



Adobe

# Ae

Adobe  
After Effects CC  
2019 release

## CLASSROOM IN A BOOK®

The official training workbook from Adobe

Brie Gyncild & Lisa Fridsma



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After Effects CC  
2019 release



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# **Adobe After Effects CC 2019 release**

## **Classroom in a Book<sup>®</sup>**

**The official training workbook from Adobe**

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Adobe After Effects CC Classroom in a Book (2019 Release)

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Cover Illustration:

Takayuki Sato (Tokyo, Japan), behance.net/gallery/47437367/Beyond-the-Moment-of-Beauty-Into-the-Galaxy

ISBN-13: 978-0-13-529864-0

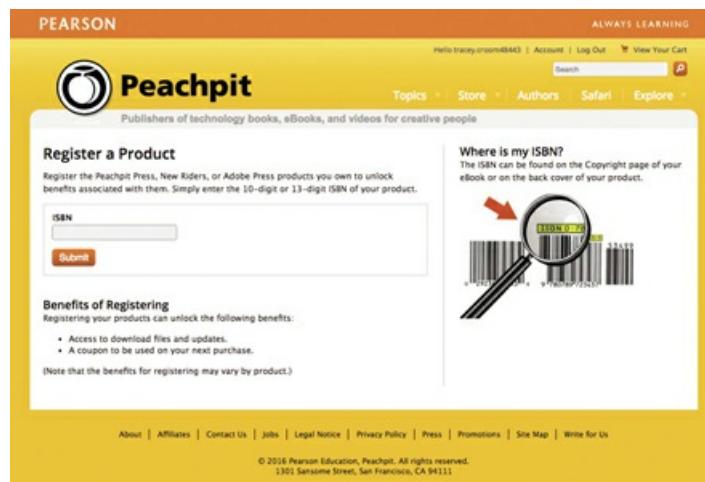
ISBN-10: 0-13-529864-4

# Where are the Lesson Files?

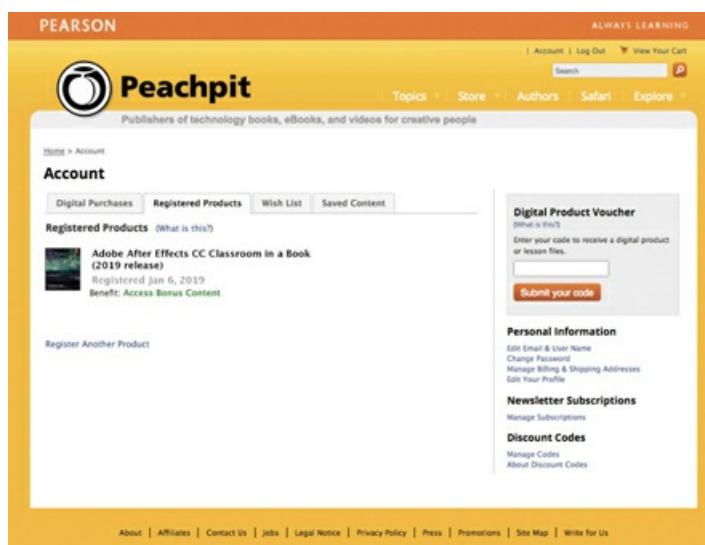
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4. Answer the questions as proof of purchase.
5. The lesson files can be accessed through the Registered Products tab on your Account page.
6. Click the Access Bonus Content link below the title of your product to proceed to the download page. Click the lesson file links to download them to your computer.



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# Getting Started

Adobe After Effects CC provides a comprehensive set of 2D and 3D tools for compositing, animation, and effects that motion graphics professionals, visual effects artists, web designers, and film and video professionals need. After Effects is widely used for digital post-production of film, video, DVDs, and the web. You can composite layers in various ways, apply and combine sophisticated visual and audio effects, and animate both objects and effects.

## About Classroom in a Book

*Adobe After Effects CC Classroom in a Book (2019 Release)* is part of the official training series for Adobe graphics and publishing software, developed with the support of Adobe product experts. The lessons are designed to let you learn at your own pace. If you're new to Adobe After Effects, you'll learn the fundamental concepts and features you'll need to master the program. And if you've been using Adobe After Effects for a while, you'll find that Classroom in a Book teaches many advanced features, including tips and techniques for using the latest version.

Although each lesson provides step-by-step instructions for creating a specific project, there's room for exploration and experimentation. You can follow the book from start to finish, or do only the lessons that match your interests and needs. Each lesson concludes with a review section summarizing what you've covered.

## Prerequisites

Before beginning to use *Adobe After Effects CC Classroom in a Book (2019 Release)*, make sure that your system is set up correctly and that you've installed the required software and hardware. You should have a working knowledge of your computer and operating system. You should know how to use the mouse and standard menus and commands, and also how to open, save, and close files. If you need to review these techniques, see the printed or online documentation included with your Microsoft® Windows® or Apple® macOS® software.

To complete the lessons in this book, you'll need to have both Adobe After Effects CC (2019 release) and Adobe Bridge CC installed. The exercises in this book are based on After Effects CC (2019 release).

## Installing After Effects, Bridge, and Media Encoder

Adobe After Effects CC is not included with the book; you must purchase it separately as part of an Adobe Creative Cloud subscription. For system requirements and complete instructions on installing the software, visit <https://helpx.adobe.com/after-effects/system-requirements.html>. Note that After Effects CC requires a 64-bit operating system. To view QuickTime movies on macOS, you must also have Apple QuickTime 7.6.6 or later installed on your system.

Some of the lessons in this book use Adobe Bridge or Adobe Media Encoder. After Effects, Bridge, and Media Encoder use separate installers. You must install these applications from Adobe Creative Cloud ([adobe.com](https://adobe.com)) onto your hard disk. Follow the onscreen instructions.

## Activating fonts

Several lessons use specific fonts that may not be installed on your system. You can activate the fonts using Adobe Fonts or choose a different font on your system with similar characteristics. If you choose a different font, your projects won't look exactly like the ones shown in the book.

Adobe Fonts licenses are included in Creative Cloud subscriptions.

To activate fonts within After Effects, choose File > Fonts From Adobe, or click the Creative Cloud icon next to Add Adobe Fonts in the Font menu in the Character panel. Then, find the font in Adobe Fonts in your browser, and activate the font.

## Optimizing performance

Creating movies is memory-intensive work for a desktop computer. After Effects CC (2019 release) requires a minimum of 8GB of RAM. The more RAM that is available to After Effects, the faster the application will work for you. For information about optimizing memory, cache, and other settings for After Effects, see "Improve performance" in After Effects Help.

## Restoring default preferences

The preferences files control the way the After Effects user interface appears on your screen. The instructions in this book assume that you see the default interface when they describe the appearance of tools, options, windows, panels, and so forth. Therefore, it's a good idea to restore the default preferences, especially if you are new to After Effects.

Each time you quit After Effects, the panel positions and certain command settings are recorded in the preferences files. To restore the original default settings, press Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) while starting After Effects. (After Effects creates new preferences files if they don't already exist the next time you start the program.)

Restoring the default preferences can be especially helpful if someone has already customized After Effects on your computer. If your copy of After Effects hasn't been used yet, these files won't exist, so this procedure is unnecessary.

**Important:** If you want to save the current settings, you can rename a preferences file instead of deleting it. When you are ready to restore those settings, change the name back, and make sure that the file is located in the correct preferences folder.

1. Locate the After Effects preferences folder on your computer:
  - **For Windows:** .../Users/<user name>/AppData/Roaming/Adobe/AfterEffects/16.0
  - **For macOS:** .../Users/<user name>/Library/Preferences/Adobe/After Effects/16.0
2. Rename any preferences files you want to preserve, and then restart After Effects.

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### ● Note

In macOS, the user library folder is hidden by default. To see it, in the Finder, choose Go > Go To Folder. In the Go To Folder dialog box, type `~/Library`, and then click Go.

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## Online content

Your purchase of this Classroom in a Book includes online materials provided by way of your Account page on [peachpit.com](https://peachpit.com). These include:

## Lesson files

To work through the projects in this book, you will need to download the lesson files from [peachpit.com](https://peachpit.com). You can download the files for individual lessons or it may be possible to download them all in a single file.

## Web Edition

The Web Edition is an online interactive version of the book providing an enhanced learning experience. Your Web Edition can be accessed from any device with a connection to the Internet and it contains:

- The complete text of the book
- Hours of instructional video keyed to the text
- Interactive quizzes

## Accessing the lesson files and Web Edition

If you purchased an eBook from [peachpit.com](https://peachpit.com) or [adobepress.com](https://adobepress.com), your Web Edition will automatically appear under the Digital Purchases tab on your Account page. Click the **Launch** link to access the product. Continue reading to learn how to register your product to get access to the lesson files.

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2. Sign in or create a new account.
3. Enter the ISBN: **9780135298640**.
4. Answer the questions as proof of purchase.
5. The **Web Edition** will appear under the Digital Purchases tab on your Account page. Click the **Launch** link to access the product.

The **Lesson Files** can be accessed through the Registered Products tab on your Account page. Click the Access Bonus Content link below the title of your product to proceed to the

download page. Click the lesson file links to download them to your computer.

## Organizing the lesson files

The files are compressed into ZIP archives to speed download time and protect the contents from damage during transfer. You must uncompress (or “unzip”) the files to restore them to their original size and format before you use them with the book. Modern Mac and Windows systems are set up to open ZIP archives by simply double-clicking.

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### ● Note

If for any reason you need to download fresh copies of the lesson files, you can download them from your account again at any time.

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1. On your hard drive, create a new folder in a convenient location, and name it **Lessons**, following the standard procedure for your operating system:
  - In Windows, right-click, and choose New > Folder. Then enter the new name for your folder.
  - In macOS, in the Finder, choose File > New Folder. Type the new name, and drag the folder to the location you want to use.
2. Drag the unzipped Lessons folder (which contains folders named Lesson01, Lesson02, and so on) that you downloaded onto your hard drive to your new Lessons folder. When you begin each lesson, navigate to the folder with that lesson number to access all the assets you need to complete the lesson.

## About copying the sample movies and projects

You will create and render one or more movies in some lessons in this book. The files in the Sample\_Movies folders are examples that you can use to see the end results of each lesson and to compare them with your own results.

The files in the End\_Project\_File folders are samples of the completed project for each lesson. Use these files for reference if you want to compare your work in progress with the project files used to generate the sample movies.

These sample movies and end-project files vary in size from relatively small to several megabytes, so you can either download them all now if you have ample storage space, or download just the files for each lesson as needed, and then delete them when you finish that lesson.

## How to use these lessons

Each lesson in this book provides step-by-step instructions for creating one or more specific elements of a real-world project. The lessons build on each other in terms of concepts and skills, so the best way to learn from this book is to proceed through the lessons in sequential order. In

this book, some techniques and processes are explained and described in detail only the first few times you perform them.

Many aspects of the After Effects application can be controlled by multiple techniques, such as a menu command, a button, dragging, and a keyboard shortcut. Only one or two of the methods are described in any given procedure, so that you can learn different ways of working even when the task is one you've done before.

The organization of the lessons is also design-oriented rather than feature-oriented. That means, for example, that you'll work with layers and effects on real-world design projects over several lessons, rather than in just one lesson.

## Additional resources

*Adobe After Effects CC Classroom in a Book (2019 Release)* is not meant to replace documentation that comes with the program or to be a comprehensive reference for every feature. Only the commands and options used in the lessons are explained in this book.

Tutorials within After Effects can help you get started: In After Effects, choose Help > Learn After Effects. The Learn panel opens with a series of tutorials.

For comprehensive information about program features and tutorials, refer to these resources:

- **Adobe After Effects Learn & Support:** [helpx.adobe.com/support/after-effects.html](http://helpx.adobe.com/support/after-effects.html) is where you can find and browse tutorials, help, and support on [www.Adobe.com](http://www.Adobe.com).
- **After Effects tutorials:** [helpx.adobe.com/after-effects/tutorials.html](http://helpx.adobe.com/after-effects/tutorials.html) lists online tutorials for beginner and experienced users. You can go there directly from After Effects by choosing Help > Tutorials.
- **After Effects Forums:** [forums.adobe.com/community/aftereffects\\_general\\_discussion](http://forums.adobe.com/community/aftereffects_general_discussion) lets you tap into peer-to-peer discussions, and questions as well as answers about After Effects.
- **Adobe Create Magazine:** [create.adobe.com](http://create.adobe.com) offers thoughtful articles on design and design issues, a gallery showcasing the work of top-notch designers, tutorials, and more.
- **Resources for educators:** [www.adobe.com/education](http://www.adobe.com/education) and [edex.adobe.com](http://edex.adobe.com) offer a treasure trove of information for instructors who teach classes on Adobe software. Find solutions for education at all levels, including free curricula that use an integrated approach to teaching Adobe software and can be used to prepare for the Adobe Certified Associate exams.

Also check out these useful links:

- **Adobe Add-ons:** [exchange.adobe.com/addons](http://exchange.adobe.com/addons) is a central resource for finding tools, services, extensions, code samples, and more to supplement and extend your Adobe products.
- **Adobe After Effects CC product home page:** [www.adobe.com/products/aftereffects](http://www.adobe.com/products/aftereffects)

## Adobe Authorized Training Centers

Adobe Authorized Training Centers offer instructor-led courses and training on Adobe products.  
A directory of AATCs is available at <https://training.adobe.com/training/partner-finder.html>

# 1 Getting to Know the Workflow

## Lesson overview

In this lesson, you'll learn how to do the following:

- Create a project and import footage.
- Create compositions and arrange layers.
- Navigate the Adobe After Effects interface.
- Use the Project, Composition, and Timeline panels.
- Transform layer properties.
- Apply basic effects.
- Create keyframes.
- Preview your work.
- Customize the workspace.
- Adjust preferences related to the user interface.
- Find additional resources for using After Effects.



This lesson will take about an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.

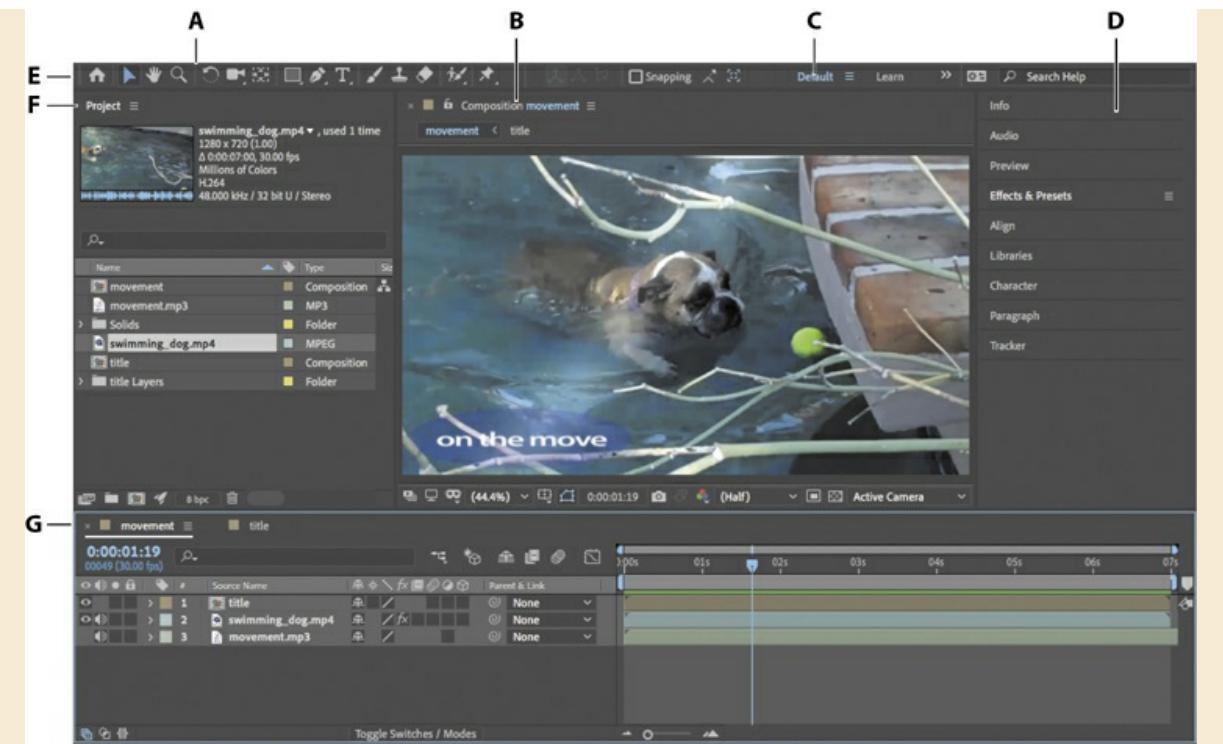


## PROJECT: TITLE SEQUENCE

Whether you use After Effects to animate a simple DVD title sequence or to create complex special effects, you generally follow the same basic workflow. The After Effects interface facilitates your work and adapts to each stage of production.

### About the After Effects work area

After Effects offers a flexible, customizable work area. The main window of the program is called the *application window*. Panels are organized in this window in an arrangement called a *workspace*. The default workspace contains stacked panels as well as panels that stand alone, as shown below.



**A.** Application window **B.** Composition panel **C.** Workspace bar **D.** Stacked panels **E.** Tools panel **F.** Project panel **G.** Timeline panel

You customize a workspace by dragging the panels into the configuration that best suits your working style. You can drag panels to new locations, change the order of stacked panels, move panels into or out of a group, place panels alongside each other, stack panels, and undock a panel so that it floats in a new window above the application window. As you rearrange panels, the other panels resize automatically to fit the window.

When you drag a panel by its tab to relocate it, the area where you can drop it—called a *drop zone*—becomes highlighted. The drop zone determines where and how the panel is inserted into the workspace. Dragging a panel to a drop zone either docks it, groups it, or stacks it.

If you drop a panel along the edge of another panel, group, or window, it will dock next to the existing group, resizing all groups to accommodate the new panel.

If you drop a panel in the middle of another panel or group, or along the tab area of a panel, it will be added to the existing group and be placed at the top of the stack. Grouping a panel does not resize other groups.

You can also open a panel in a floating window. To do so, select the panel, and then choose Undock Panel or Undock Frame from the panel menu. Or, drag the panel or group outside the application window.

## Getting started

A basic After Effects workflow follows six steps: importing and organizing footage, creating

compositions and arranging layers, adding effects, animating elements, previewing your work, and rendering and outputting the final composition so that it can be viewed by others. In this lesson, you will create a simple animated video using this workflow, and along the way, you'll learn your way around the After Effects interface.

First, you'll preview the final movie to see what you'll create in this lesson.

1. Make sure the following files are in the Lessons/Lesson01 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: movement.mp3, swimming\_dog.mp4, title.psd
  - In the Sample\_Movies folder: Lesson01.avi, Lesson01.mov
2. Open and play the Lesson01.avi sample movie in Windows Movies & TV or the Lesson01.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

### **Creating a project and importing footage**

When you begin each lesson of this book, it's a good idea to restore the default preferences for After Effects. (For more information, see “[Restoring default preferences](#)” on page 3.) You can do this with a simple keyboard shortcut.

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#### ► **Tip**

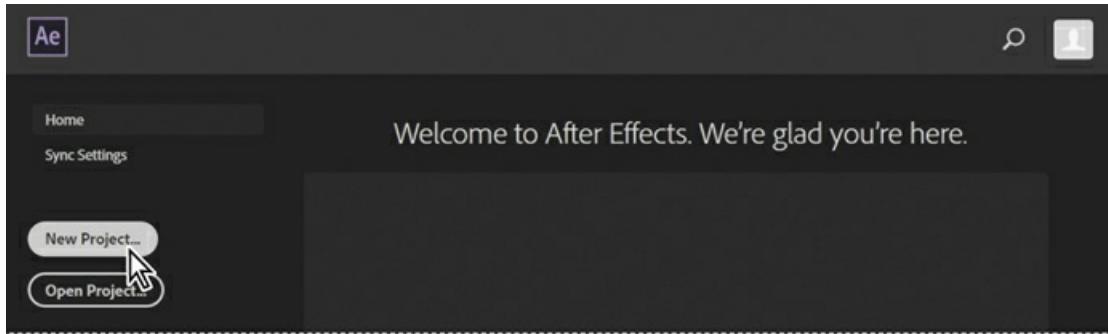
Restoring default preferences can be tricky in Windows, especially if you're working on a fast system. Press the keys after you double-click the application icon but before After Effects begins to list the files it's activating. Alternatively, you can choose Edit > [your Creative Cloud account username] > Clear Settings, and then restart the application.

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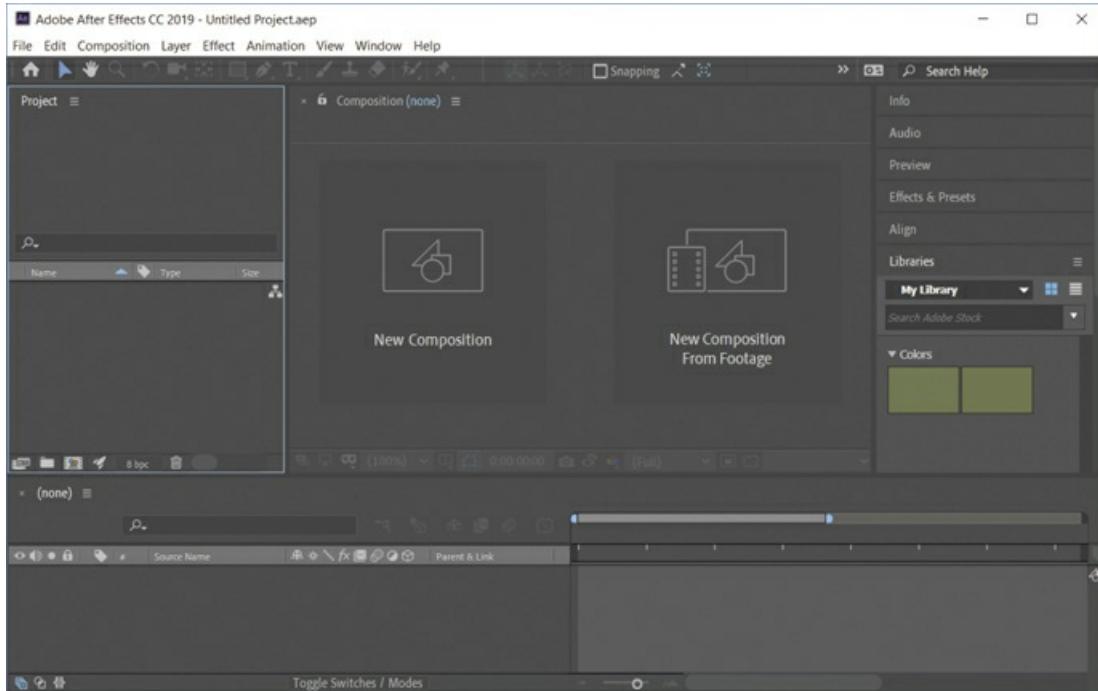
1. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences.

The Home window opens. It provides easy access to your recent After Effects projects, as well as to tutorials and more information about After Effects.

2. Click New Project in the Home window.



After Effects displays an empty, untitled project.



An After Effects project is a single file that stores references to all the footage you use in that project. It also contains *compositions*, which are the individual containers used to combine footage, apply effects, and, ultimately, drive the output.

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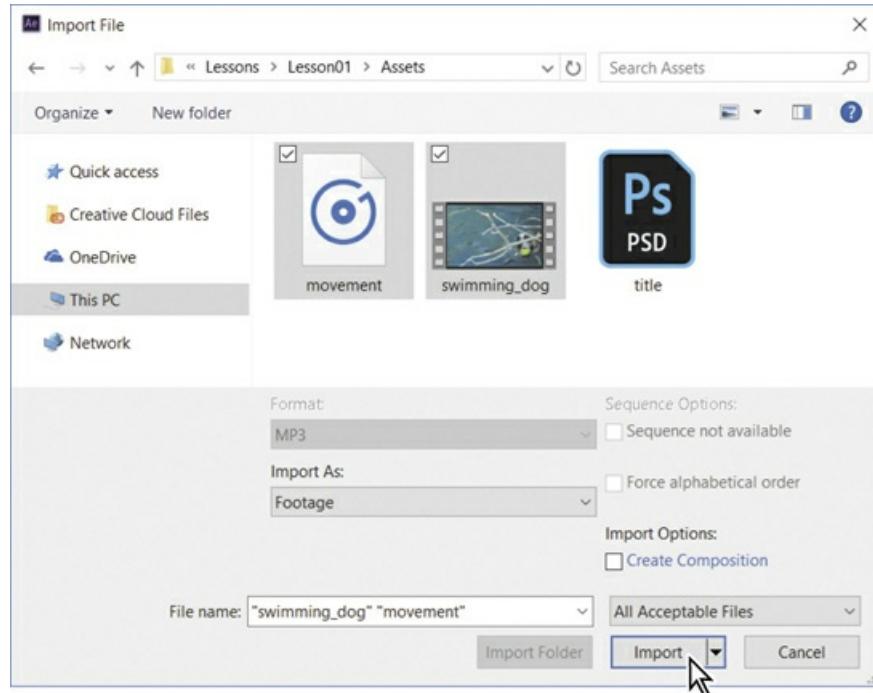
### ► Tip

To quickly maximize a panel, double-click the panel tab. To return it to its original size, double-click the tab again.

---

When you begin a project, often the first thing you'll do is add footage to it.

3. Choose File > Import > File.
4. Navigate to the Assets folder in your Lessons/Lesson01 folder. Shift-click to select the movement.mp3 and swimming\_dog.mp4 files. Then click Import or Open.



A *footage item* is the basic unit in an After Effects project. You can import many types of footage items, including moving-image files, still-image files, still-image sequences, audio files, layered files from Adobe Photoshop and Adobe Illustrator, other After Effects projects, and projects created in Adobe Premiere® Pro. You can import footage items at any time.

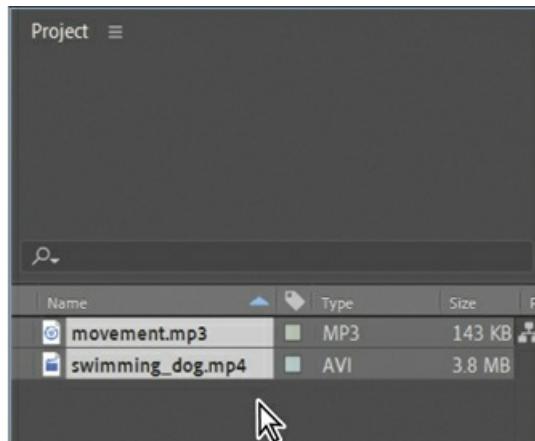
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### ► Tip

You can also choose File > Import > Multiple Files to select files located in different folders or drag and drop files from Explorer or the Finder. You can use Adobe Bridge to search for, manage, preview, and import footage.

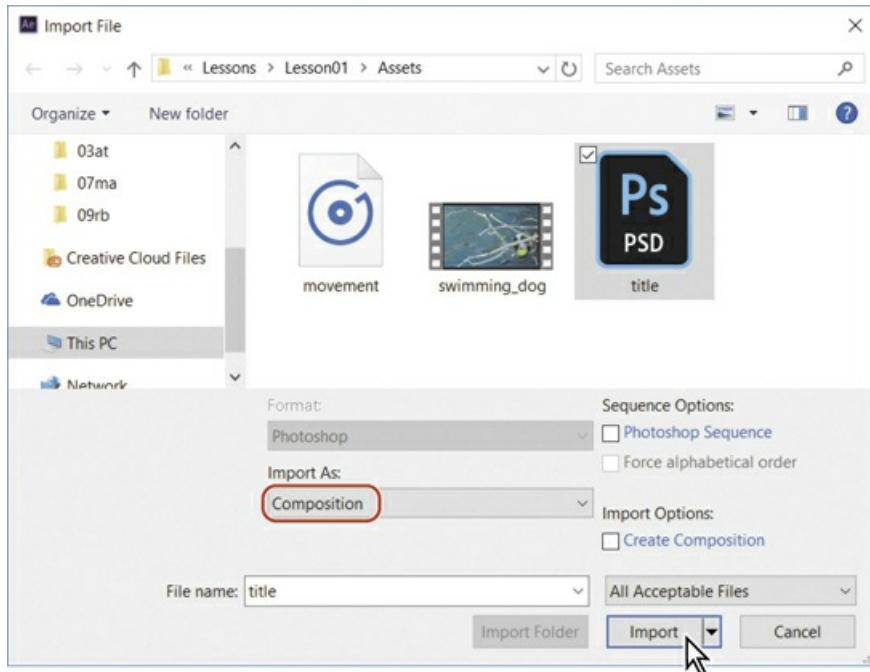
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As you import assets, After Effects reports its progress in the Info panel.



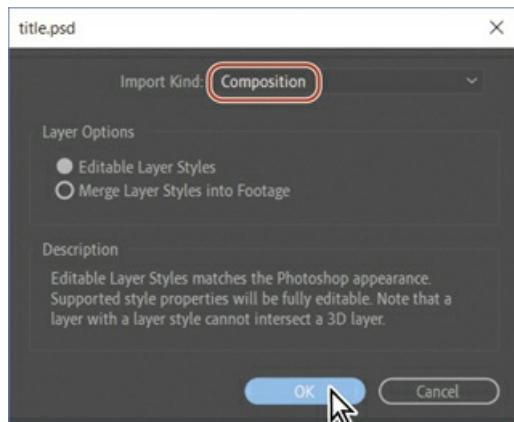
Because one of the footage items for this project is a multilayer Photoshop file, you'll import it separately as a composition.

5. Double-click in the lower area of the Project panel to open the Import File dialog box.
6. Navigate to the Lesson01/Assets folder again, and select the title.psd file. Choose Composition from the Import As menu. (In macOS, you may need to click Options to see the Import As menu.) Then click Import or Open.



After Effects opens an additional dialog box that displays options for the file you are importing.

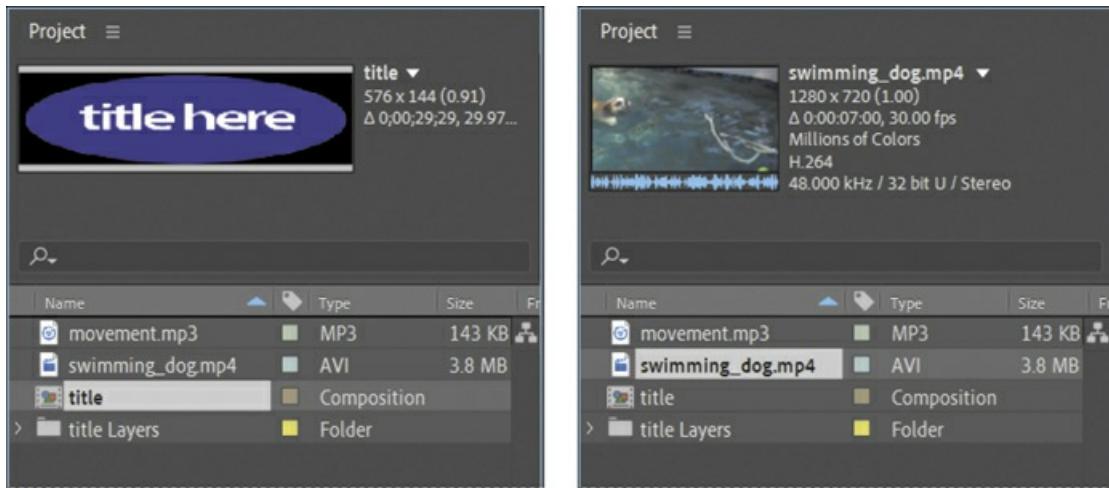
7. In the title.psd dialog box, choose Composition from the Import Kind menu to import the layered Photoshop file as a composition. Select Editable Layer Styles in the Layer Options area, and then click OK.



The footage items appear in the Project panel.

8. In the Project panel, click to select different footage items. Notice that a thumbnail preview appears at the top of the Project panel. You can also see the file type and size, as well as

other information about each item, in the Project panel columns.



When you import files, After Effects doesn't copy the video and audio data itself into your project. Instead, each footage item in the Project panel contains a reference link to the source files. When After Effects needs to retrieve image or audio data, it reads it from the source file. This keeps the project file small and allows you to update source files in another application without modifying the project.

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#### ▶ Tip

You can locate missing fonts or effects the same way. Choose File > Dependencies, and then choose Find Missing Fonts or Find Missing Effects. Or just type **Missing Fonts** or **Missing Effects** into the Search box in the Project panel.

---

If you move a file or if After Effects can't access its location, it will report that the file is missing. To identify missing files, choose File > Dependencies > Find Missing Footage. You can also type **Missing Footage** into the Search box in the Project panel to look for the missing assets.

To save time and minimize the size and complexity of a project, you'll usually import a footage item once even if you're using it multiple times in a composition. However, you may sometimes need to import a source file more than once, such as if you want to use it at two different frame rates.

After you've imported footage, it's a good time to save the project.

9. Choose File > Save. In the Save As dialog box, navigate to the Lessons/Lesson01/Finished\_Project folder. Name the project **Lesson01\_Finished.aep**, and then click Save.

### Creating a composition and arranging layers

The next step of the workflow is to create a composition. You create all animation, layering, and effects in a composition. An After Effects composition has both spatial dimensions and a

temporal dimension (time).

Compositions include one or more layers, arranged in the Composition panel and in the Timeline panel. Any item that you add to a composition—such as a still image, moving-image file, audio file, light layer, camera layer, or even another composition—becomes a new layer. Simple projects may include only one composition, while elaborate projects may include several compositions to organize large amounts of footage or intricate effects sequences.

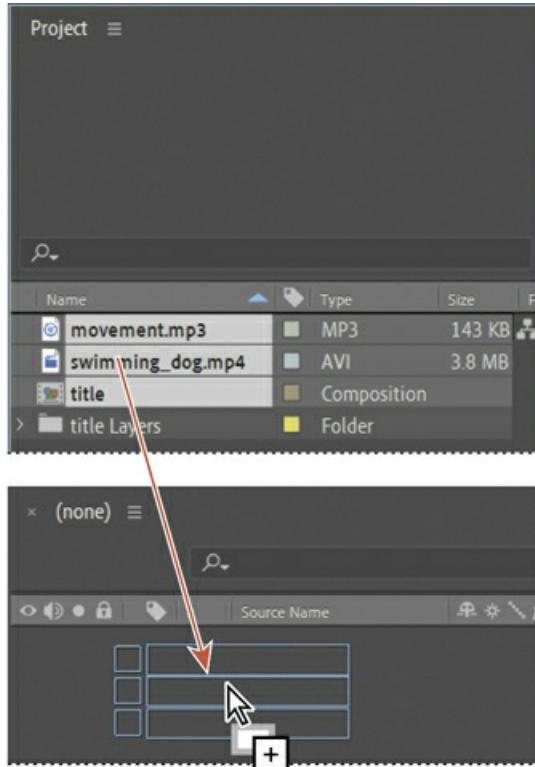
To create a composition, you'll drag the footage items into the Timeline panel, and After Effects will create layers for them.

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### ► Tip

To create a composition from footage as you import it, select Create Composition in the Import File dialog box.

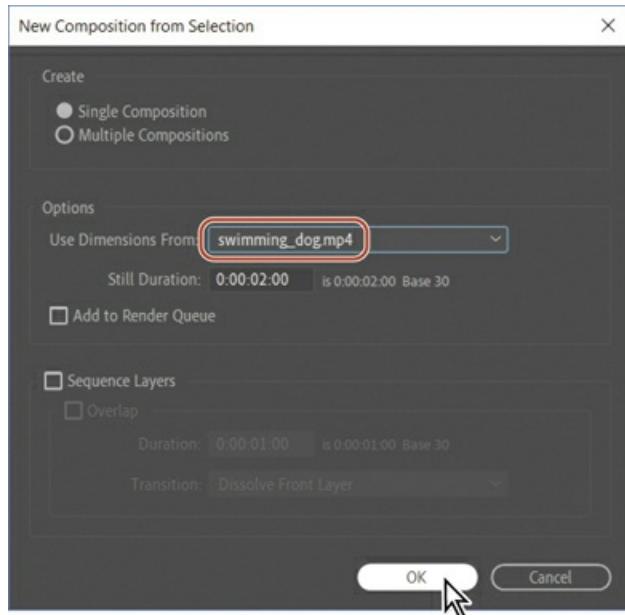
---



1. In the Project panel, Shift-click to select the movement.mp3, swimming\_dog.mp4, and title assets. Don't select the title Layers folder.
2. Drag the selected footage items into the Timeline panel. The New Composition From Selection dialog box appears.

After Effects bases the dimensions of the new composition on the selected footage. In this example, all of the footage is sized identically, so you'll accept the default settings for the composition.

3. Select swimming\_dog.mp4 in the Use Dimensions From menu, and then click OK to create the new composition.



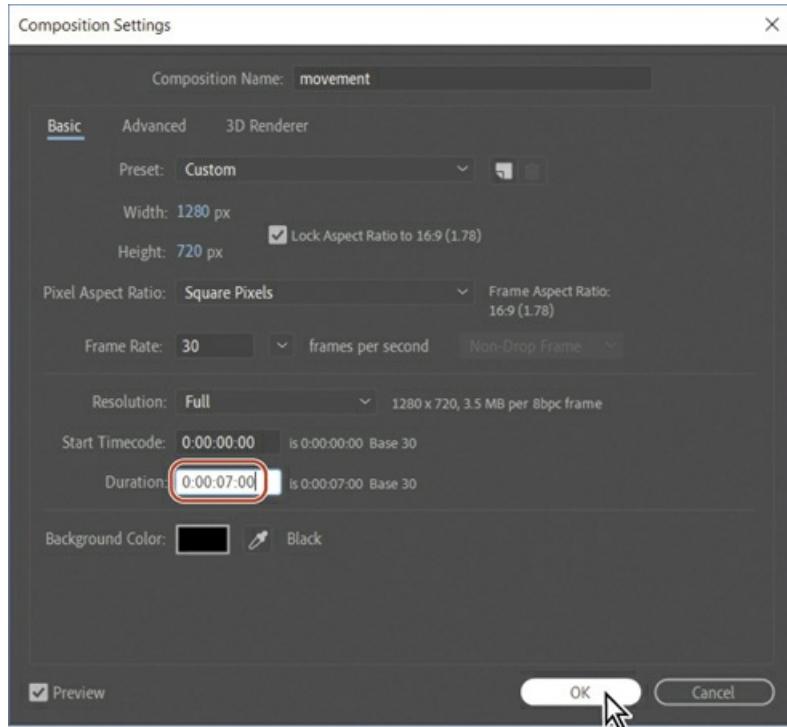
The footage items appear as layers in the Timeline panel, and After Effects displays the composition, named swimming\_dog, in the Composition panel.



When you add a footage item to a composition, that footage becomes the source for a new layer. A composition can have any number of layers, and you can also include a composition as a layer in another composition, which is called *nesting*.

Some of the assets are longer than others, but you want them all to continue only as long as the swimming dog is on the screen. You'll change the length of the entire composition to 7:00 to match the dog clip.

4. Choose Composition > Composition Settings.
5. In the Composition Settings dialog box, rename the composition **movement**, type **7:00** for the Duration, and then click OK.



The Timeline panel displays the same duration for each of the layers.

In this composition, there are three footage items, and therefore three layers in the Timeline panel. Depending on the order in which the elements were selected when you imported them, your layer stack may differ from the one shown on the previous page. The layers need to be in a specific order as you add effects and animations, however, so you'll rearrange them now.

## About layers

*Layers* are the components you use to build a composition. Any item that you add to a composition—such as a still image, moving-image file, audio file, light layer, camera layer, or even another composition—becomes a new layer. Without layers, a composition consists only of an empty frame.

Using layers, you can work with specific footage items in a composition without affecting any other footage. For example, you can move, rotate, and draw masks for one layer without disturbing any other layers in the composition, or you can use the same footage in more than one layer and use it differently in each instance. In general, the layer order in the Timeline panel corresponds to the stacking order in the Composition panel.

### Tip

To deselect all layers, click a blank area of the Timeline panel or press F2.

6. Click an empty area of the Timeline panel to deselect the layers, and then drag the title layer to the top of the layer stack, if it is not already there. Drag the movement.mp3 layer to the bottom of the layer stack.



7. Choose File > Save to save your project so far.

## Adding effects and modifying layer properties

Now that your composition is set up, you can start having fun—applying effects, making transformations, and adding animation. You can add any combination of effects and modify any of a layer's properties, such as size, placement, or opacity. Using effects, you can alter a layer's appearance or sound, and even generate visual elements from scratch. The easiest way to start is to apply any of the hundreds of effects included with After Effects.

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### Note

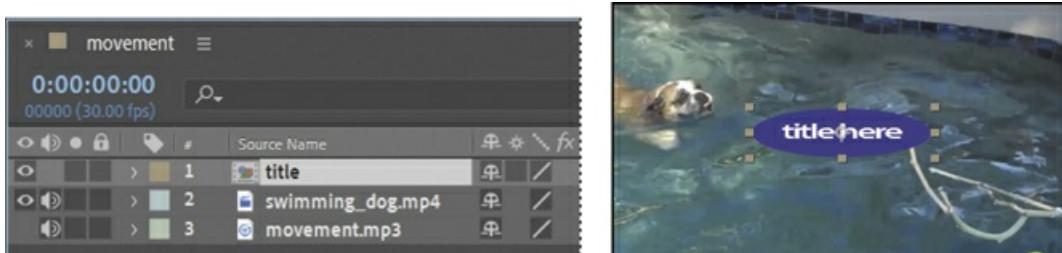
This exercise is just the tip of the iceberg. You will learn more about effects and animation presets in [Lesson 2, “Creating a Basic Animation Using Effects and Presets,”](#) and throughout the rest of this book.

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## Transforming layer properties

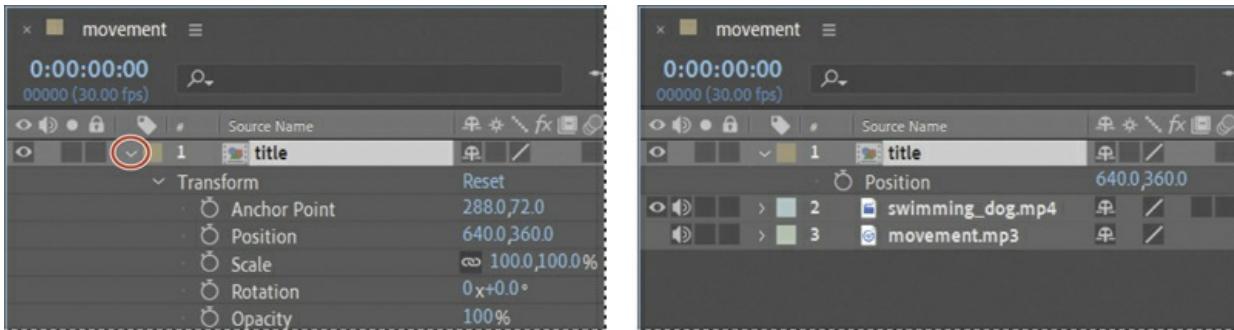
The title is currently in the center of the screen, obscuring the dog and distracting from the action. You'll move it to the lower left corner, where it will remain visible but not in the way.

1. Select the title layer (layer 1) in the Timeline panel. Notice that layer handles appear around the layer in the Composition panel.



2. Click the triangle to the left of the layer number to expand the layer, and then expand the layer's Transform properties: Anchor Point, Position, Scale, Rotation, and Opacity.

3. If you can't see the properties, scroll down the Timeline panel using the scroll bar at the right side of the panel. Better yet, select the title layer name again, and press P.

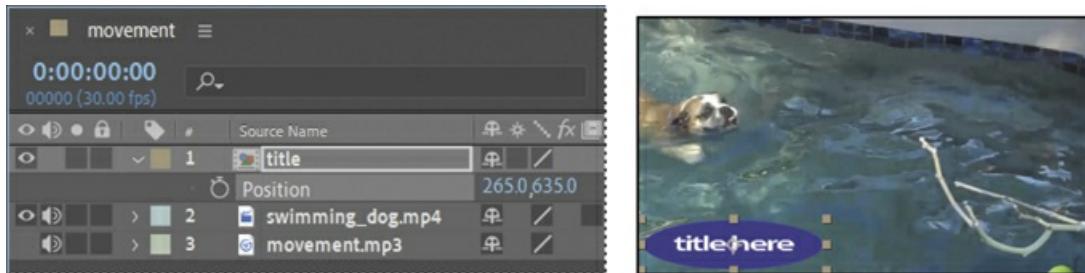


Expand Transform to see all its properties.

Press P to see just the Position property.

This keyboard shortcut displays only the Position property, which is the only property you want to change for this exercise. You'll move this layer to the lower left corner.

4. Change the coordinates for the Position property to **265, 635**. Or use the Selection tool to drag the title to the lower left corner of the screen.



5. Press P to hide the Position property, or click the triangle to the left of the layer number to hide all properties.

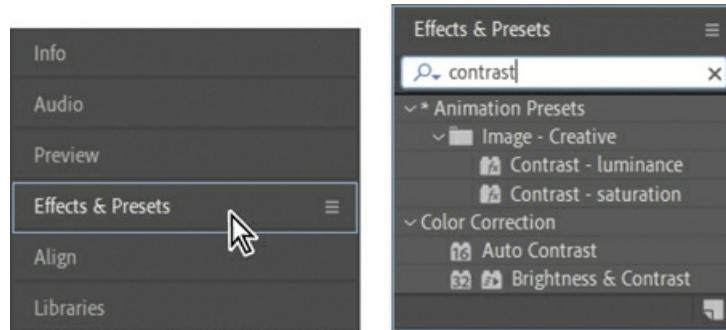
## Adding an effect to correct color

After Effects includes several effects to correct or modify color in your projects. You'll use the Auto Contrast effect to adjust the overall contrast in the clip and intensify the color of the water.

### Note

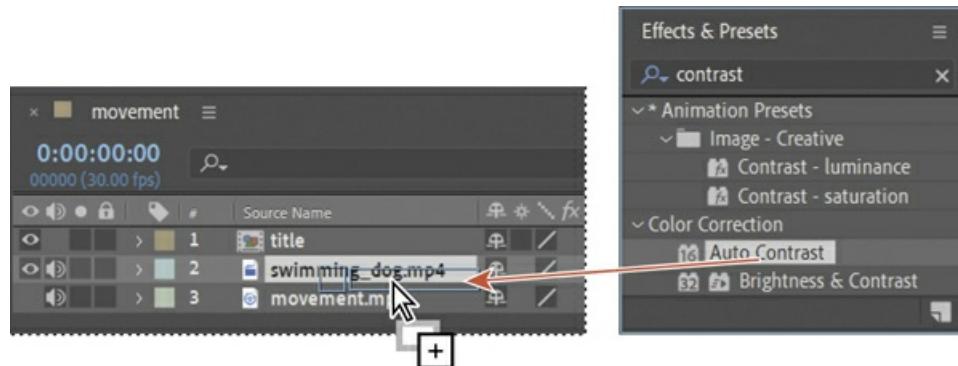
If you double-click a layer in the Timeline panel, After Effects opens the layer in the Layer panel. To return to the Composition panel, click the Composition tab.

1. Select the *swimming\_dog.mp4* layer in the Timeline panel.
2. Click the Effects & Presets panel (in the panel stack at the right side of the application window) to open it, and type **contrast** in the search box.

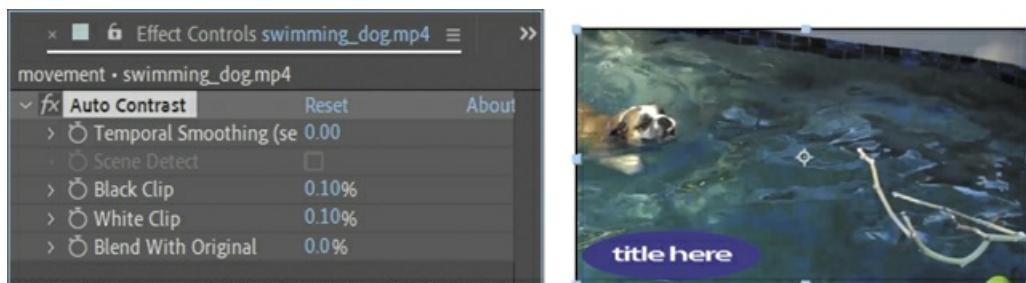


After Effects searches for effects and presets that contain the letters you type, and displays the results interactively. Before you have finished typing, the Auto Contrast effect—located in the Color Correction category—appears in the panel.

3. Drag the Auto Contrast effect onto the swimming\_dog layer in the Timeline panel.

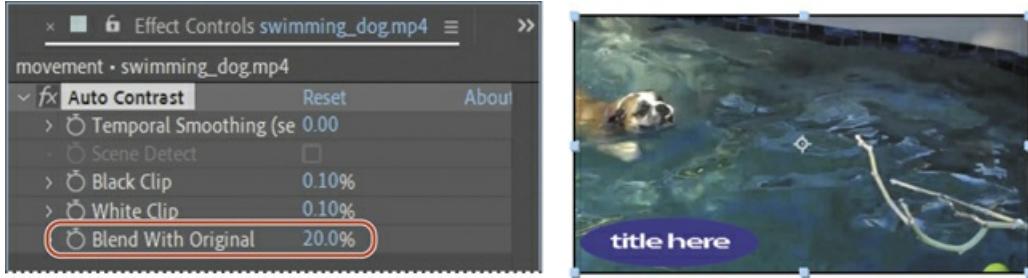


After Effects applies the effect and automatically opens the Effect Controls panel in the upper left area of the workspace.



The contrast intensifies colors a little more than we need. You'll customize the settings to reduce the effect.

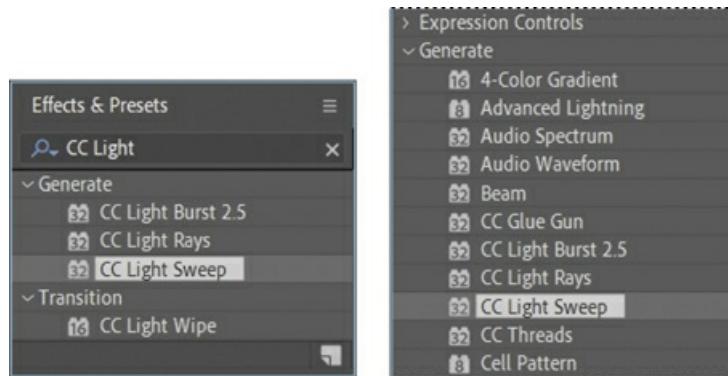
4. In the Effect Controls panel, click the number next to Blend With Original, type **20%**, and press Enter or Return to accept the new value.



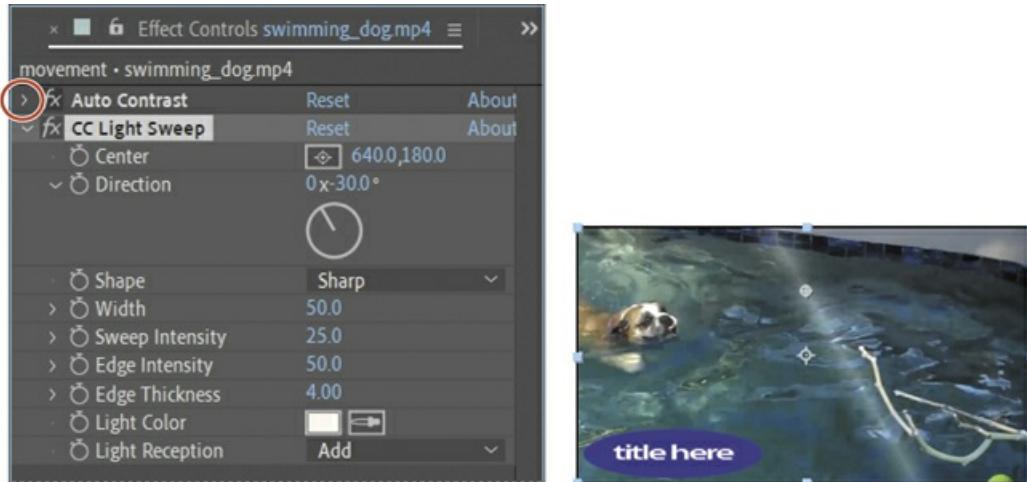
## Adding a stylistic effect

After Effects also includes many stylistic effects. You'll add a beam of light to the clip to add an artistic touch. You'll change the settings of this effect to modify the angle and intensity of the light.

1. Click the **x** in the search box in the Effects & Presets panel to clear it, and then locate the CC Light Sweep effect by doing one of the following:
  - Type **CC Light** in the search box.
  - Click the triangle next to Generate to expand the category in alphabetical order.

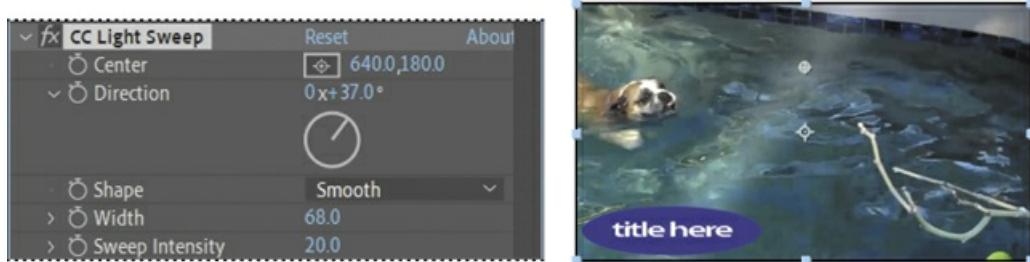


2. Drag the CC Light Sweep effect in the Generate category onto the swimming\_dog layer name in the Timeline panel. After Effects adds the CC Light Sweep settings to the Effect Controls panel under the Auto Contrast effect.
3. In the Effect Controls panel, click the triangle next to the Auto Contrast effect to hide those settings so that you can see the CC Light Sweep settings more easily.



First, you'll change the angle of the light.

4. For Direction, type **37°**.
5. From the Shape menu, choose Smooth to widen and soften the light beam.
6. For Width, type **68** to widen the beam a bit more.
7. Change the Sweep Intensity value to **20** to make the beam a little more subtle.



8. Choose File > Save to save your work so far.

## Animating the composition

So far, you've started a project, created a composition, imported footage, and applied some effects. It all looks great, but how about some movement? You've applied only static effects.

In After Effects, you can change any combination of a layer's properties over time using conventional keyframing, expressions, or keyframe assistants. You'll explore many of these methods throughout the lessons of this book. For this project, you'll apply an animation preset to introduce the title to the screen, and you'll animate the title's color over time.

## Preparing the text composition

In this exercise, you'll work with a separate composition—the one you imported from a layered Photoshop file.

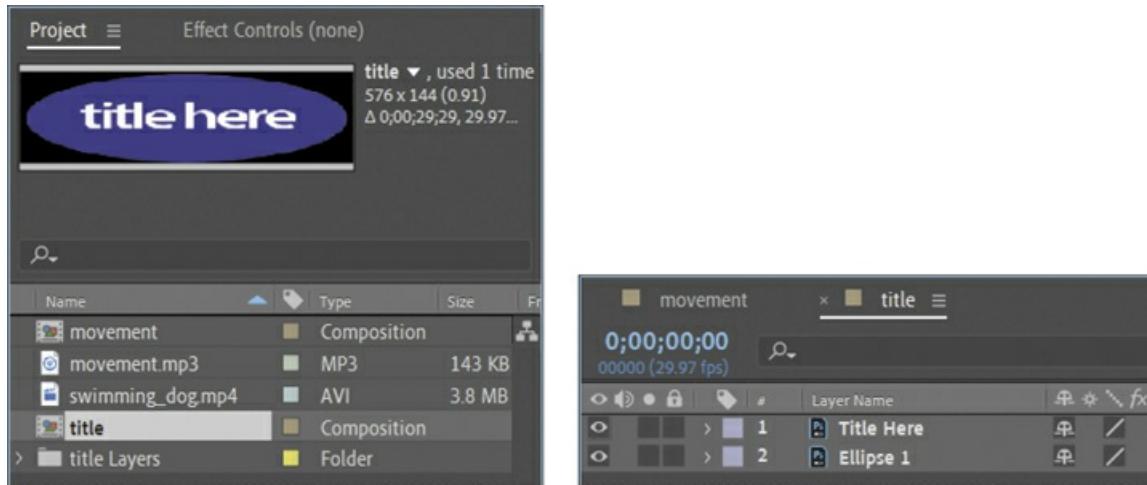
### Note

If the Project tab isn't visible, choose Window > Project to open the Project panel.

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1. Select the Project tab to display the Project panel, and then double-click the title composition to open it as a composition in its own Timeline panel.

This composition is the layered Photoshop file you imported. Two layers—Title Here and Ellipse 1—appear in the Timeline panel. The Title Here layer contains placeholder text that was created in Photoshop.



At the top of the Composition panel is the Composition Navigator bar, which displays the relationship between the main composition (movement) and the current composition (title), which is nested within the main composition.



You can nest multiple compositions within each other; the Composition Navigator bar displays the entire composition path. Arrows between the composition names indicate the direction in which information flows.

Before you can replace the text, you need to make the layer editable.

---

**Note**

If you see a warning about missing fonts or layer dependencies, click OK. If Adobe Fonts opens, activate the missing font.

---

2. Select the Title Here layer (layer 1) in the Timeline panel, and then choose Layer > Create > Convert To Editable Text.



A T icon appears next to the layer name in the Timeline panel, indicating that it is now an editable text layer. The layer is also selected in the Composition panel, ready for you to edit.

The blue lines at the top, bottom, and sides of the Composition panel indicate title-safe and action-safe zones. Television sets enlarge a video image and allow some portion of its outer edges to be cut off by the edge of the screen. This is known as *overscan*. The amount of overscan is not consistent between television sets, so you should keep important parts of a video image, such as action or titles, within margins called *safe zones*. Keep your text inside the inner blue guides to ensure that it is in the title-safe zone, and keep important scene elements inside the outer blue guides to ensure that they are in the action-safe zone.

## Editing text

You'll start by replacing the placeholder text with real text. Then you'll format it to fit the space better.

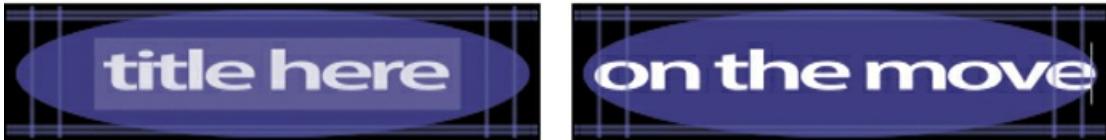
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### Note

After Effects offers robust character and paragraph formatting controls, but the default settings—whatever typeface appears when you type—should be fine for this project. You'll learn more about type in [Lesson 3, “Animating Text.”](#)

---

1. Select the Horizontal Type tool (T) in the Tools panel, and drag over the placeholder text in the Composition panel to select it. Then type **on the move**.



## About the Tools panel

As soon as you create a composition, the tools in the Tools panel in the upper left corner of the After Effects application window become available. After Effects includes tools that enable you to modify elements of your composition. Some of these tools—the Selection tool and the Hand tool, for example—will be familiar to you if you use other Adobe applications, such as Photoshop. Others will be new.



A. Home **B.** Selection **C.** Hand **D.** Zoom **E.** Rotation **F.** Camera tools **G.** Pan Behind **H.** Mask and Shape tools **I.** Pen tools **J.** Type tools **K.** Brush **L.** Clone Stamp **M.** Eraser **N.** Roto Brush and Refine Edge tools **O.** Puppet tools

When you hover the pointer over any button in the Tools panel, a tool tip identifies the tool and its keyboard shortcut. A small triangle in the lower right corner of the button indicates that one or more additional tools are hidden behind it. Click and hold the button to display the hidden tools, and then select the tool you want to use.

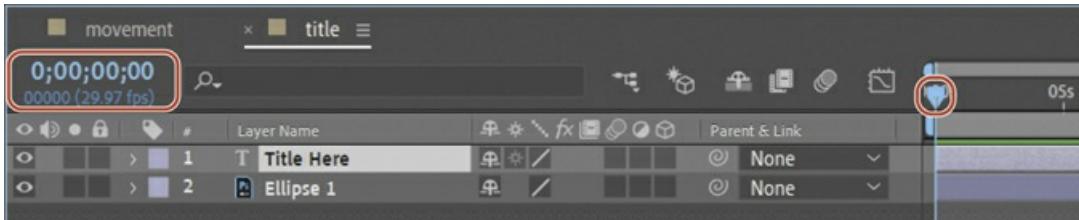
2. Select the text again. Then, in the Character panel (docked on the right side of the screen), change the text size to **100 px** and the tracking to **-50**.



## Animating text with animation presets

Now that the text is formatted, you can apply an animation preset. You'll use the Fade Up Words preset, so the words will appear in order over time.

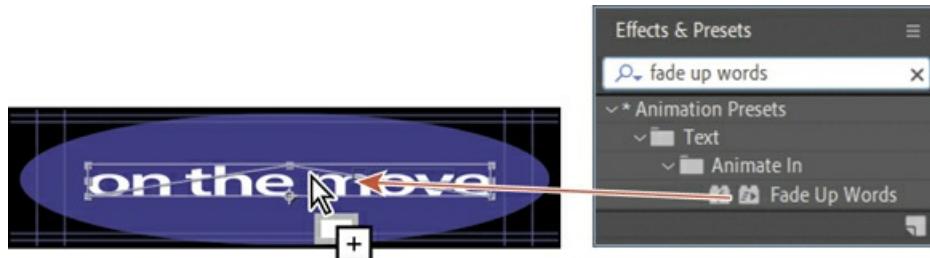
1. Select the Title Here layer in the Timeline panel again, and make sure you're at the first frame of the animation by doing one of the following:
  - Drag the current-time indicator all the way to the left of the time ruler, to 0:00.
  - Press the Home key on your keyboard.



### ► Tip

If you don't see the Effects & Presets tab, choose Window > Effects & Presets.

2. Select the Effects & Presets tab to display the Effects & Presets panel. Then type **fade up words** in the search box.
3. Select the Fade Up Words effect in the Animate In category, and drag it onto the **on the move** text in the Composition panel.



After Effects adds the effect. Because it's a simple effect, there are no settings in the Effect Controls panel.

4. Manually preview the effect by dragging the current-time indicator from 0:00 to 1:00. The words fade in, so that they are all onscreen by 1:00.



## About timecode and duration

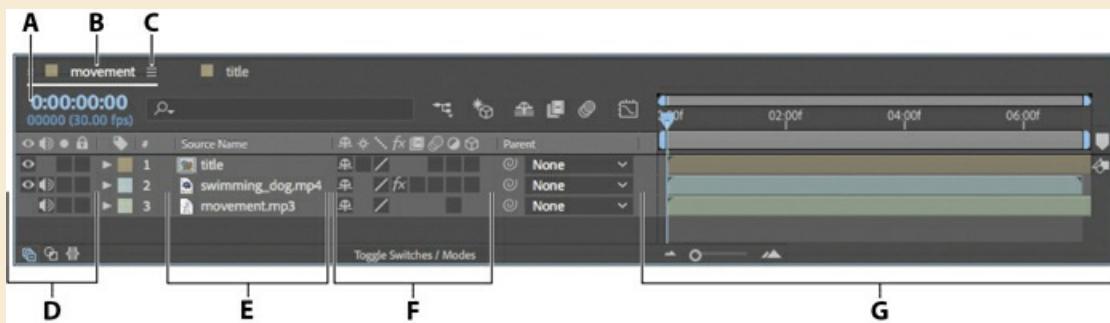
The primary concept related to time is *duration*, or length. Each footage item, layer, and composition in a project has its own duration, which is reflected in the beginning and ending times displayed in the time rulers in the Composition, Layer, and Timeline panels.

The way you view and specify time in After Effects depends on the display style, or unit of measure, that you use to describe time. By default, After Effects displays time in Society of Motion Picture and Television Engineers (SMPTE) timecode: hours, minutes, seconds, and frames. Note that the figures are separated by semicolons in the After Effects interface, representing drop-frame timecode (which adjusts for the real-time frame rate), but this book uses a colon to represent non-drop-frame timecode.

To learn when and how to change to another system of time display, such as frames, or feet and frames of film, see After Effects Help.

## About the Timeline panel

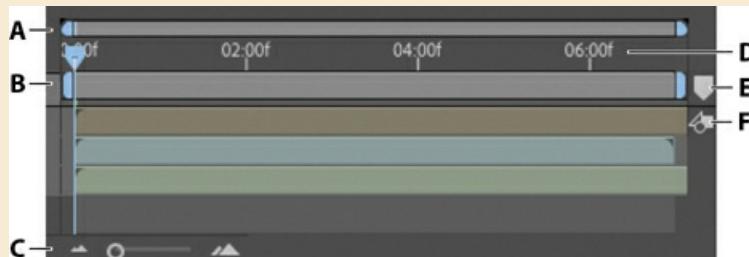
Use the Timeline panel to animate layer properties and set In and Out points for a layer. (In and Out points are the points at which a layer begins and ends in the composition.) Many of the Timeline panel controls are organized in columns of related functions. By default, the Timeline panel contains a number of columns and controls, as shown here:



A. Current time B. Composition name C. Timeline panel menu D. Audio/Video Switches column E. Source Name/Layer Name column F. Layer switches G. Time graph/Graph Editor area

### Understanding the time graph

The time graph portion of the Timeline panel (the right side) contains a time ruler, markers to indicate specific times, and duration bars for the layers in your composition.



A. Time navigator start and end brackets  
B. Work area start and end brackets  
C. Time zoom slider  
D. Time ruler  
E. Composition marker bin  
F. Composition button

Before delving too deeply into animation, it will help to understand at least some of these controls. The duration of a composition, a layer, or a footage item is represented visually in the time graph. On the time ruler, the current-time indicator marks the frame you are viewing or editing, and the frame appears in the Composition panel.

The work area start and end brackets indicate the part of the composition that will be

rendered for previews or final output. When you work on a composition, you may want to render only a portion of it by specifying a segment of the composition time ruler as a work area.

A composition's current time appears in the upper left corner of the Timeline panel. To move to a different time, drag the current-time indicator in the time ruler—or click the current-time field in the Timeline panel or Composition panel, type a new time, and press Enter or Return, or click OK.

For more information about the Timeline panel, see [After Effects Help](#).

## Animating effects using keyframes

You'll add an effect to the type layer, but this time, you'll animate its settings using keyframes.

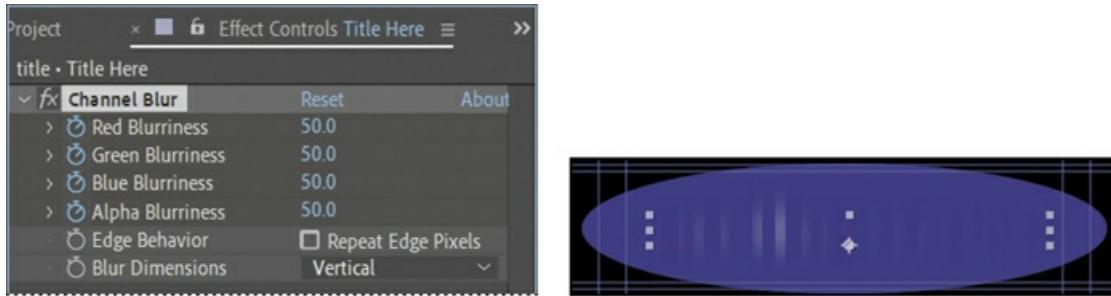
1. Go to the beginning of the time ruler by doing one of the following:
  - Drag the current-time indicator to the left in the time ruler so that it's positioned at 0:00.
  - Click the Current Time field in the Timeline panel or Composition panel, and type **00**. If you clicked in the Current Time field in the Composition panel, click OK to close the Go To Time dialog box.
2. Type **channel blur** in the search box in the Effects & Presets panel.
3. Drag the Channel Blur effect onto the Title Here layer in the Timeline panel.

After Effects adds the Channel Blur effect to the layer and displays its settings in the Effect Controls panel. The Channel Blur effect individually blurs the red, green, blue, and alpha channels in a layer. It will create an interesting look for the title.

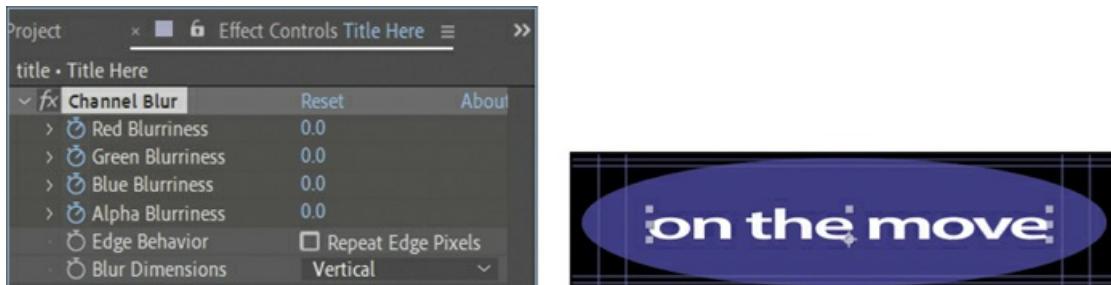
4. In the Effect Controls panel, set the Red Blurriness, Green Blurriness, Blue Blurriness, and Alpha Blurriness values to **50**.
5. Click the stopwatch icon (⌚) next to each of the settings you changed to create initial keyframes. The text will be blurred as it first appears.

Keyframes are used to create and control animation, effects, audio properties, and many other kinds of changes that occur over time. A keyframe marks the point in time where you specify a value, such as spatial position, opacity, or audio volume. Values between keyframes are *interpolated*. When you use keyframes to create a change over time, you must use at least two keyframes—one for the state at the beginning of the change, and one for the state at the end of the change.

6. From the Blur Dimensions menu, choose Vertical.



7. Go to 1:00 in the timeline.
8. Change the values to the following:
  - Red Blurriness: **0**
  - Green Blurriness: **0**
  - Blue Blurriness: **0**
  - Alpha Blurriness: **0**



9. Manually preview the effect by moving the current-time indicator from 0 to 1:00.



## Changing the opacity of the background

The title looks good, but the ellipse is too bright. You'll change its opacity so that the water in the video shows through.

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### Tip

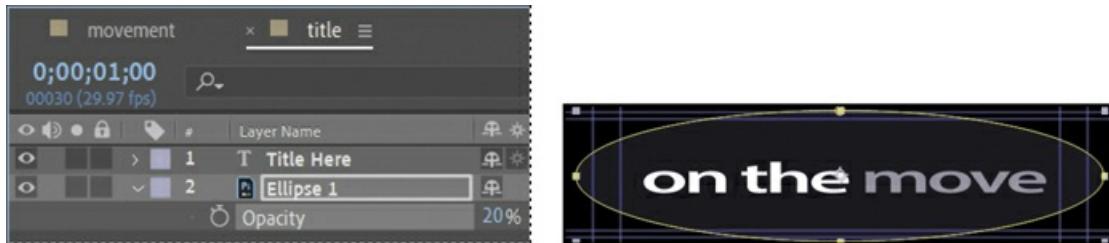
To remember the keyboard shortcut for the Opacity property, think of it as *transparency*.

---

1. In the Timeline panel, select the Ellipse 1 layer.
  2. Press T to reveal the layer's Opacity property.
  3. Change the Opacity value to **20%**.
-

## ► Tip

To see how the title appears over the water, click the movement tab in the Timeline panel.



## Previewing your work

You're probably eager to see the results of your work. You can preview your composition using the Preview panel, which is in the stacked panels on the right side of the application window in the default workspace. To preview your composition, click the Play/Stop button in the Preview panel, or press the spacebar on your keyboard.

1. In the title Timeline panel, hide all layer properties, and deselect all layers.
2. Make sure that the Video switch (●) is selected for the layers that you want to preview—in this case, the Title Here and Ellipse 1 layers.
3. Press the Home key to go to the beginning of the time ruler.
4. Do one of the following:
  - Click the Play/Stop button (▶) in the Preview panel.
  - Press the spacebar.



## ► Tip

Verify that the work area brackets include all the frames you want to preview.

5. To stop the preview, do one of the following:
  - Click the Play/Stop button in the Preview panel.
  - Press the spacebar.



You've previewed a simple animation, so it probably played back in real time.

When you press the spacebar or click the Play/Stop button, After Effects caches the composition and allocates enough RAM to play the preview (with audio) as fast as the system allows, up to the frame rate of the composition. The number of frames played depends on the amount of RAM available to the application. Often, the preview will play in real time only after After Effects has cached all the included frames.

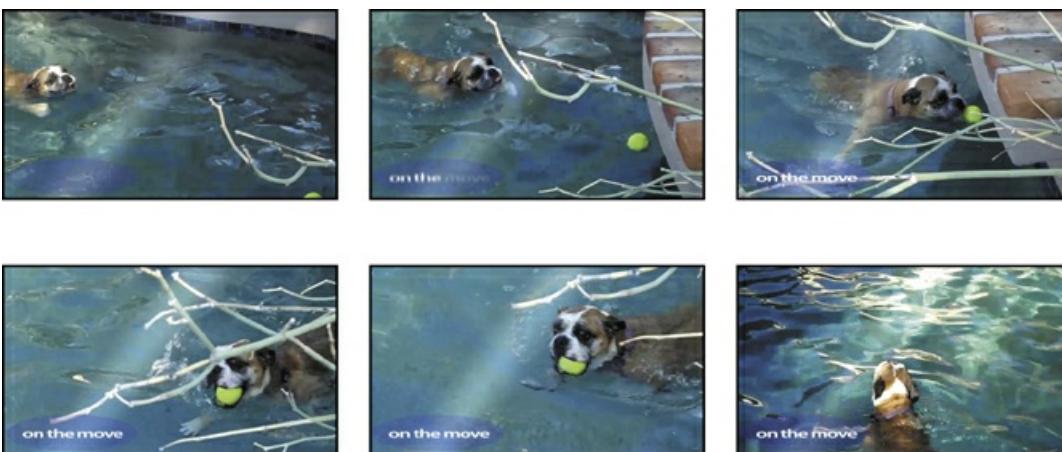
In the Timeline panel, the preview plays either the span of time you specify as the work area, or from the beginning of the time ruler. In the Layer and Footage panels, the preview plays only untrimmed footage. Before you preview, check which frames are designated as the work area.

Now you'll preview the entire composition—the animated text plus graphic effects.

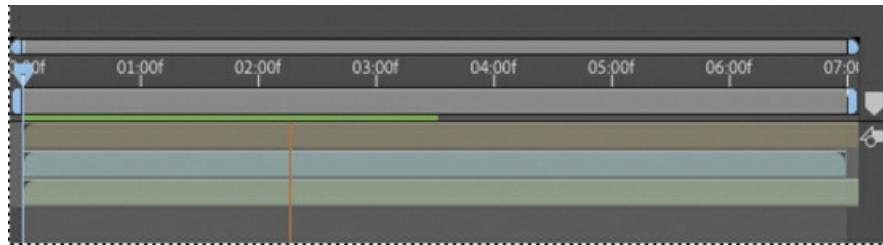
6. Click the movement tab in the Timeline panel to bring it forward.
7. Make sure that the Video switch (●) is turned on for all of the layers in the composition except the audio layer, and press F2 to deselect all layers.
8. Drag the current-time indicator to the beginning of the time ruler, or press the Home key.



9. To start the preview, click the Play/Stop button (▶) in the Preview panel, or press the spacebar.



A green progress bar indicates which frames are cached to RAM. When all of the frames in the work area are cached, the preview plays back in real time. Until all the frames are cached, the playback may be slower and the audio may drag.



The more detail and precision you want to preview, the more RAM is required. You can control the amount of detail shown by changing the resolution, magnification, and preview quality of your composition. You can also limit the number of layers previewed by turning off the Video switch for certain layers, or limit the number of frames previewed by adjusting the composition's work area.

10. Press the spacebar to stop the preview.
11. Choose File > Save to save your project.

## Optimizing performance in After Effects

How you configure After Effects and your computer determines how quickly After Effects renders projects. Complex compositions can require a large amount of memory to render, and the rendered movies can take a large amount of disk space to store. Search for “Improve Performance” in After Effects Help for tips that can help you configure your system, After Effects preferences, and your projects for better performance.

By default, After Effects enables GPU acceleration for effects, layer animations, and other features that can take advantage of the performance enhancements. Adobe recommends enabling GPU acceleration. However, if you receive an error or know that your system’s GPU is not compatible with After Effects, you can disable GPU acceleration for a project: Choose File > Project Settings, and then choose Mercury Software Only on the Video Rendering And Effects tab.

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### ► Tip

See the status of GPU acceleration quickly. The rocket icon at the bottom of the Project panel is dimmed when GPU acceleration is disabled.

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## Rendering and exporting your composition

When you’re finished with your masterpiece—as you are now—you can render and export it at the quality settings you choose, and create movies in the formats that you specify. You will learn about exporting compositions in subsequent lessons, especially in [Lesson 15, “Rendering and Outputting.”](#)

## Customizing workspaces

In the course of this project, you may have resized or repositioned some panels or opened new

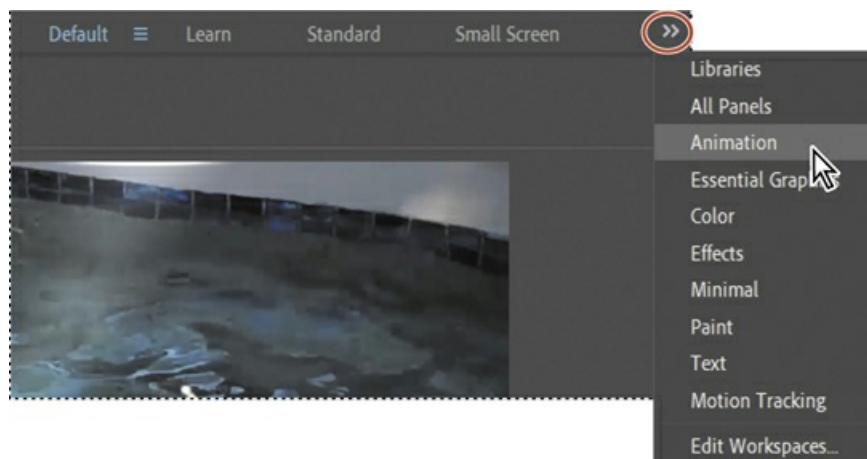
ones. As you modify a workspace, After Effects saves those modifications, so the next time you open the project, the most recent version of a workspace is used. However, you can choose to restore the original workspace at any time by choosing Window > Workspace > Reset “Default” To Saved Layout.

Alternatively, if you find yourself frequently using panels that aren’t part of the Default workspace, or if you like to resize or group panels for different types of projects, you can save time by customizing the workspace to suit your needs. You can save any workspace configuration, or use any of the preset workspaces that come with After Effects. These predefined workspaces are suitable for different types of workflows, such as animation or effects work.

## Using predefined workspaces

Take a minute to explore the predefined workspaces in After Effects.

1. If you closed the Lesson01\_Finished.aep project, open it—or any other project—to explore the workspaces.
2. Click Animation in the Workspace bar, which is next to the Tools panel. Click the double arrows (») to see workspaces that don’t fit in the Workspace bar.



After Effects opens the following panels at the right side of the application window: Info, Preview, Effects & Presets, Motion Sketch, Wiggler, Smoother, and Audio.

You can also change workspaces using the Workspace menu.

3. Choose Window > Workspace > Motion Tracking.

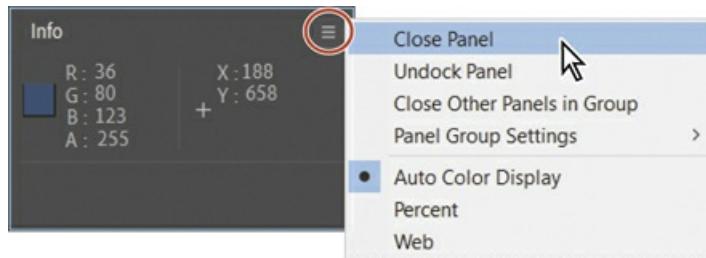
Different panels open. The Info, Preview, and Tracker panels give you easy access to the tools and controls you need to focus on tracking objects in your compositions.

## Saving a custom workspace

You can save any workspace, at any time, as a custom workspace. Once saved, new and edited workspaces appear in the Window > Workspace submenu and in the Workspace bar at the top of the application window. If a project with a custom workspace is opened on a system other than

the one on which it was created, After Effects looks for a workspace with a matching name. If After Effects finds a match (and the monitor configuration matches), it uses that workspace; if it can't find a match (or the monitor configuration doesn't match), it opens the project using the current local workspace.

1. Close a panel by choosing Close Panel from its panel menu.



2. Choose Window > Effects & Presets to open another panel.

The Effects & Presets panel is added to the panel stack.

3. Choose Window > Workspace > Save As New Workspace. Enter a name for the workspace, and click OK to save it, or click Cancel if you don't want to save it.
4. Click Default in the Workspace bar to restore the original panels.

### Controlling the brightness of the user interface

You can brighten or darken the After Effects user interface. Changing the brightness preference affects panels, windows, and dialog boxes.

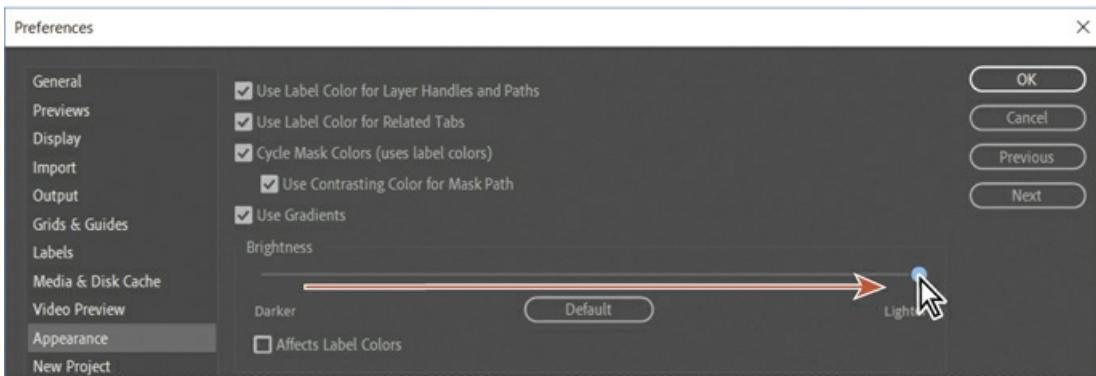
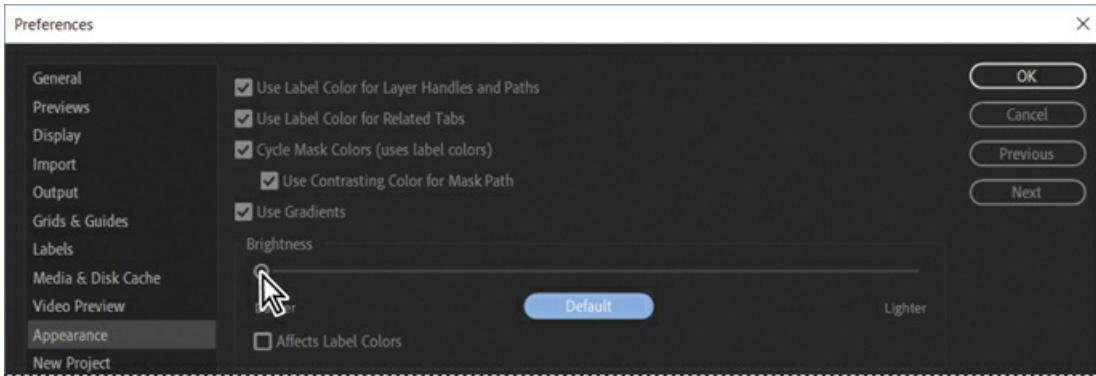
1. Choose Edit > Preferences > Appearance (Windows) or After Effects CC > Preferences > Appearance (macOS).
2. Drag the Brightness slider to the left or right, and notice how the screen changes.

---

#### ● Note

By default, the After Effects user interface is dark. We've used a lighter interface for the images in this book, so that text in the interface is visible in print. If you use the default UI brightness, your panels and dialog boxes will appear darker than ours.

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3. Click OK to save the new brightness setting or Cancel to leave your preferences unchanged. You can click Default to restore the default brightness setting.
4. Choose File > Close Project to close the file without saving any changes.

## Finding resources for using After Effects

After Effects includes interactive tutorials in the application itself. To access them, select Learn in the Workspace bar. An overview of the interface and essential features is available in the Learn panel, as are several interactive tutorials.

The Home window that appears when you open the application provides quick access to the tutorials in the Learn panel as well as more advanced tutorials online. Additionally, it provides links to other information to help you get the most out of After Effects. You can return to the Home window at any time by clicking the Home icon in the Tools panel.

For complete and up-to-date information about using After Effects panels, tools, and other application features, visit the Adobe website. To search for information in After Effects Help and support documents, as well as on other websites relevant to After Effects users, simply enter a search term in the Search Help box in the upper right corner of the application window. You can narrow the results to view only Adobe Help and support documents.

For additional resources, such as tips and techniques and the latest product information, check out the After Effects Help And Support page at [helpx.adobe.com/after-effects.html](http://helpx.adobe.com/after-effects.html).

Congratulations! You've finished [Lesson 1](#). Now that you're acquainted with the After Effects workspace, you can continue to [Lesson 2](#) to learn how to create and animate compositions using effects and preset animations, or you can proceed to another lesson in this book.

## **Review questions**

- 1** What are the basic components of the After Effects workflow?
- 2** What is a composition?
- 3** How can you find missing footage?
- 4** How can you preview your work in After Effects?
- 5** How can you customize an After Effects workspace?

## **Review answers**

- 1** Most After Effects workflows include these steps: importing and organizing footage, creating compositions and arranging layers, adding effects, animating elements, previewing your work, and rendering and exporting the final composition.
- 2** A composition is where you create all animation, layering, and effects. An After Effects composition has both spatial and temporal (time) dimensions. Compositions include one or more layers—video, audio, still images—arranged in the Composition panel and in the Timeline panel. Simple projects may include only one composition, while elaborate projects may include several compositions to organize large amounts of footage or intricate effects sequences.
- 3** To locate missing footage, choose File > Dependencies > Find Missing Footage. Or type **Missing Footage** into the Search field in the Project panel.
- 4** You can manually preview your work in After Effects by moving the current-time indicator, or you can press the spacebar or click the Play/Stop button in the Preview panel to preview your composition from the current-time indicator to the end of the composition. After Effects allocates enough RAM to play the preview (with audio) as fast as the system allows, up to the frame rate of the composition.
- 5** You can customize an After Effects workspace by dragging the panels into the configuration that best suits your working style. You can drag panels to new locations, move panels into or out of groups, place panels alongside each other, stack panels, and undock a panel so that it floats above the application window. As you rearrange panels, the other panels resize automatically to fit the application window. You can save custom workspaces by choosing Window > Workspace > Save As New Workspace.

## 2 Creating a Basic Animation Using Effects and Presets

### Lesson overview

In this lesson, you'll learn how to do the following:

- Use Adobe Bridge to preview and import footage items.
- Work with the layers of an imported Adobe Illustrator file.
- Use guides to position objects.
- Apply drop-shadow and emboss effects.
- Apply a text animation preset.
- Adjust the time range of a text animation preset.
- Precompose layers.
- Apply a dissolve transition effect.
- Adjust the transparency of a layer.
- Render an animation for broadcast use.



This lesson will take about an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: ANIMATED LOGO

Hit the ground running with a variety of effects and animation presets in After Effects. You can use them to create great-looking animations quickly and easily.

### Getting started

In this lesson, you will become more familiar with the Adobe After Effects project workflow. You'll learn new ways to accomplish basic tasks as you create a simple identification graphic for a fictional travel show called "Travel Europe" on the fictional Destinations cable network. You will animate the travel show ID so that it fades to become a watermark that can appear in the lower right corner of the screen during other TV programs. Then you'll export the ID for use in broadcast output.

First, take a look at the final project files to see what you'll be doing.

- 1.** Make sure the following files are in the Lessons/Lesson02 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: destinations\_logo.ai, ParisRiver.jpg
  - In the Sample\_Movies folder: Lesson02.avi, Lesson02.mov
- 2.** Open and play the Lesson02.avi sample movie in Windows Movies & TV or the Lesson02.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

Before you begin the lesson, you'll restore the default application settings for After Effects. See

“Restoring default preferences” on page 3 for more information.

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences.
4. In the Home window, click New Project.

After Effects opens to display a blank, untitled project.

5. Choose File > Save As > Save As.
6. In the Save As dialog box, navigate to the Lessons/Lesson02/Finished\_Project folder.
7. Name the project **Lesson02\_Finished.aep**, and then click Save.

### Importing footage using Adobe Bridge

In Lesson 1, you chose File > Import > File to import footage. However, you can also use Adobe Bridge—a powerful, flexible tool for organizing, browsing, and locating the assets you need to create content for print, web, television, DVD, film, and mobile devices. Adobe Bridge keeps native Adobe files (such as PSD and PDF files) as well as non-Adobe application files available for easy access. You can drag assets into your layouts, projects, and compositions as needed; preview your assets; and even add metadata (file information) to assets to make files easier to locate.

Adobe Bridge is not automatically installed with After Effects CC. You’ll need to install it separately. If Bridge is not installed, you’ll be prompted to install it when you choose File > Browse In Bridge.

In this exercise, you will jump to Adobe Bridge to import the still image that will serve as the background of your composition.

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#### Tip

You can use Adobe Bridge separately to manage your files. To open Adobe Bridge directly, choose Adobe Bridge from the Start menu (Windows) or double-click the Adobe Bridge icon in the Applications / Adobe Bridge folder (macOS).

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1. Choose File > Browse In Bridge. If you receive a message about enabling an extension to Adobe Bridge, click Yes.

Adobe Bridge opens, displaying a collection of panels, menus, and buttons.

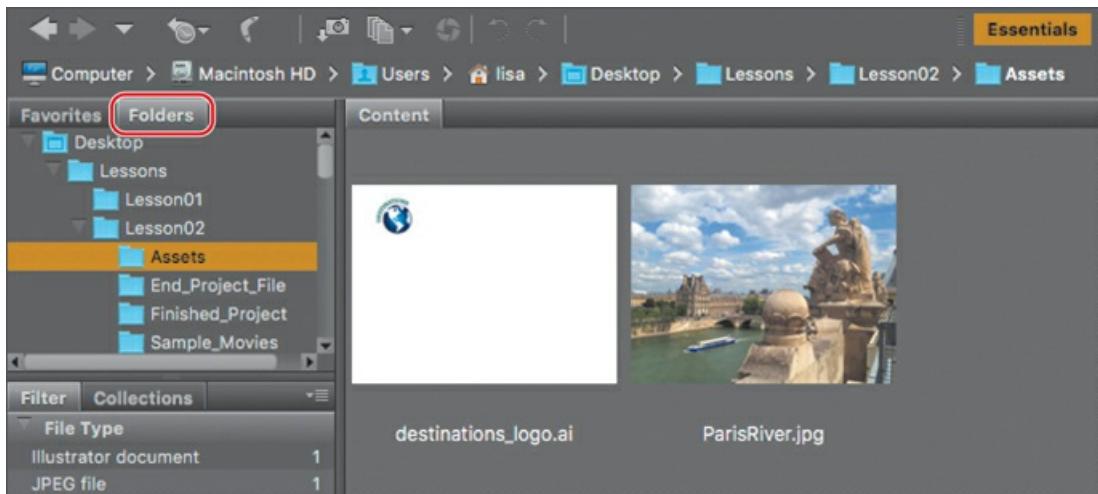
2. Click the Folders tab in the upper left corner of Adobe Bridge.
3. In the Folders panel, navigate to the Lessons/Lesson02/Assets folder. Click the arrows to open nested folders. You can also double-click folder thumbnail icons in the Content panel.

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#### Note

We're using the Essentials workspace, which is the default workspace in Bridge.

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The Content panel updates interactively. For example, when you select the Assets folder in the Folders panel, thumbnail previews of the folder's contents appear in the Content panel. Adobe Bridge displays previews of image files such as those in PSD, TIFF, and JPEG formats, as well as Illustrator vector files, multipage Adobe PDF files, QuickTime movie files, and more.

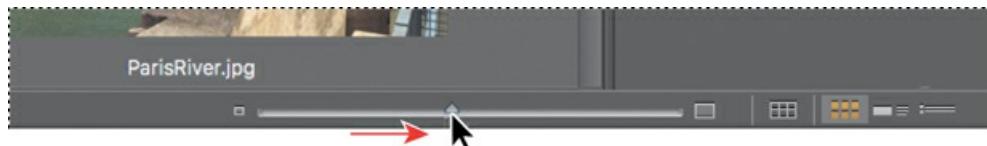
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**Tip**

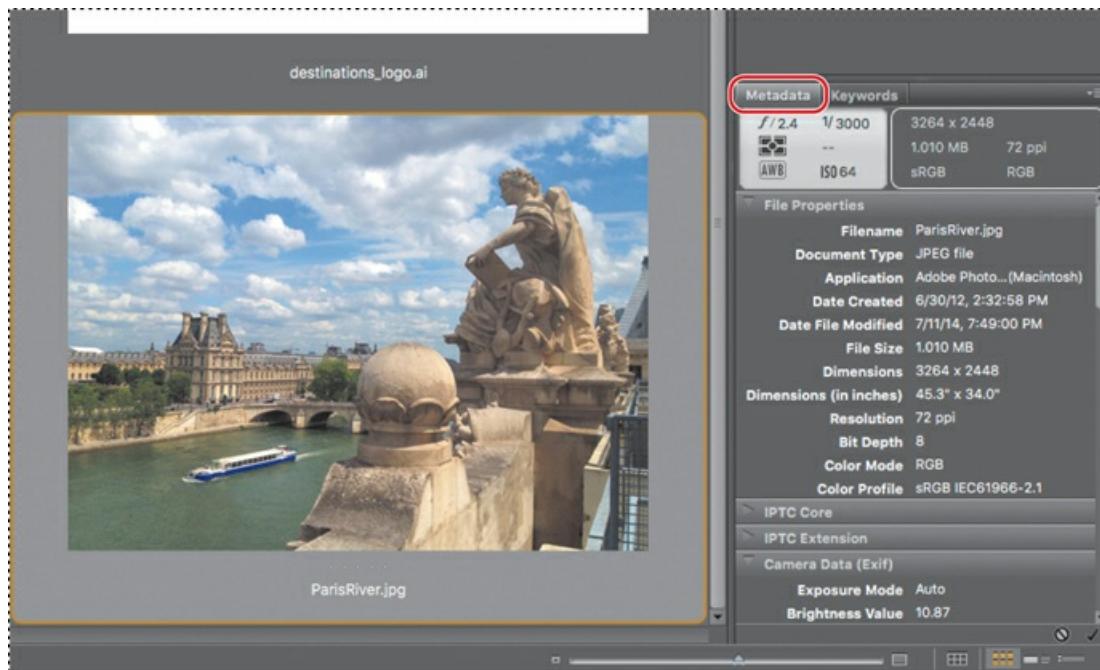
To prioritize different information in Adobe Bridge, change the workspace: Choose Window > Workspace, and then select a workspace. See Adobe Bridge Help to learn about customizing Adobe Bridge.

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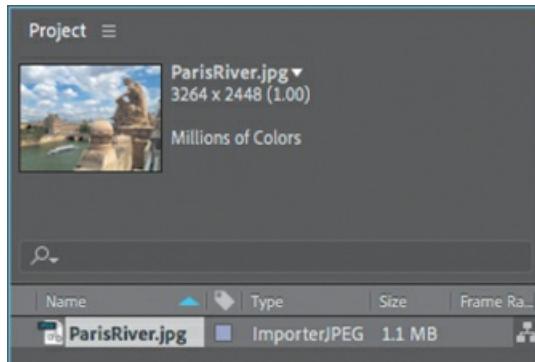
4. Drag the thumbnail slider at the bottom of the Adobe Bridge window to enlarge the thumbnail previews.



5. Select the ParisRiver.jpg file in the Content panel, and notice that it appears in the Preview panel as well. Information about the file, including its creation date, bit depth, and file size, appears in the Metadata panel.



6. Double-click the ParisRiver.jpg thumbnail in the Content panel to place the file in your After Effects project. Alternatively, you can drag the ParisRiver.jpg thumbnail into the Project panel in After Effects.
7. Return to After Effects, if you're not already there.



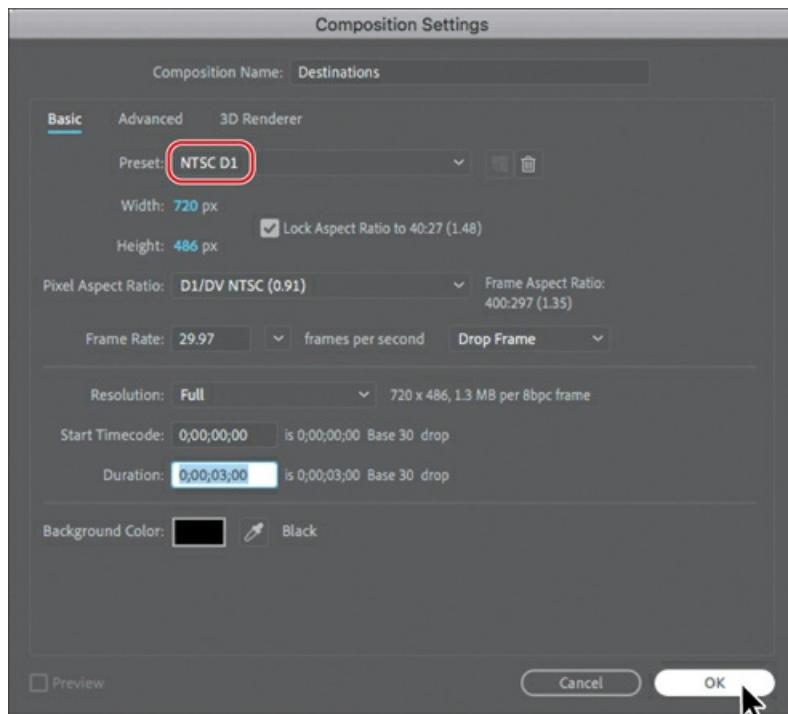
You can close Adobe Bridge if you'd like. You won't be using it again during this lesson.

### Creating a new composition

Following the After Effects workflow you learned in [Lesson 1](#), the next step to building the travel show ID is to create a new composition. In [Lesson 1](#), you created the composition based on footage items that were selected in the Project panel. You can also create an empty composition, and then add your footage items to it.

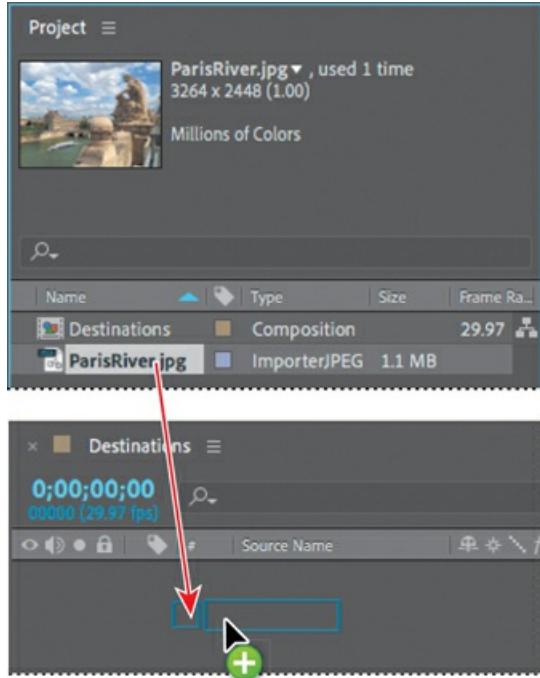
1. Create a new composition by doing one of the following:
  - Click the Create A New Composition button ( at the bottom of the Project panel.
  - Click the New Composition button in the Composition panel.
  - Choose Composition > New Composition.

- Press Ctrl+N (Windows) or Command+N (macOS).
2. In the Composition Settings dialog box, do the following:
- Name the composition **Destinations**.
  - Choose NTSC D1 from the Preset pop-up menu. NTSC D1 is the resolution for standard-definition television in the United States and some other countries. This preset automatically sets the width, height, pixel aspect ratio, and frame rate for the composition to NTSC standards.
  - In the Duration field, type **300** to specify 3 seconds.
  - Click OK.



After Effects displays an empty composition named Destinations in the Composition panel and in the Timeline panel. Now, you'll add the background.

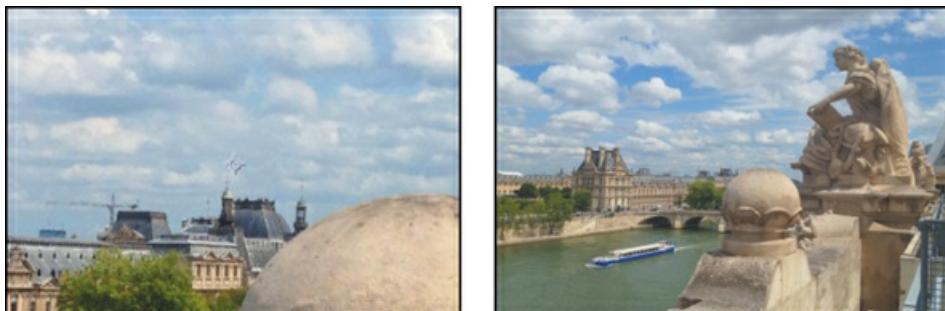
3. Drag the ParisRiver.jpg footage item from the Project panel to the Timeline panel to add it to the Destinations composition.



#### ► Tip

The keyboard shortcut for fitting a layer to a composition is Ctrl+Alt+F (Windows) or Command+Option+F (macOS).

- With the ParisRiver layer selected in the Timeline panel, choose Layer > Transform > Fit To Comp to scale the background image to the dimensions of the composition.



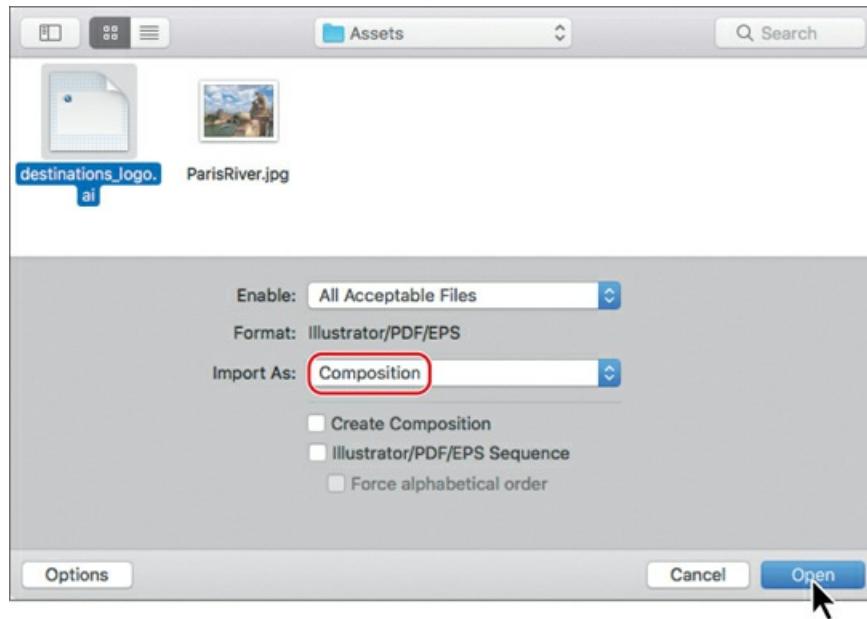
## Importing the foreground element

Your background is now in place. The foreground object you'll use is a layered vector graphic that was created in Illustrator.

- Choose File > Import > File.
- In the Import File dialog box, select the destinations\_logo.ai file in the Lessons/Lesson02/Assets folder. (The file appears as destinations\_logo if file extensions are

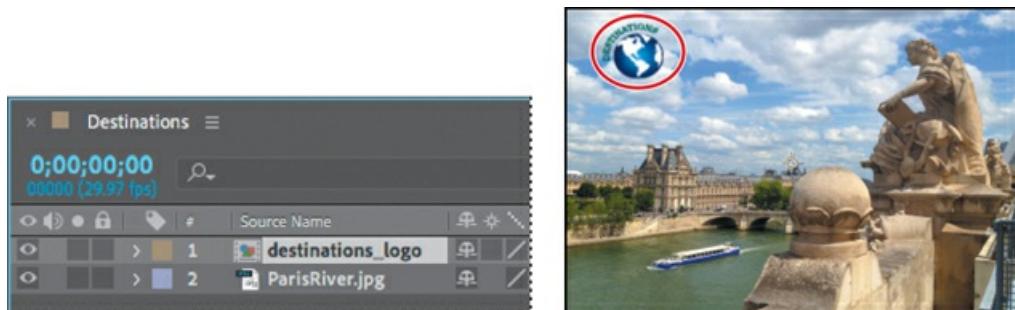
hidden.)

3. Choose Composition from the Import As menu. (In macOS, you may need to click Options to display the Import As menu). Then click Import or Open.



The Illustrator file is added to the Project panel as a composition named destinations\_logo. A folder named destinations\_logo Layers also appears. This folder contains the three individual layers of the Illustrator file. Click the triangle to open the folder and see its contents if you like.

4. Drag the destinations\_logo composition file from the Project panel into the Timeline panel above the ParisRiver layer.

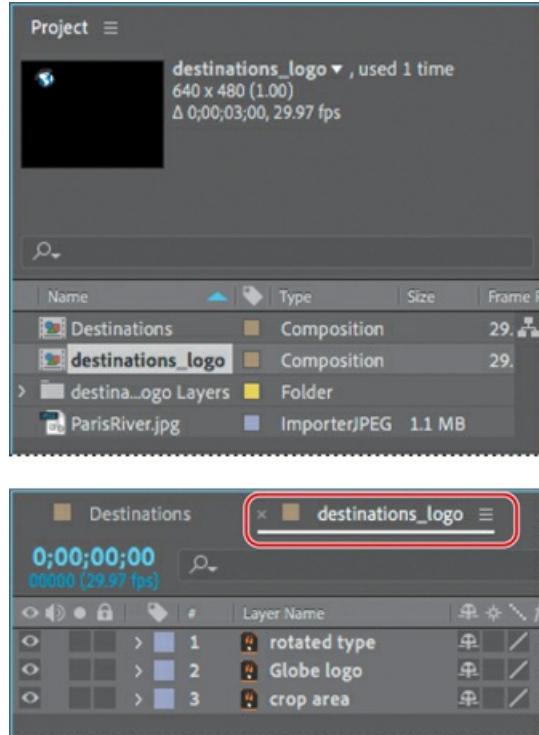


You should now see both the background image and the logo in the Composition panel and in the Timeline panel.

### Working with imported Illustrator layers

The destinations\_logo graphic was created in Illustrator; your job in After Effects is to add text and animate it. To work with the layers of the Illustrator file independently of the background footage, you'll open the destinations\_logo composition in its own Timeline and Composition panels.

1. Double-click the destinations\_logo composition in the Project panel.



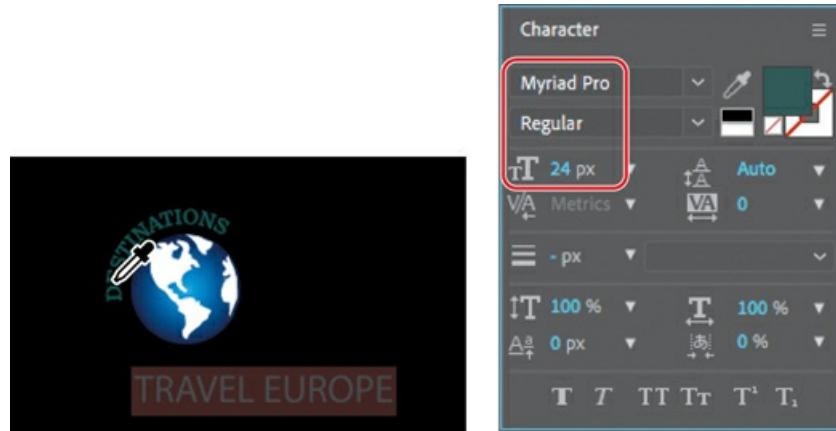
The composition opens in its own Timeline and Composition panels.

2. Select the Horizontal Type tool (**T**) in the Tools panel, and click in the Composition panel.
3. Type **TRAVEL EUROPE**, all capital letters, and then select all of the text you just entered.



Notice that the generic Text 1 layer name in the Timeline panel changes to TRAVEL EUROPE, the text you typed.

4. In the Character panel, select a sans serif typeface such as Myriad Pro, and change the font size to **24** pixels. Click the eyedropper (**eyedropper**) in the Character panel, and click the rotated “Destinations” text on the logo to select the green color. After Effects applies it to the text you typed. Leave all other options in the Character panel at their defaults.



### Note

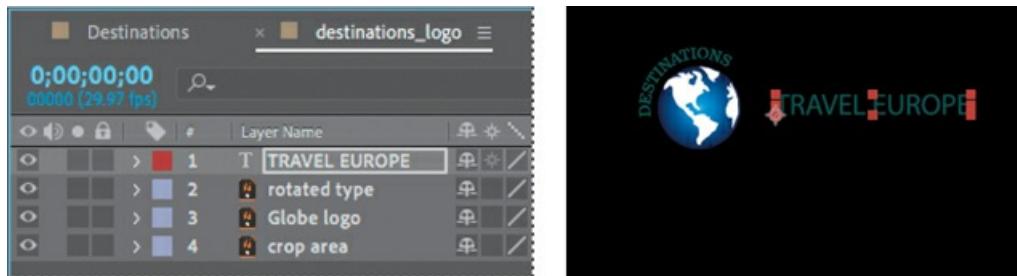
If the Character panel isn't open, choose Window > Character. You may need to expand the width of the panel to see the eyedropper.

You'll position the text you just typed using a guide.

### Tip

You can also choose View > Show Grid to make the nonprinting grid visible to help you position objects. Choose View > Show Grid again to hide the grid later.

5. Select the Selection tool (►).
6. Choose View > Show Rulers, and then drag a guide from the left ruler into the Composition panel.
7. Right-click or Control-click the guide, click Edit Position, type **170** in the Edit Value dialog box, and click OK. The guide moves to the position you specified.
8. Drag the text up next to the image, snapping its left side to the guide.
9. Choose View > Show Rulers, and then choose View > Show Guides to hide the ruler and the guide.



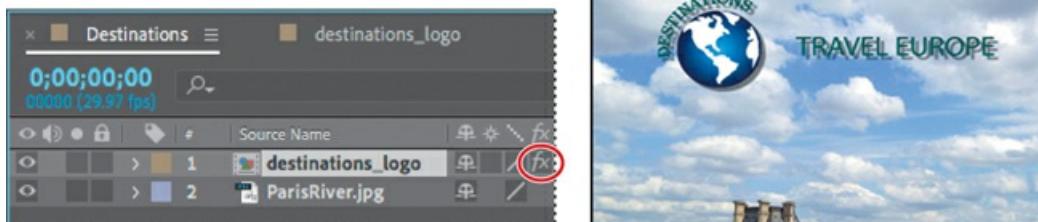
## Applying effects to a layer

Now you will return to the main composition, Destinations, and apply an effect to the destinations\_logo layer. This will apply the effect to all of the layers nested in the destinations\_logo composition.

1. Click the Destinations tab in the Timeline panel, and then select the destinations\_logo layer.

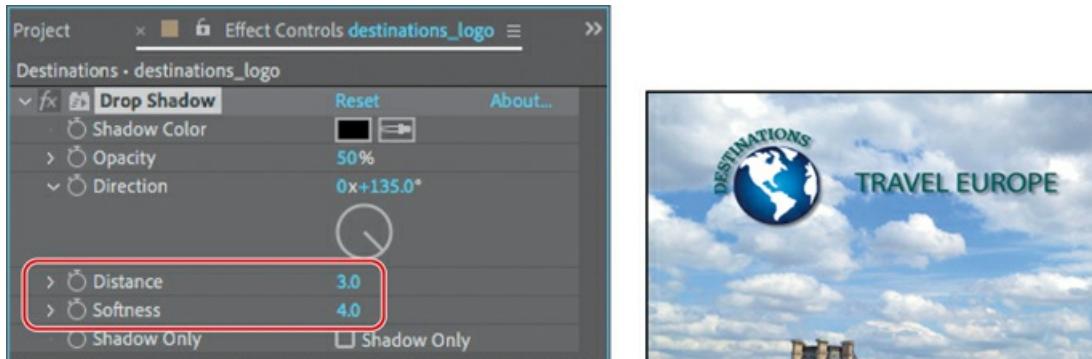
The effect you create next will be applied only to the logo elements, not to the background image of the river.

2. Choose Effect > Perspective > Drop Shadow.



A soft-edged shadow appears behind the nested layers of the destinations\_logo layer—the logo graphic, the rotated type, and the words *Travel Europe*—in the Composition panel. You can customize the effect using the Effect Controls panel, which appears in front of the Project panel when you apply an effect.

3. In the Effect Controls panel, reduce the drop shadow's Distance to 3 and increase its Softness to 4. You can set each value by clicking the field and typing the number or by dragging the blue value.



The drop shadow is nice, but the logo will stand out even more if you apply an emboss effect. You can use either the Effect menu or the Effects & Presets panel to locate and apply effects.

## Applying and controlling effects

You can apply or remove an effect at any time. Once you've applied effects to a layer, you can temporarily turn off one or all of the effects in the layer to concentrate on another aspect of your composition. Effects that are turned off do not appear in the Composition panel, and

typically aren't included when the layer is previewed or rendered.

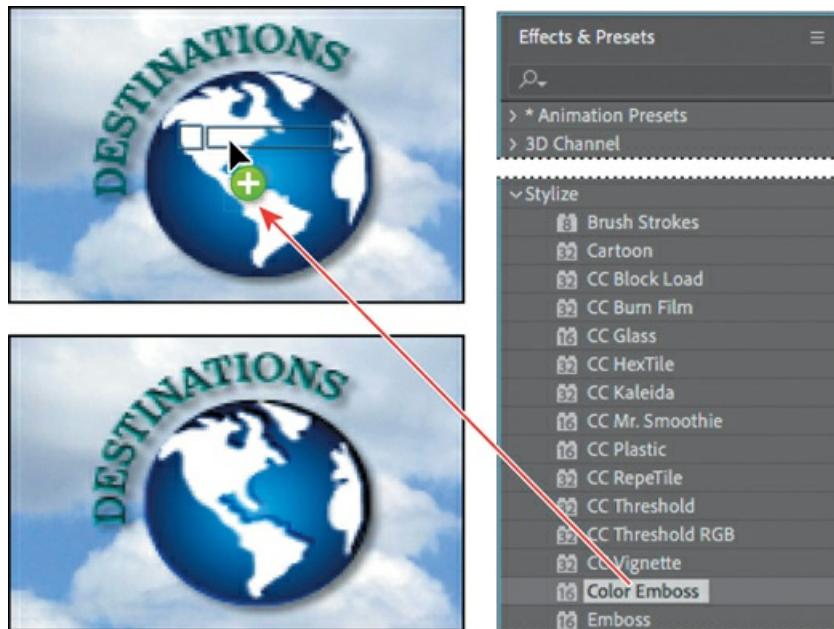
By default, when you apply an effect to a layer, the effect is active for the duration of the layer. However, you can make an effect start and stop at specific times, or make the effect more or less intense over time. You'll learn more about creating animation using keyframes or expressions in [Lesson 5, “Animating a Multimedia Presentation,”](#) and [Lesson 6, “Animating Layers.”](#)

You can apply and edit effects on adjustment layers just as you do with other layers. Note, however, that when you apply an effect to an adjustment layer, the effect is applied to all layers below it in the Timeline panel.

Effects can also be saved, browsed, and applied as animation presets.

4. Click the Effects & Presets tab to open the panel. Then click the triangle next to Stylize to expand the category.
5. With the destinations\_logo layer selected in the Timeline panel, drag the Color Emboss effect into the Composition panel.

The Color Emboss effect sharpens the edges of objects in the layer without suppressing the original colors. The Effect Controls panel displays the Color Emboss effect and its settings below the Drop Shadow effect.



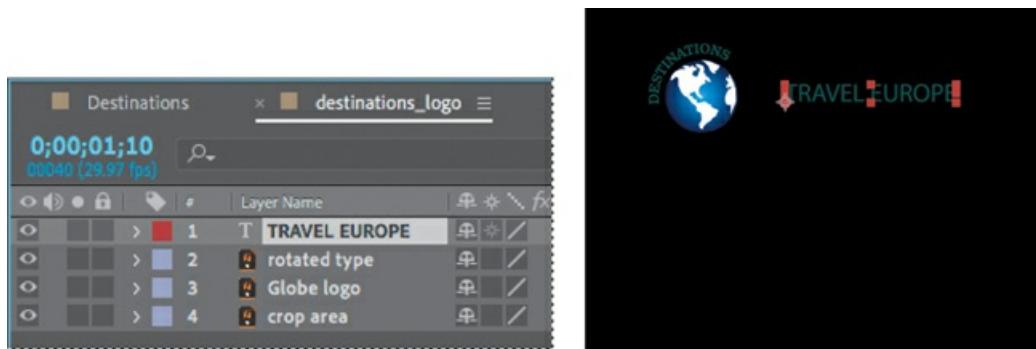
6. Choose File > Save to save your work.

### Applying an animation preset

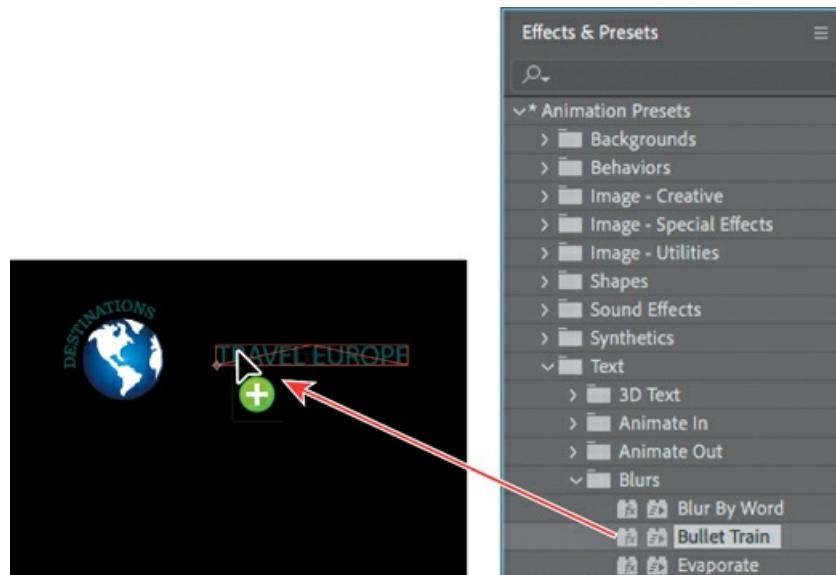
You've positioned the type and applied some effects to it. It's time to add some animation! You will learn several ways to animate text in [Lesson 3](#); for now, you'll use a simple animation preset that will fade the words *Travel Europe* onto the screen next to the logo. You'll need to work in the destinations\_logo composition so that you can apply the animation to only the TRAVEL

EUROPE text layer.

1. Click the destinations\_logo tab in the Timeline panel, and select the TRAVEL EUROPE layer.
2. Move the current-time indicator to 1:10, which is the point at which you want the text to start fading in.



3. In the Effects & Presets panel, choose Animation Presets > Text > Blurs.
4. Drag the Bullet Train animation preset onto the TRAVEL EUROPE layer in the Timeline panel or over the words *Travel Europe* in the Composition panel. Don't worry about the text disappearing—you're looking at the first frame of the animation, which happens to be blank.



5. Click a blank area of the Timeline panel to deselect the TRAVEL EUROPE layer, and then drag the current-time indicator to 2:00 to manually preview the text animation. The text appears, letter by letter, until the words *Travel Europe* are fully onscreen at 2:00.

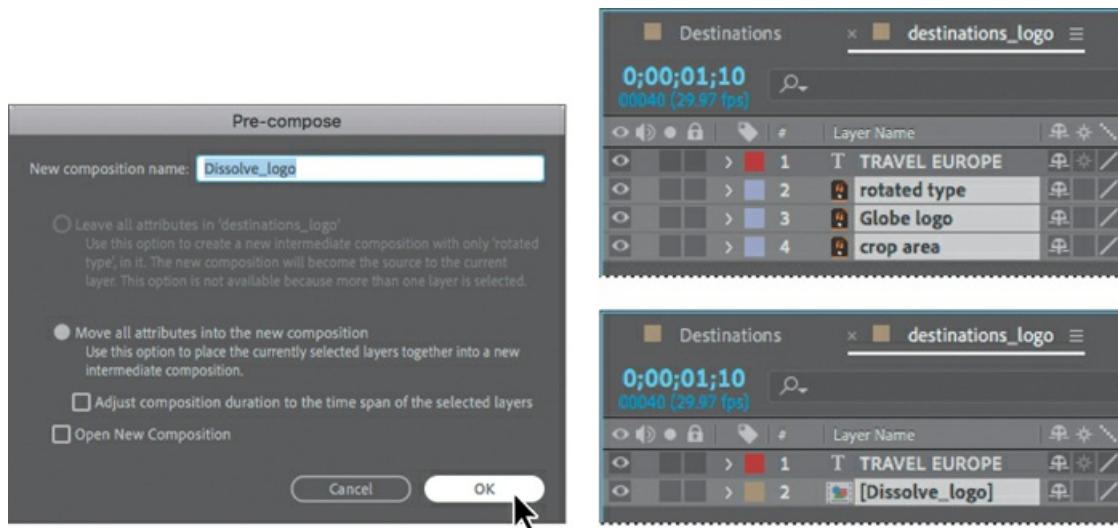


## Precomposing layers for a new animation

The travel show ID is coming along nicely, and you're probably eager to preview the complete animation. Before you do, however, you'll add a dissolve to all of the logo elements except the words *Travel Europe*. To do this, you need to precompose the other three layers of the destinations\_logo composition: rotated type, Globe logo, and crop area.

*Precomposing* is a way to nest layers within a composition. Precomposing moves the layers to a new composition, which takes the place of the selected layers. When you want to change the order in which layer components are rendered, precomposing is a quick way to create intermediate levels of nesting in an existing hierarchy.

1. Shift-click to select the rotated type, Globe logo, and crop area layers in the destinations\_logo Timeline panel.
2. Choose Layer > Pre-compose.
3. In the Pre-compose dialog box, name the new composition **Dissolve\_logo**. Make sure the Move All Attributes Into The New Composition option is selected. Then click OK.



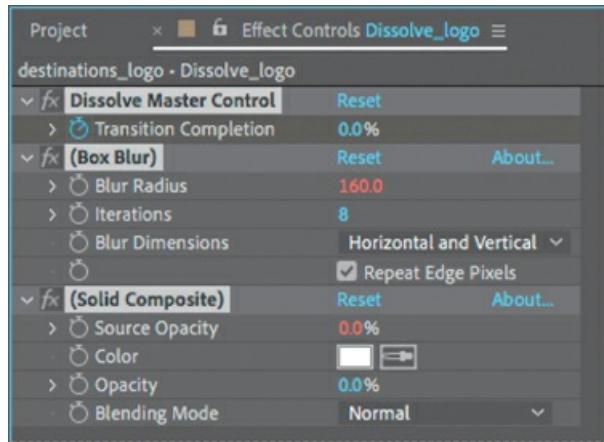
The three layers are replaced in the destinations\_logo Timeline panel with a single layer, Dissolve\_logo. This new, precomposed layer contains the three layers that you selected in step 1. You can apply the dissolve effect to it without affecting the TRAVEL EUROPE text layer and its Bullet Train animation.

4. Make sure the Dissolve\_logo layer is selected in the Timeline panel, and press the Home key or drag the current-time indicator to 0:00.
5. In the Effects & Presets panel, choose Animation Presets > Transitions – Dissolves, and then drag the Dissolve – Vapor animation preset onto the Dissolve\_logo layer in the Timeline panel or onto the Composition panel.

---

### ► Tip

To locate the Dissolve – Vapor preset quickly, type **vap** in the search box in the Effects & Presets panel.



The Dissolve – Vapor animation preset includes three components—a master dissolve, a box blur, and a solid composite, all of which appear in the Effect Controls panel. The default settings are fine for this project.

## 6. Choose File > Save.

### Previewing the effects

It's time to preview all of the effects together.

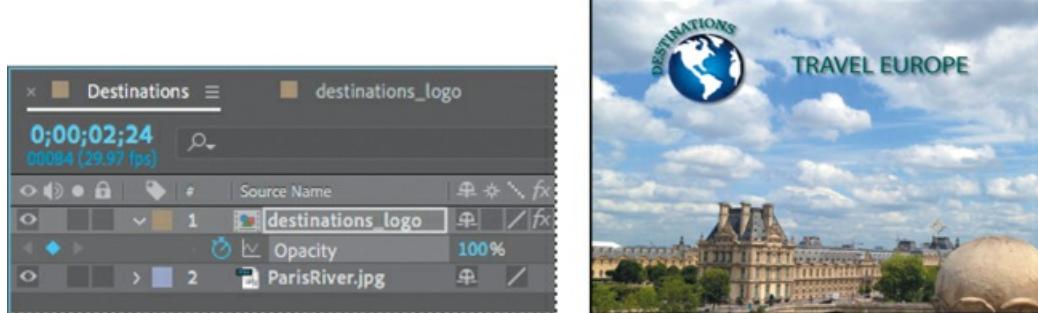
1. Click the Destinations tab in the Timeline panel to switch to the main composition. Press the Home key or drag the current-time indicator to make sure you're at the beginning of the time ruler.
2. Make sure the Video switch (●) is selected for both layers in the Destinations Timeline panel.
3. Click the Play button (▶) in the Preview panel, or press the spacebar, to watch the preview. Press the spacebar to stop playback at any time.



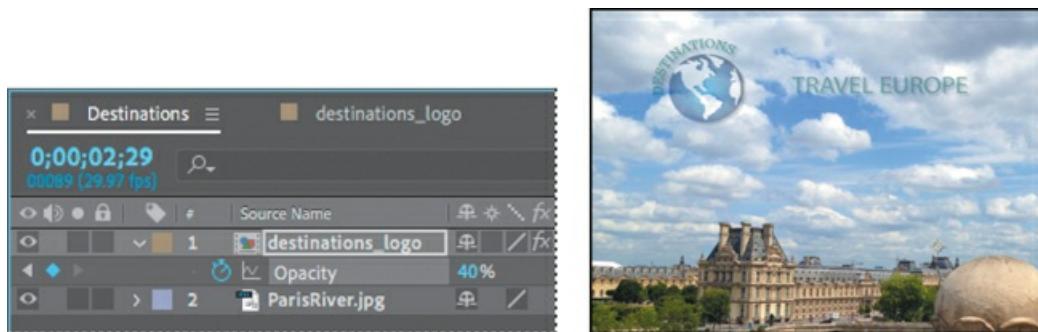
### Adding transparency

Many TV stations display logos semitransparently in the corner of the frame to emphasize the brand. You'll reduce the opacity of the ID so that it can be used this way.

1. Still in the Destinations Timeline panel, go to 2:24.
2. Select the destinations\_logo layer, and press T to display its Opacity property. By default, the Opacity is 100%—fully opaque. Click the stopwatch icon (⌚) to set an Opacity keyframe at this point in time.



3. Press the End key or drag the current-time indicator to go to the end of the time ruler (2:29), and change the Opacity to **40%**. After Effects adds a keyframe.



4. Click the Play button (▶) in the Preview panel, press the spacebar, or press 0 on your numeric keypad to preview your composition.

The logo appears, the words *Travel Europe* fly in, and it all fades to 40% opacity.

5. Press the spacebar to stop playback when you're done.
6. Choose File > Save to save your project.

## Rendering the composition

You're ready to prepare your travel show ID for output. When you create output, the layers of a composition and each layer's masks, effects, and properties are rendered frame by frame into one or more output files or, in the case of an image sequence, into a series of consecutive files.

---

### Note

For more about output formats and rendering, see [Lesson 15, “Rendering and Outputting”](#).

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Making a movie from your final composition can take a few minutes or many hours, depending on the composition's frame size, quality, complexity, and compression method. When you place your composition in the Render Queue, it becomes a render item that uses the render settings assigned to it.

After Effects provides a variety of formats and compression types for rendering output; the

format you choose depends on the medium from which you'll play your final output or on the requirements of your hardware, such as a video- editing system.

---

### ● Note

For output to final-delivery formats, you can use Adobe Media Encoder. You'll learn about Adobe Media Encoder in [Lesson 15, “Rendering and Outputting”](#).

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You'll render and export the composition so that it can be broadcast on television.

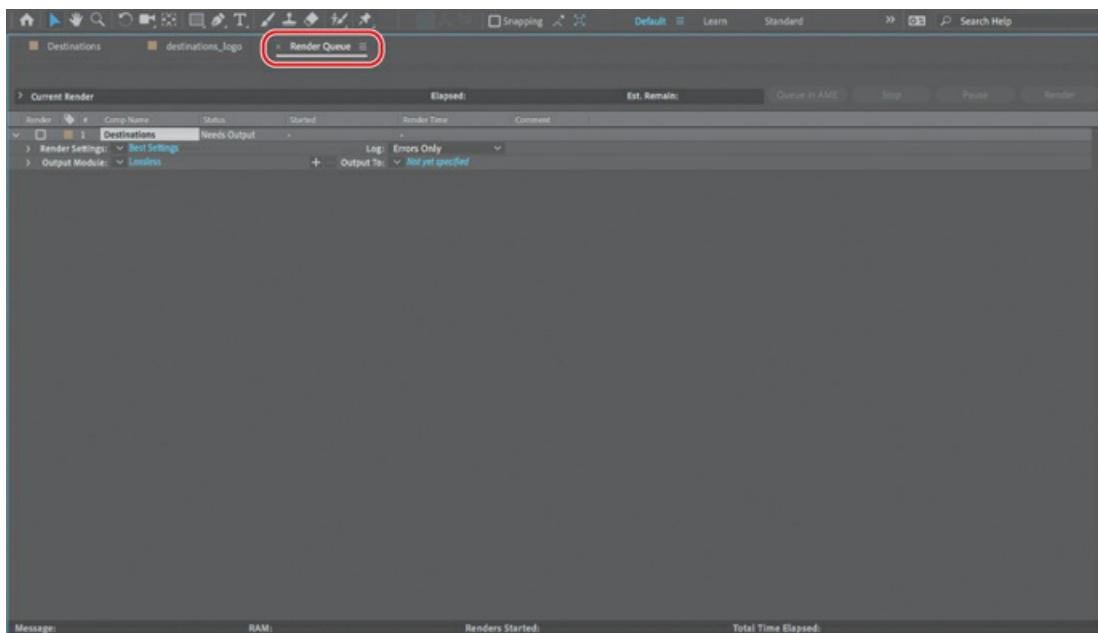
1. Click the Project tab to bring the Project panel forward. If the Project tab is not visible, choose Window > Project.
2. Do one of the following to add the composition to the Render Queue:
  - Select the Destinations composition in the Project panel, and choose Composition > Add To Render Queue. The Render Queue panel opens automatically.
  - Choose Window > Render Queue to open the Render Queue panel, and then drag the Destinations composition from the Project panel onto the Render Queue panel.
3. Double-click the Render Queue tab to maximize the panel so that it fills the application window.

---

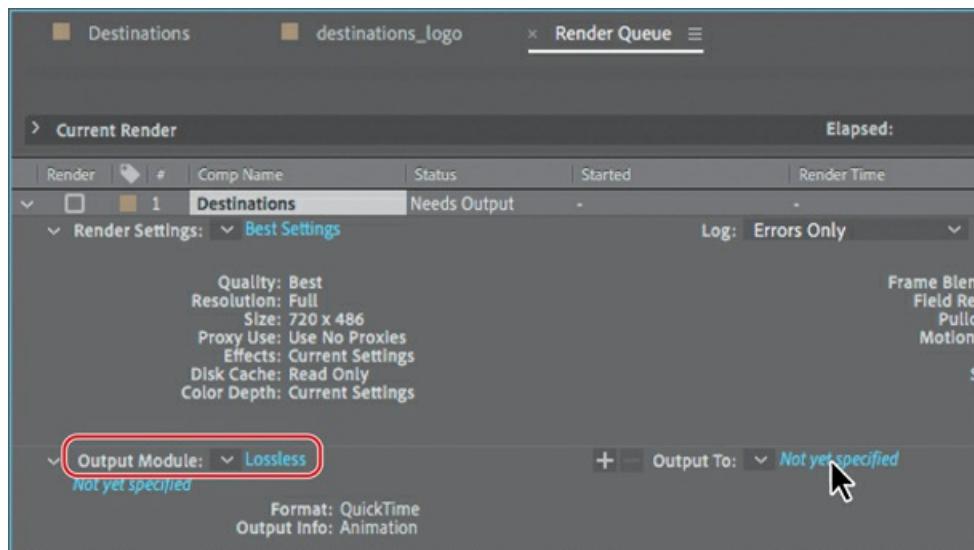
### ► Tip

The keyboard shortcut for the Maximize Panel Group command is the accent grave character (`), which shares a key with the tilde character (~).

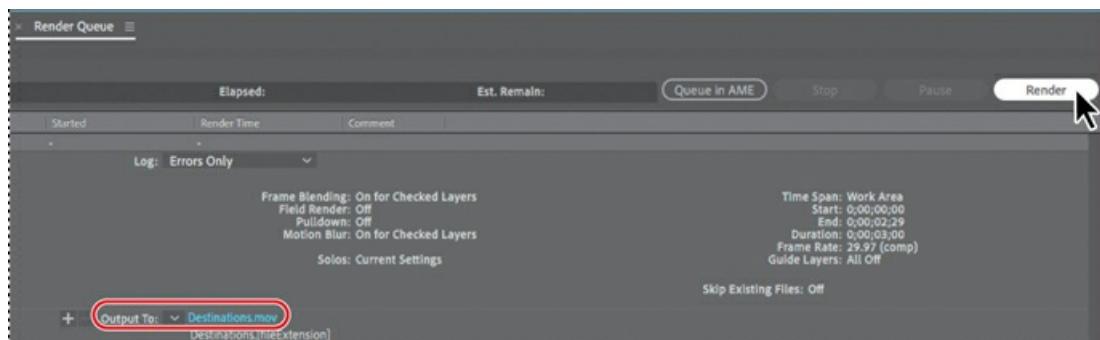
---



4. Click the triangle to expand the Render Settings options. By default, After Effects renders compositions with Best Quality and Full Resolution. The default settings are fine for this project.
5. Click the triangle to expand the Output Module options. By default, After Effects uses lossless compression to encode the rendered composition into a movie file, which is fine for this project. But you need to identify where to save the file.
6. Click the blue words next to the Output To menu.



7. In the Output Movie To dialog box, accept the default movie name (Destinations), select the Lessons/Lesson02/Finished\_Project folder for the location, and then click Save.
8. Back in the Render Queue panel, click the Render button.



After Effects displays a progress bar in the Render Queue panel as it encodes the file, and issues an audio alert when all items in the Render Queue have been rendered and encoded.

9. When the movie is complete, double-click the Render Queue tab to restore your workspace.
10. If you want to see your final product, double-click the Destinations.avi or Destinations.mov file in the Lessons/Lesson02/Finished\_Project folder to open it in Windows Media Player or QuickTime, and then play the file.



**11.** Save and close the project file, and then quit After Effects.

Congratulations. You've created a travel show ID suitable for broadcast.

### Review questions

- 1** How do you use Adobe Bridge to preview and import files?
- 2** What is *precomposing*?
- 3** How do you customize an effect?
- 4** How do you modify the transparency of a layer in a composition?

### Review answers

- 1** Choose File > Browse In Bridge to jump from After Effects to Adobe Bridge. If Bridge isn't installed, you'll be prompted to download and install it. In Bridge, you can search for and preview image assets. When you locate the asset you want to use in an After Effects project, double-click it or drag it to the Project panel.
- 2** *Precomposing* is a way to nest layers within a composition. Precomposing moves the layers to a new composition, which takes the place of the selected layers. When you want to change the order in which layer components are rendered, precomposing is a quick way to create intermediate levels of nesting in an existing hierarchy.
- 3** After you apply an effect to a layer in a composition, you can customize its properties in the Effect Controls panel. This panel opens automatically when you apply the effect, or you can open it at any time by selecting the layer with the effect and choosing Window > Effect Controls.
- 4** To modify the transparency of a layer, reduce its opacity. Select the layer in the Timeline panel, press T to reveal its Opacity property, and enter a value lower than 100%.

# 3 Animating Text

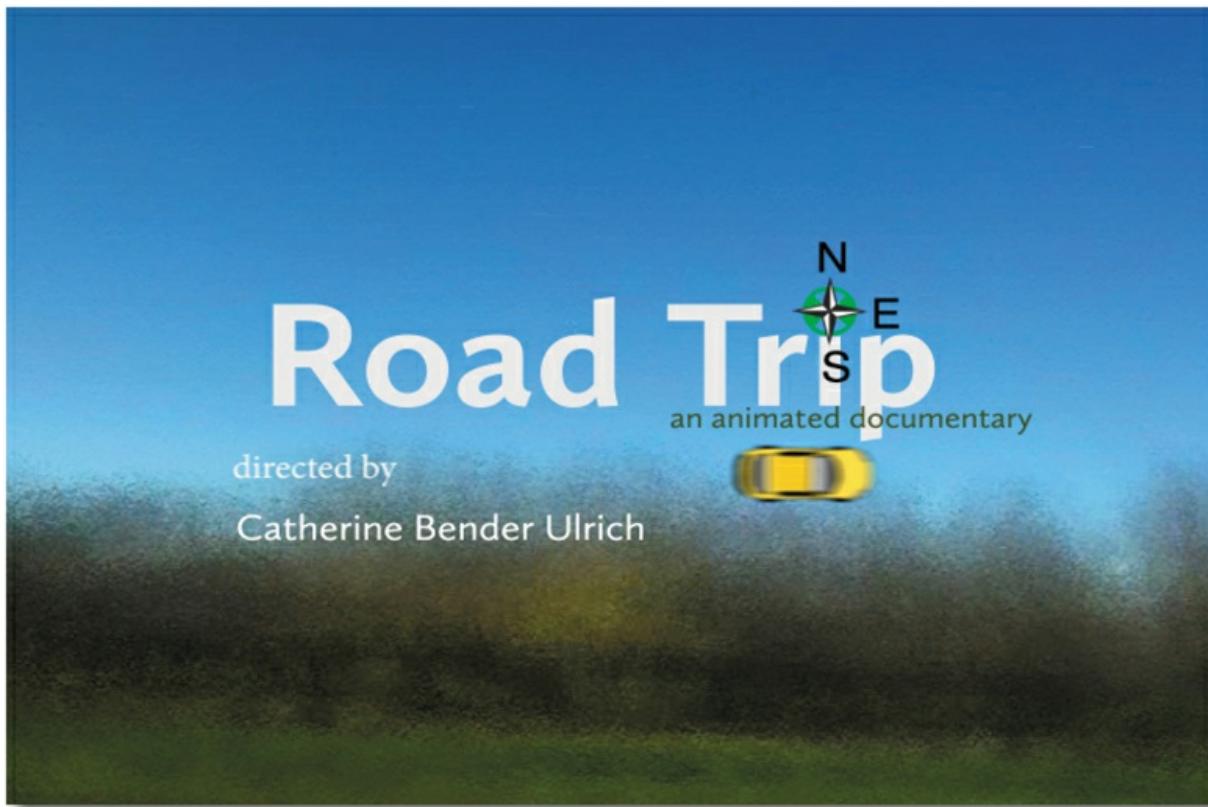
## Lesson overview

In this lesson, you'll learn how to do the following:

- Create and animate text layers.
- Stylize text using the Character and Paragraph panels.
- Apply and customize text animation presets.
- Preview animation presets in Adobe Bridge.
- Install fonts using Adobe Fonts.
- Animate text using keyframes.
- Animate layers using parenting.
- Edit and animate imported Adobe Photoshop text.
- Use a text animator group to animate selected characters on a layer.



This lesson will take approximately two hours to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: MOVIE TITLE SEQUENCE

Your type doesn't need to sit still while your audience is reading it. In this lesson, you'll learn several ways to animate type in After Effects, including timesaving methods unique to text layers.

### Getting started

Adobe After Effects offers many ways to animate text. You can animate text layers by manually creating keyframes in the Timeline panel, using animation presets, or using expressions. You can even animate individual characters or words in a text layer. In this lesson, you'll employ several different animation techniques, including some that are unique to text, while you design the opening title credits for an animated documentary called *Road Trip*. You'll also take advantage of Adobe Fonts to install a font for use in your project.

As in other projects, you'll begin by previewing the movie you're creating, and then you'll open After Effects.

1. Make sure the following files are in the Lessons/Lesson03 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: background\_movie.mov, car.ai, compass.swf, credits.psd
  - In the Sample\_Movies folder: Lesson03.mov, Lesson03.avi
2. Open and play the Lesson03.avi sample movie in Windows Movies & TV or the Lesson03.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

As you start the application, restore the default settings for After Effects. See “[Restoring default preferences](#)” on page [3](#).

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences.
4. Click New Project in the Home window.

After Effects opens to display a blank, untitled project.

5. Choose File > Save As > Save As, and navigate to the Lessons/Lesson03/Finished\_Project folder.
6. Name the project **Lesson03\_Finished.aep**, and then click Save.

## Importing the footage

You need to import two footage items to begin this lesson.

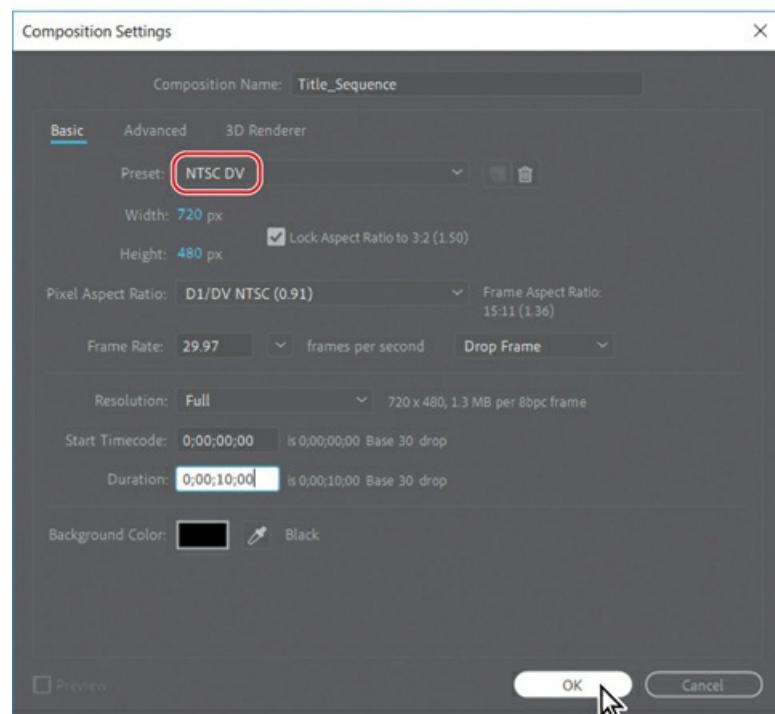
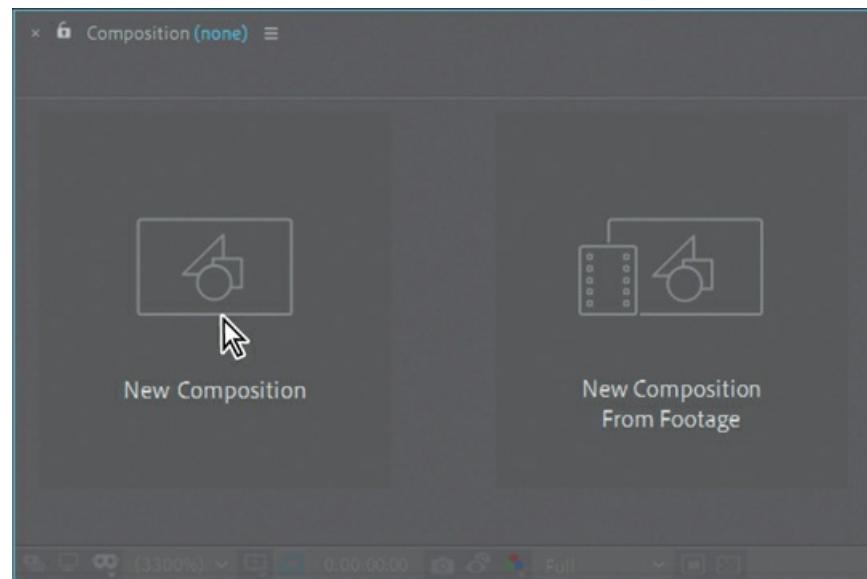
1. Double-click an empty area of the Project panel to open the Import File dialog box.
2. Navigate to the Lessons/Lesson03/Assets folder on your hard disk, Ctrl-click (Windows) or Command-click (macOS) to select both the background\_movie.mov and compass.swf files, and then click Import or Open.

After Effects can import several file formats, including Adobe Photoshop and Adobe Illustrator files as well as QuickTime and AVI movies. This makes After Effects an incredibly powerful application for compositing and motion graphics work.

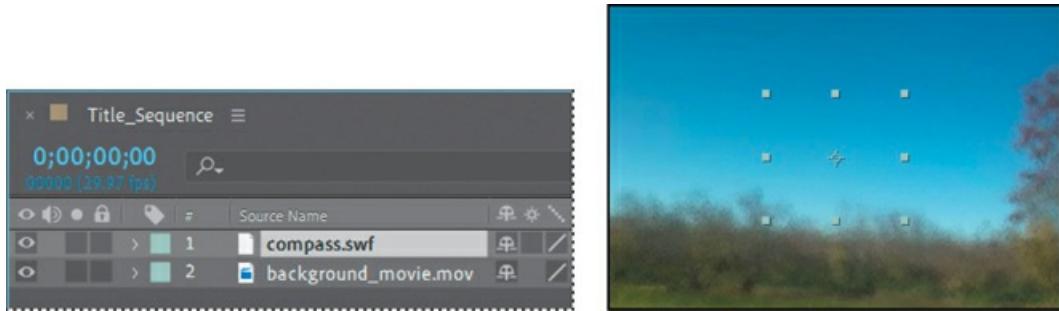
## Creating the composition

Now, you’ll create the composition.

1. Click the New Composition button in the Composition panel to create a new composition.
2. In the Composition Settings dialog box, name the composition **Title\_Sequence**, choose NTSC DV from the Preset menu, and set the Duration to **10:00**, which is the length of the background movie. Then click OK.



3. Drag the background\_movie.mov and compass.swf footage items from the Project panel to the Timeline panel. Arrange the layers so that compass.swf is above background\_movie.mov in the layer stack.



**4.** Choose File > Save.

You're ready to add the title text to the composition.

### About text layers

In After Effects, you can add text with flexibility and precision. The Tools, Character, and Paragraph panels contain a wide range of text controls. You can create and edit horizontal or vertical text directly on the screen in the Composition panel, and quickly change the font, style, size, and color of the text. You can apply changes to individual characters and set formatting options for entire paragraphs, including alignment, justification, and word-wrapping. In addition to all of these style features, After Effects provides tools for easily animating specific characters and properties, such as text opacity and hue.

After Effects uses two types of text: point text and paragraph text. Use *point text* to enter a single word or line of characters; use *paragraph text* to enter and format text as one or more paragraphs.

In many ways, text layers are just like any other layers in After Effects. You can apply effects and expressions to text layers, animate them, designate them as 3D layers, and edit the 3D text while viewing from multiple angles. As with layers imported from Illustrator, text layers are continuously rasterized, so when you scale the layer or resize the text, it retains crisp, resolution-independent edges. The two main differences between text layers and other layers are that you cannot open a text layer in its own Layer panel and you can animate the text in a text layer using special text-animator properties and selectors.

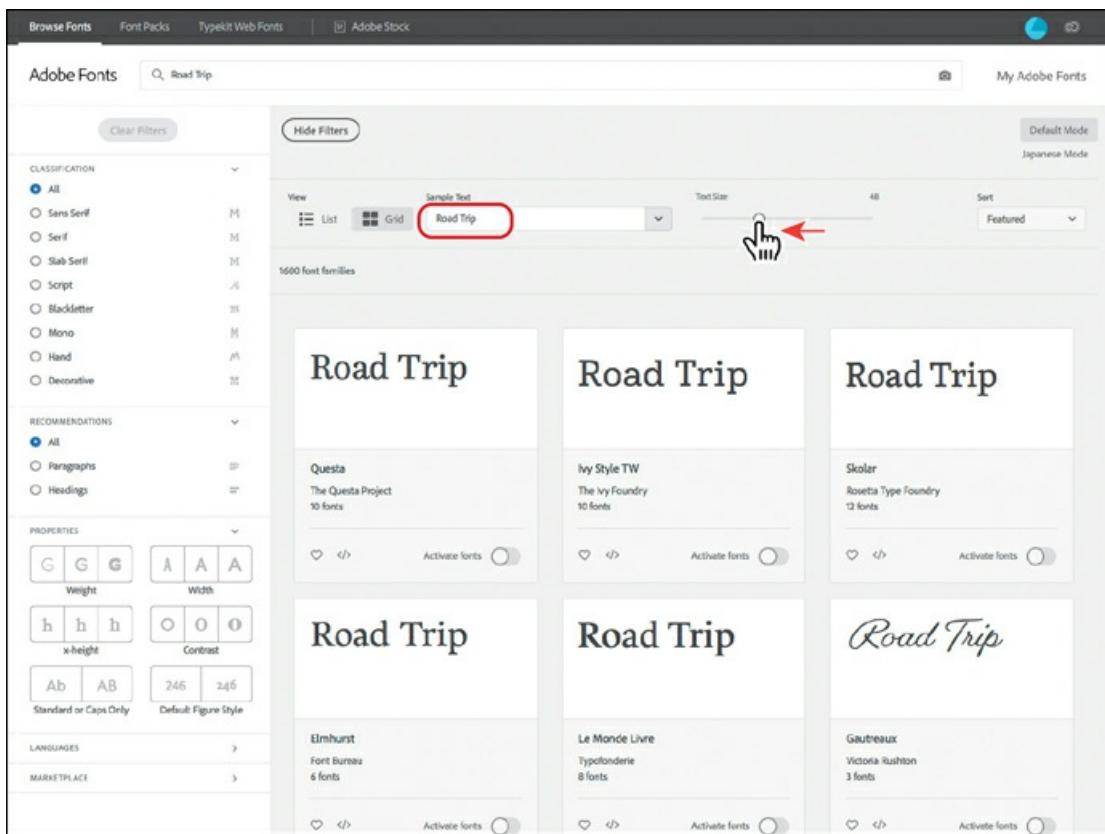
### Installing a font using Adobe Fonts

Hundreds of fonts are available through Adobe Fonts, which is included with an Adobe Creative Cloud membership. You'll use Adobe Fonts to install a font that will work well for the title text. When you install an Adobe Fonts font on your system, it's available in any application.

**1.** Choose File > Add Fonts From Adobe.

After Effects opens the Adobe Fonts page in your default browser.

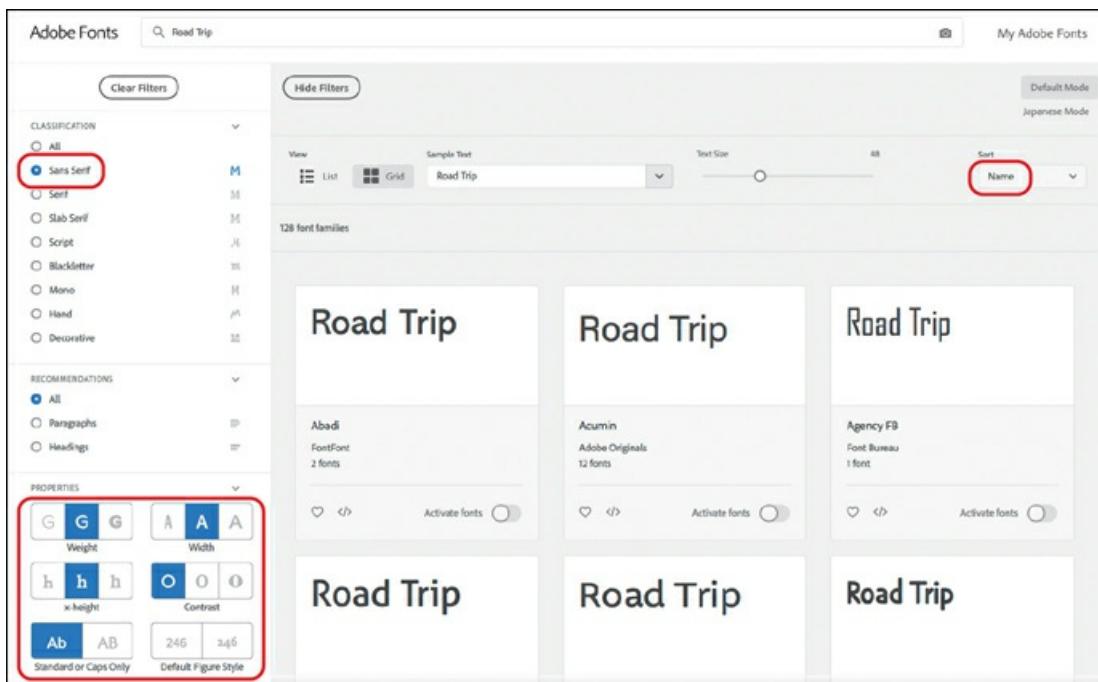
- 2.** Make sure you're signed in to Creative Cloud. If not, click Sign In at the top of the screen, and then enter your Adobe ID.
- 3.** Type **Road Trip** in the sample text field, and move the slider to decrease the sample text size so you can see the full title.



Using your own text as the sample text lets you get a feel for how a font will work in your project.

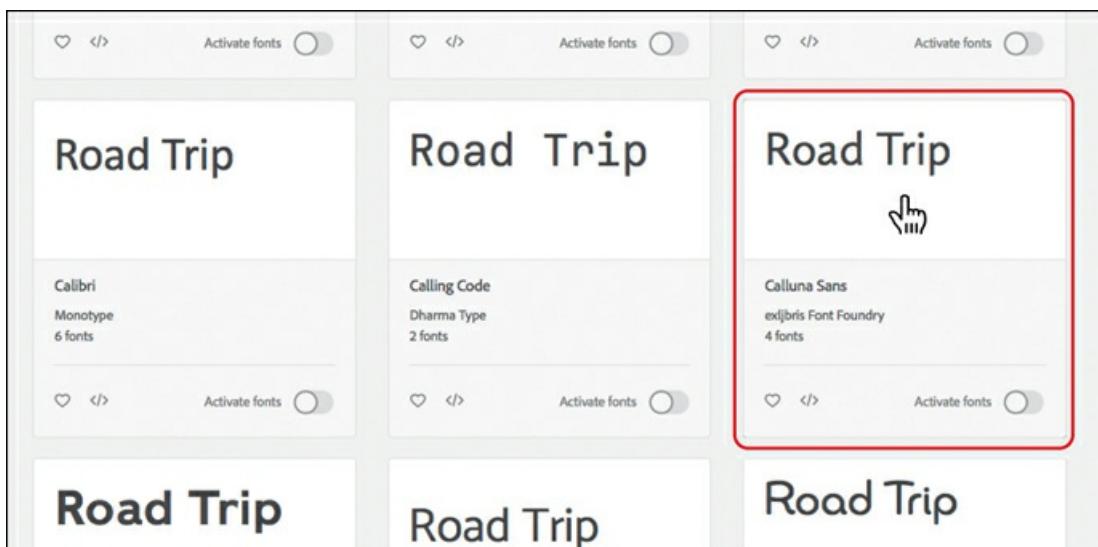
You can browse fonts on the Adobe Fonts website, but because there are so many, it's often more efficient to filter them or to search for a specific font. You'll filter fonts to see those that meet your requirements.

4. Choose Name from the Sort menu in the upper right corner. Then, on the left side of the page, select Sans Serif in the Classification area. In the Properties area, select the buttons for medium weight, medium width, medium height, low contrast, and standard capitalization.



Adobe Fonts displays several fonts that meet the requirements you specified.

5. Browse a few pages worth of fonts to see what's available. Calluna Sans, which is probably on the second page, will work nicely.
6. Click Calluna Sans.



Adobe Fonts displays sample text for all the fonts in the selected family, as well as additional information about the font.

### ● Note

Depending on your system and your Internet connection, it may take a few minutes

for Adobe Fonts to activate your fonts.

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7. Click Activate Font next to the Regular and Bold versions of the font.

The screenshot shows the Adobe Fonts website for the 'Calluna Sans' font. At the top, there's a header with the font name, a 'Activate All Fonts' button, and a note about licensing. Below the header, there are tabs for 'Fonts', 'About', 'Usage', and 'Details'. Under the 'Fonts' tab, it says '10 fonts'. There are three examples of text: 'The quick brown fox jumps over the lazy dog' in different styles. The first two are in regular weight, with their 'Activate font' buttons being greyed out. The third example is in bold weight, with its 'Activate font' button highlighted with a red oval and labeled 'Active'. Below these examples, there's another bold example with its 'Activate' button also highlighted with a red oval.

The selected fonts are automatically added to your system and are then available in any application, including After Effects. After you've activated your fonts, you can close Adobe Fonts and your browser.

### Creating and formatting point text

When you enter point text, each line of text is independent—the length of a line increases or decreases as you edit the text, but it doesn't wrap to the next line. The text you enter appears in a new text layer. The small line through the I-beam marks the position of the text baseline.

1. In the Tools panel, select the Horizontal Type tool (**T**).
2. Click anywhere in the Composition panel, and type **Road Trip**. Then exit text-editing mode by pressing Enter on the numeric keypad or selecting the layer name in the Timeline panel. The text layer is selected in the Composition panel.

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#### Note

If you press Enter or Return on the regular keyboard instead of on the numeric keypad, you'll begin a new paragraph.

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### Using the Character panel

The Character panel provides options for formatting characters. If text is highlighted, changes you make in the Character panel affect only the highlighted text. If no text is highlighted, changes you make in the Character panel affect the selected text layers and the text layers' selected Source Text keyframes, if any exist. If no text is highlighted and no text layers are selected, changes you make in the Character panel become the defaults for the next text entry.

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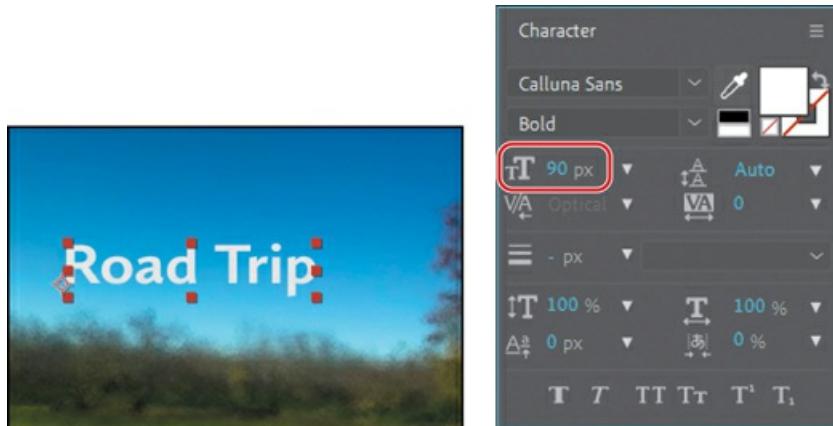
### ► Tip

To open the panels individually, choose Window > Character or Window > Paragraph. To open both panels, select the Horizontal Type tool, and then click the Toggle The Character And Paragraph Panels button in the Tools panel.

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After Effects displays sample text for each font. You can filter fonts to display only fonts from Adobe or favorites you've marked.

1. Select the Road Trip text layer in the Timeline panel.
2. In the Character panel, choose Calluna Sans Bold from the Font Family menu.
3. Set the Font Size to **90** pixels, and make sure no stroke is selected.
4. Leave all other options at their default settings.



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### ► Tip

To select a font quickly, begin typing its name in the Font Family box. The Font Family menu jumps to the first font on your system that matches the letters you've typed. If a type layer is selected, the text in the Composition panel is formatted with the newly selected font.

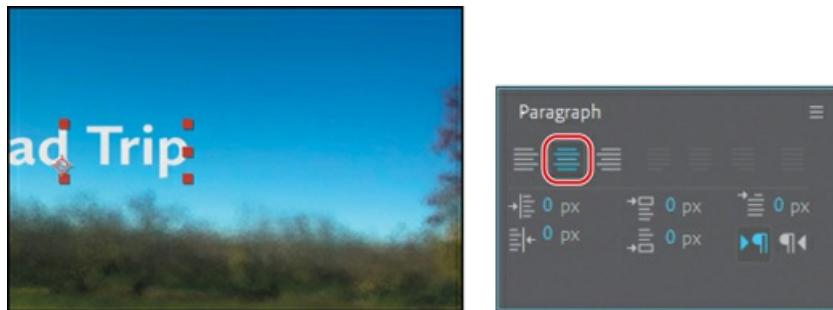
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## Using the Paragraph panel

Use the Paragraph panel to set options that apply to an entire paragraph, such as alignment,

indentation, and leading. For point text, each line is a separate paragraph. You can use the Paragraph panel to set formatting options for a single paragraph, multiple paragraphs, or all paragraphs in a text layer. You just need to make one adjustment in the Paragraph panel for this composition's title text.

1. In the Paragraph panel, click the Center Text button. This aligns horizontal text to the center of the layer, not to the center of the composition.



2. Leave all other options at their default settings.

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#### ● Note

Your screen may look different, depending on where you started typing.

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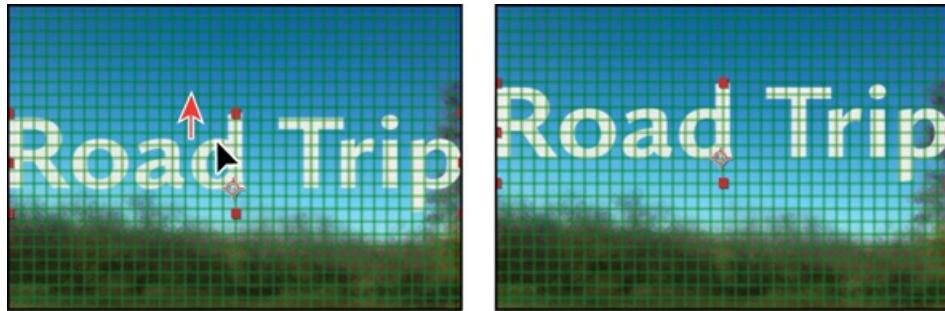
## Positioning the type

To precisely position layers, such as the text layer you're working on now, you can display rulers, guides, and grids in the Composition panel. These visual reference tools don't appear in the final rendered movie.

1. Make sure the Road Trip text layer is selected in the Timeline panel.
2. Choose Layer > Transform > Fit To Comp Width. This scales the layer to fit to the width of the composition.

Now you can position the text layer using a grid.

3. Choose View > Show Grid and then View > Snap To Grid.
4. Using the Selection tool (►), drag the text up in the Composition panel until the base of the letters sits on the horizontal gridline in the center of the composition. Press Shift after you start dragging to constrain the movement and help you position the text.



5. When the layer is in position, choose View > Show Grid again to hide the grid.

This project isn't destined for broadcast TV, so it's okay that the title extends beyond the title-safe and action-safe areas of the composition at the beginning of the animation.

6. Choose File > Save to save your project.

## Using a text animation preset

Now you're ready to animate the title. The easiest way to do that is to use one of the many animation presets that come with After Effects. After applying an animation preset, you can customize it and save it to use again in other projects.

1. Press the Home key or go to 0:00 to make sure the current-time indicator is at the beginning of the time ruler.

After Effects applies animation presets from the current time.

2. Select the Road Trip text layer.

## Browsing animation presets

You already applied an animation preset using the Effects & Presets panel in [Lesson 2, “Creating a Basic Animation Using Effects and Presets.”](#) But what if you're not sure which animation preset you want to use? To help you choose the right animation preset for your projects, you can preview presets in Adobe Bridge.

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### Note

If Bridge isn't installed, you'll be prompted to install it when you choose **Browse Presets**. For more information, see page 2.

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1. Choose **Animation > Browse Presets**. Adobe Bridge opens, displaying the contents of the After Effects Presets folder.
2. In the Content panel, double-click the Text folder, and then the Blurs folder.
3. Click to select the first preset, **Blur By Word**. Adobe Bridge plays a sample of the animation in the Preview panel.
4. Select a few other presets, and watch them in the Preview panel.

5. Preview the Evaporate preset, and then double-click its thumbnail preview. Alternatively, you can right-click (Windows) or Control-click (macOS) the thumbnail and choose Place In Adobe After Effects CC 2019.



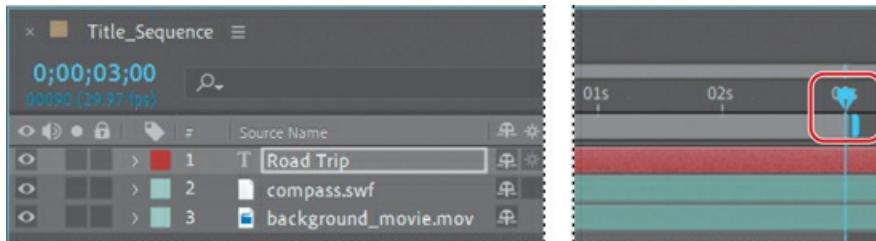
6. Return to After Effects, but leave Adobe Bridge open in the background.

After Effects applies the preset to the selected layer, which is the Road Trip layer, but nothing appears to change in the composition. This is because at 0:00, the first frame of the animation, the letters haven't yet evaporated.

## Previewing a range of frames

Now, you'll preview the animation. Although the composition is 10 seconds long, you need to preview only the first few seconds, since that is where the text animation occurs.

1. In the Timeline panel, move the current-time indicator to 3:00, and press N to set the end bracket of the work area.



2. Press the spacebar to watch a preview of the animation.



The letters appear to evaporate into the background. It looks great—but you want the letters to fade in and remain onscreen, not disappear. You'll customize the preset to suit your needs.

3. Press the spacebar to stop the preview, and then press the Home key to move the current-time indicator back to 0:00.

## Customizing an animation preset

After you apply an animation preset to a layer, all of its properties and keyframes are listed in the Timeline panel. You'll use those properties to customize the preset.

### Tip

If you press U twice (UU), After Effects displays all modified properties for the layer, instead of only the animated properties. Press the U key again to hide all the layer's properties.

1. Select the Road Trip text layer in the Timeline panel, and press U.

The U key, sometimes referred to as the *Überkey*, is a valuable keyboard shortcut that reveals all the animated properties of a layer.

2. Click the Offset property name to select both of its keyframes.

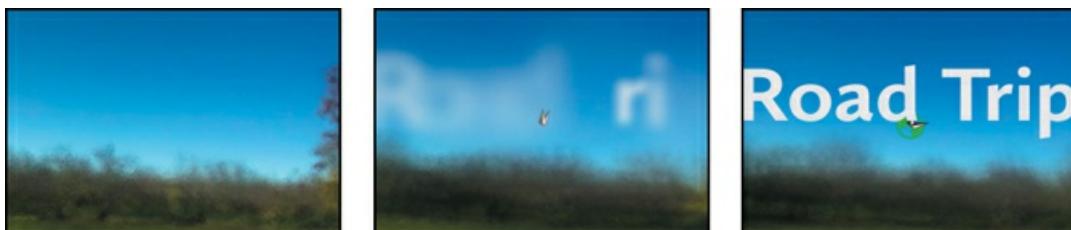


The Offset property specifies how much to offset the start and end of the selection.

3. Choose Animation > Keyframe Assistant > Time-Reverse Keyframes.

The Time-Reverse Keyframes command switches the order of the two Offset keyframes so that the letters are invisible at the beginning of the composition, and then emerge into view.

4. Drag the current-time indicator from 0:00 to 3:00 to manually preview the animation you edited.



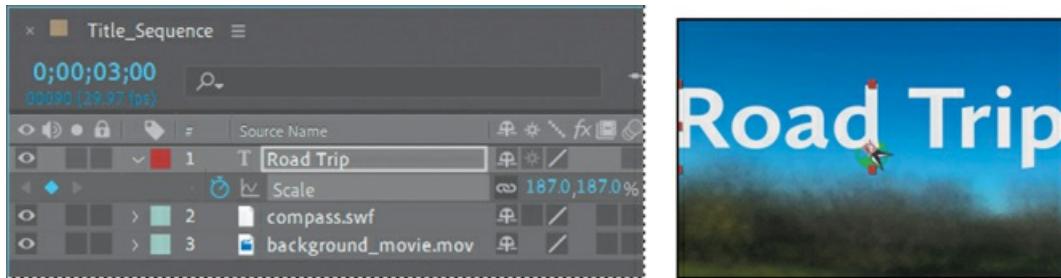
The letters now fade into, rather than disappear from, the composition.

5. Press U to hide the layer's properties.
6. Press the End key to move the current-time indicator to the end of the time ruler, and then press N to set the end bracket of the work area.
7. Choose File > Save to save your project.

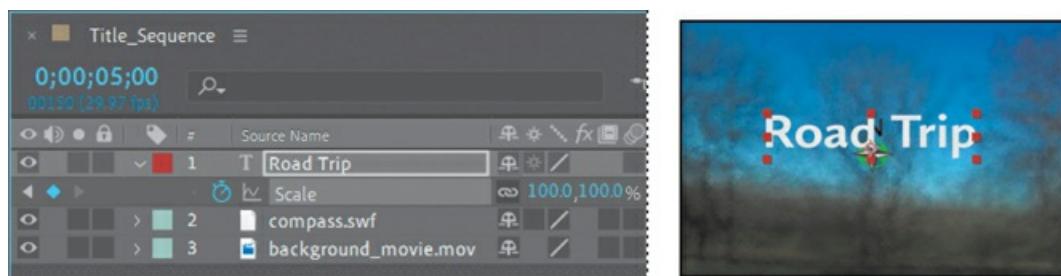
## Animating with scale keyframes

The text layer was scaled to nearly 200% when you applied the Fit To Comp Width command to it earlier in this lesson. Now, you'll animate the layer's scale so that the type gradually shrinks down to its original size.

1. In the Timeline panel, move the current-time indicator to 3:00.
2. Select the Road Trip text layer, and press the S key to reveal its Scale property.
3. Click the stopwatch icon (⌚) to add a Scale keyframe at the current time (3:00).



4. Move the current-time indicator to 5:00.
5. Reduce the layer's Scale values to **100, 100%**. After Effects adds a new Scale keyframe at the current time.



## Previewing the scale animation

Now you'll preview the change.

1. Move the current-time indicator to 5:10, and press N to set the end of the work area. The scale animation ends shortly before 5:10.
2. Press the spacebar to preview the animation from 0:00 to 5:10. The movie title fades in and then scales to a smaller size.

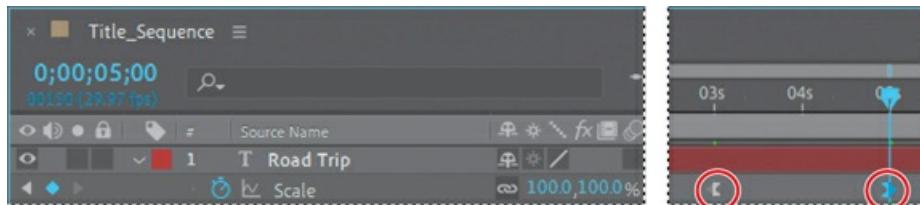


3. Press the spacebar to stop playback after you've viewed the animation.

## Adding Easy Ease

The beginning and end of the scale animation are rather abrupt. In nature, nothing comes to an absolute stop. Instead, objects ease into and out of starting and stopping points. You'll apply Easy Ease to make the animation smoother.

1. Right-click (Windows) or Control-click (macOS) the Scale keyframe at 3:00, and choose Keyframe Assistant > Easy Ease Out. The keyframe becomes a left-pointing icon.
2. Right-click (Windows) or Control-click (macOS) the Scale keyframe at 5:00, and choose Keyframe Assistant > Easy Ease In. The keyframe becomes a right-pointing icon.



3. Watch another preview. Press the spacebar to stop it when you're done.
4. Choose File > Save.

## Animating using parenting

The next task is to make it appear as if the virtual camera is zooming away from the composition. The text scale animation you just applied gets you halfway there, but you need to animate the scale of the compass as well. You could manually animate the compass layer, but it's easier to take advantage of parenting relationships in After Effects.

1. Press the Home key, or drag the current-time indicator to the beginning of the time ruler.
2. In the Timeline panel, click the Parent & Link pop-up menu for the compass layer, and choose 1. Road Trip.

This sets the Road Trip text layer as the parent of the compass layer, which in turn becomes the child layer.

As the child layer, the compass layer inherits the Scale keyframes of its parent layer (Road Trip). Not only is this a quick way to animate the compass, but it also ensures that the compass scales at the same rate and by the same amount as the text layer.

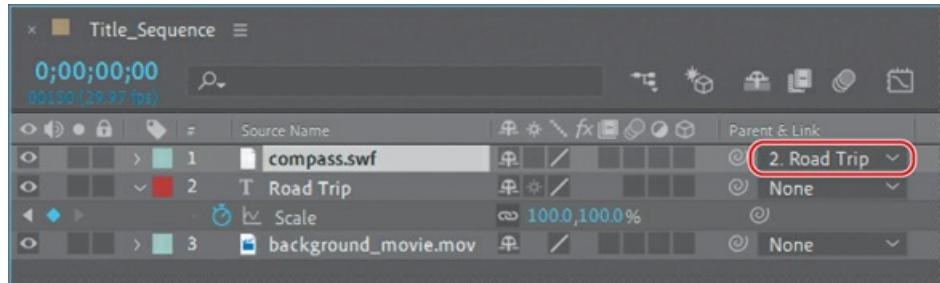
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### Note

When you move the compass layer, its parent becomes 2. Road Trip, because Road Trip is now the second layer.

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3. In the Timeline panel, move the compass layer above the Road Trip text layer.



4. Move the current-time indicator to 9:29 so you can clearly see the compass in the Composition panel.
5. In the Composition panel, drag the compass so that its anchor point is over the dot in the letter *i* in the word *trip*. Alternatively, you can select the compass layer in the Timeline panel, press P to reveal its Position property, and then enter **124, -62**.

6. Move the current-time indicator from 3:00 to 5:00 to manually preview the scaling. Both the text and the compass scale down in size, so that it appears that the camera is moving away from the scene.



7. Press the Home key to return to 0:00, and drag the work area end bracket to the end of the time ruler.
8. Select the Road Trip layer in the Timeline panel, and press S to hide its Scale property. If you entered Position values for the compass, select the compass layer, and press P to hide the Position property, too. Then choose File > Save.

## About parent and child layers

*Parenting* assigns one layer's transformations to another layer, called a *child layer*. Creating a parenting relationship between layers synchronizes the changes in the parent layer with the corresponding transformation values of the child layers, except opacity. For example, if a parent layer moves 5 pixels to the right of its starting position, then the child layer also moves 5 pixels to the right of its starting position. A layer can have only one parent, but a

layer can be a parent to any number of 2D or 3D layers within the same composition. Parenting layers is useful for creating complex animations, such as linking the movements of a marionette or depicting the orbits of planets in the solar system.

For more information on parent and child layers, see After Effects Help.

## Animating imported Photoshop text

If all text animations involved just two short words, such as *road trip*, life would be easy. But in the real world, you may often have to work with longer blocks of text, and they can be tedious to enter manually. Fortunately, you can import text from Photoshop or Illustrator. You can preserve text layers, edit them, and animate them in After Effects.

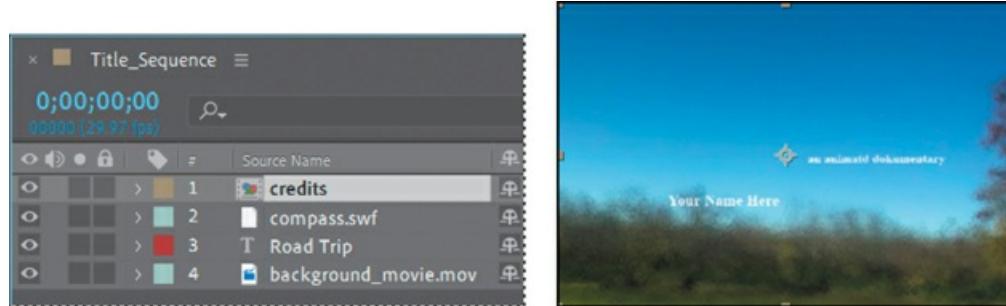
## Importing text

Some of the remaining text for this composition is in a layered Photoshop file, which you'll import now.

1. Click the Project tab to bring the Project panel forward, and then double-click an empty area in the Project panel to open the Import File dialog box.
2. Select the credits.psd file in the Lessons/Lesson03/Assets folder. Choose Composition – Retain Layer Sizes from the Import As menu. (In macOS, you may need to click Options to see the Import As menu.) Then click Import or Open.
3. In the Credits.psd dialog box, select Editable Layer Styles, and click OK.

After Effects can import Photoshop layer styles, retaining the appearance of the layers you're importing. The imported file is added as a composition to the Project panel; its layers are added in a separate folder.

4. Drag the credits composition from the Project panel into the Timeline panel, placing it at the top of the layer stack.



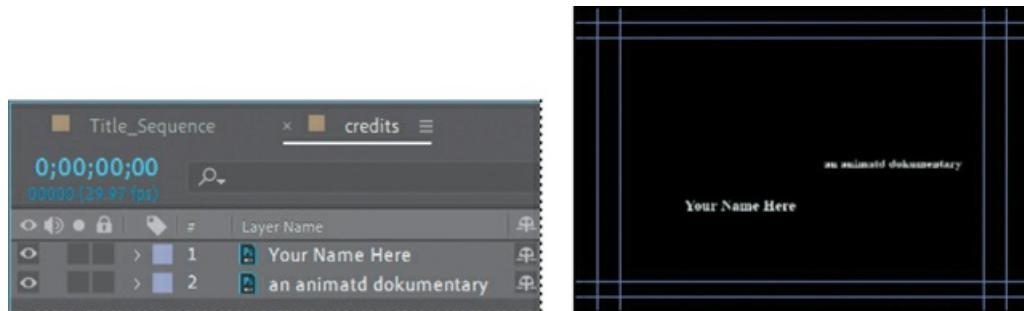
Because you imported the credits.psd file as a composition with layers intact, you can work on it in its own Timeline panel, editing and animating its layers independently.

## Editing imported text

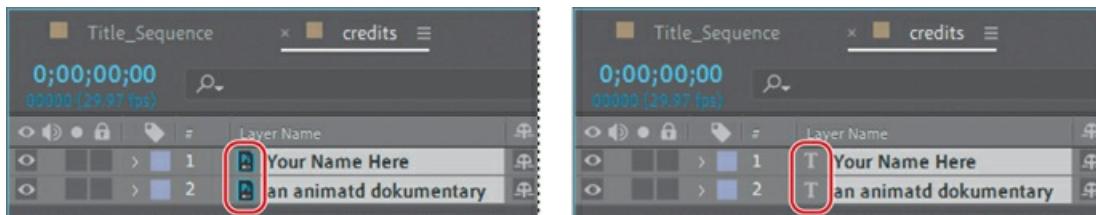
The text you imported isn't currently editable in After Effects. You'll change that so that you can control the type and apply animations. If you have a sharp eye, you've noticed some typos in the

imported text. So, first you'll clean up the type.

1. Double-click the credits composition in the Project panel to open it in its own Timeline panel.

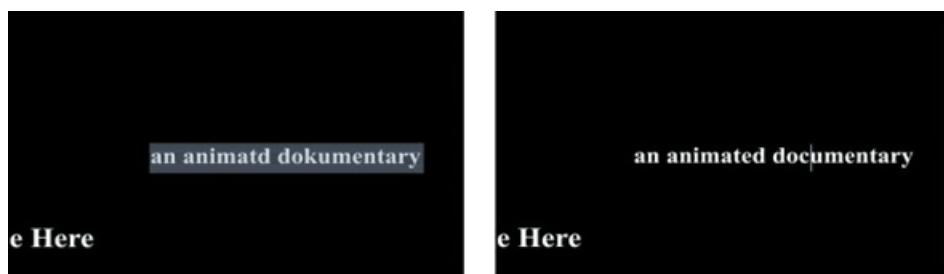


2. Shift-click to select both layers in the credits Timeline panel, and choose Layer > Create > Convert To Editable Text. (Click OK if you see a warning about missing fonts.)



Now the text layers can be edited, and you can fix the typos.

3. Deselect both layers, and then double-click layer 2 in the Timeline panel to select the text and automatically switch to the Horizontal Type tool (T).
4. Type an *e* between the *t* and *d* in the word *animated*. Then change the *k* to a *c* in *documentary*.



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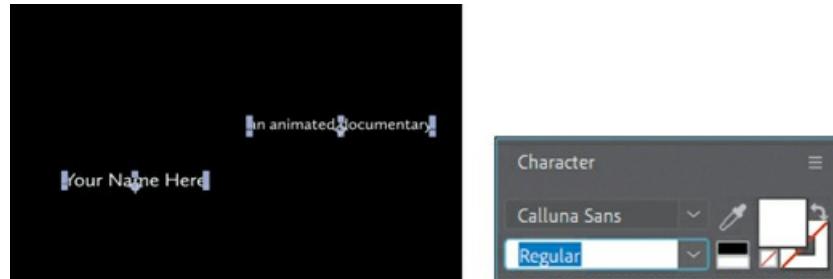
### Note

The layer name does not change in the Timeline panel when you correct the spelling in the layer. This is because the original layer name was created in Photoshop. To change a layer's name, select it in the Timeline panel, press Enter or Return, type the new name, and press Enter or Return again.

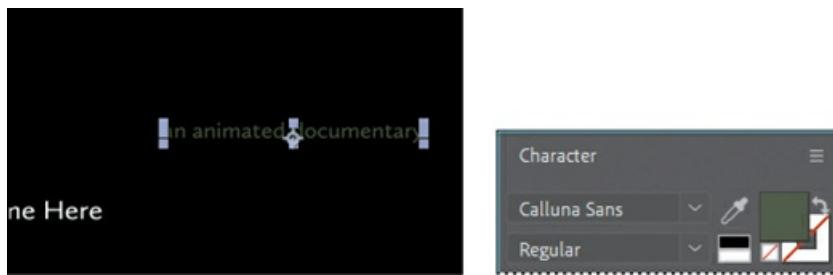
---

5. Switch to the Selection tool (▶) to exit text-editing mode.

6. Shift-click to select both layers in the Timeline panel.
7. If the Character panel isn't open, choose Window > Character to open it.
8. Choose Calluna Sans Regular to match the typeface you used for the words *Road Trip*. Leave all other settings as they are.



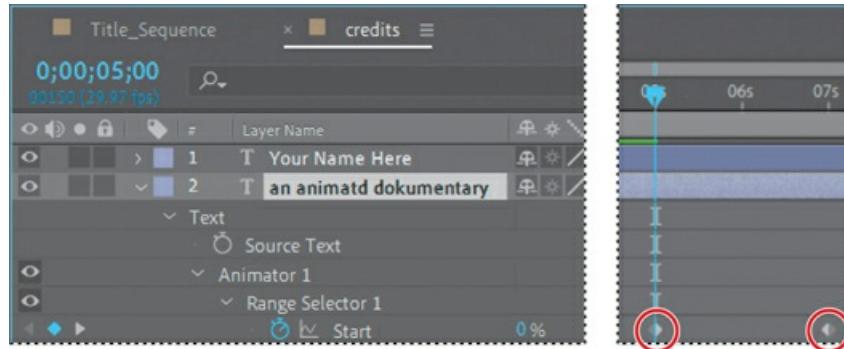
9. Click an empty area of the Timeline panel to deselect both layers. Then select layer 2 again.
10. In the Character panel, click the Fill Color box. Then, in the Text Color dialog box, select a shade of green, and click OK. We used R=66, G=82, B=42.



## Animating the subtitle

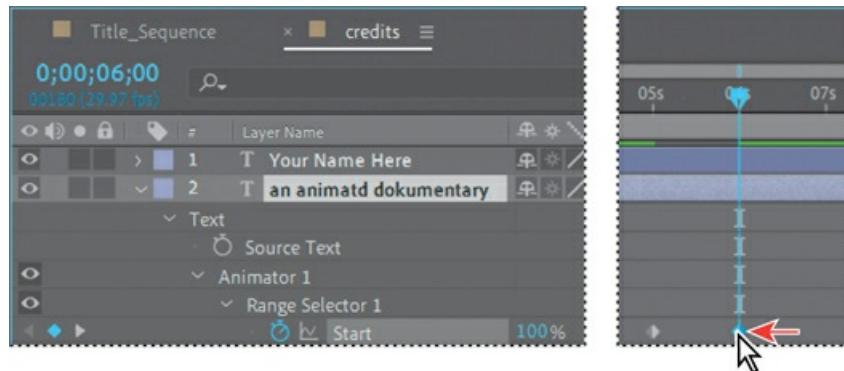
You want the letters of the subtitle—*an animated documentary*—to fade onscreen from left to right under the movie title. The easiest way to do this is to use another text animation preset.

1. Go to 5:00 in the timeline. At that point, the title and the compass have finished scaling to their final size.
2. Select the subtitle layer (layer 2) in the Timeline panel.
3. Press Ctrl+Alt+Shift+O (Windows) or Command+Option+Shift+O (macOS) to jump to Adobe Bridge.
4. Navigate to the Presets/Text/Animate In folder.
5. Select the Fade Up Characters animation preset, and watch it in the Preview panel. This effect works well to reveal the text gradually.
6. Double-click the Fade Up Characters preset to apply it to the subtitle layer, and then return to After Effects.
7. With the subtitle layer selected in the Timeline panel, press UU to see the properties modified by the animation preset. You should see two keyframes for Range Selector 1 Start: one at 5:00, and one at 7:00.



You still have a lot of animation to fit into this composition, so you will speed up the effect by 1 second.

8. Go to 6:00, and then drag the second Range Selector 1 Start keyframe to 6:00.



9. Drag the current-time indicator across the time ruler between 5:00 and 6:00 to see the letters fade in.
10. When you're done, select the subtitle layer, and press U to hide the modified properties. Then choose File > Save to save your work.

### Animating type tracking

Next, you'll animate the appearance of the director's name in the composition using a text animation tracking preset. By animating tracking, you can make words seem to expand outward as they appear onscreen from a central point.

### Customizing placeholder text

Currently, the director's name is simply a layer with placeholder text—*Your Name Here*. Before you animate it, change it to your own name.

1. Still working in the credits timeline in the Timeline panel, select the *Your Name Here* layer.
2. Select the Horizontal Type tool (T), and then replace *Your Name Here* in the Composition panel with your own name. Use a first, middle, and last name so that you have a nice long string of text to animate. Click the layer name when you're done. The layer name doesn't change, because it was named in Photoshop.

## ● Note

It doesn't matter where the current-time indicator is located when you edit the text of this layer. Currently, the text is onscreen for the duration of the composition. That will change once you animate it.

## Applying a tracking preset

Now you will animate the director's name with a tracking preset so that it starts to appear onscreen shortly after the words *an animated documentary* are fully visible in the composition.

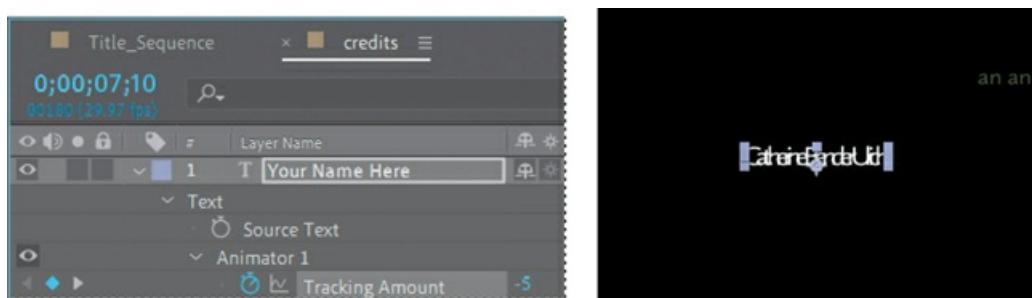
1. Go to 7:10.
2. Select the Your Name Here layer in the Timeline panel.
3. Type Increase Tracking in the search box of the Effects & Presets panel. Then double-click the preset to apply it to the Your Name Here layer.
4. Drag the current-time indicator across the time ruler between 7:10 and 9:10 to manually preview the tracking animation.



## Customizing the tracking animation preset

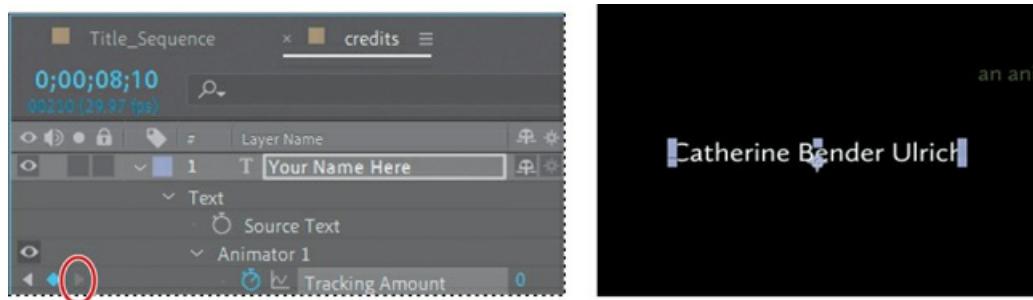
The text expands, but you want the letters to be so close initially that they're on top of each other, and then to expand to a reasonable, readable distance apart. The animation should also occur more quickly. You'll adjust the Tracking Amount to achieve both goals.

1. Select the Your Name Here layer in the Timeline panel, and press UU to reveal the properties that were modified.
2. Go to 7:10.
3. Under Animator 1, change the Tracking Amount to -5 so that the letters are squeezed together.



4. Click the Go To Next Keyframe arrow (▶) for the Tracking Amount property, and then

change the value to **0**.



5. Drag the current-time indicator across the time ruler between 7:10 and 8:10. The letters expand as they appear onscreen, and stop animating at the last keyframe.

### Animating text opacity

You'll take the animation of the director's name a little further by having it fade onscreen as the letters expand. To do this, you'll animate the layer's Opacity property.

1. Make sure the Your Name Here layer is selected in the credits timeline.
2. Press T to reveal only the layer's Opacity property.
3. Go to 7:10, and set the Opacity to **0%**. Then click the stopwatch icon (⌚) to set an Opacity keyframe.
4. Go to 7:20, and set the Opacity to **100%**. After Effects adds a second keyframe.

Now the letters of the director's name will fade in as they expand onscreen.

5. Drag the current-time indicator across the time ruler between 7:10 and 8:10 to see the letters of the director's name fade in as they spread out.



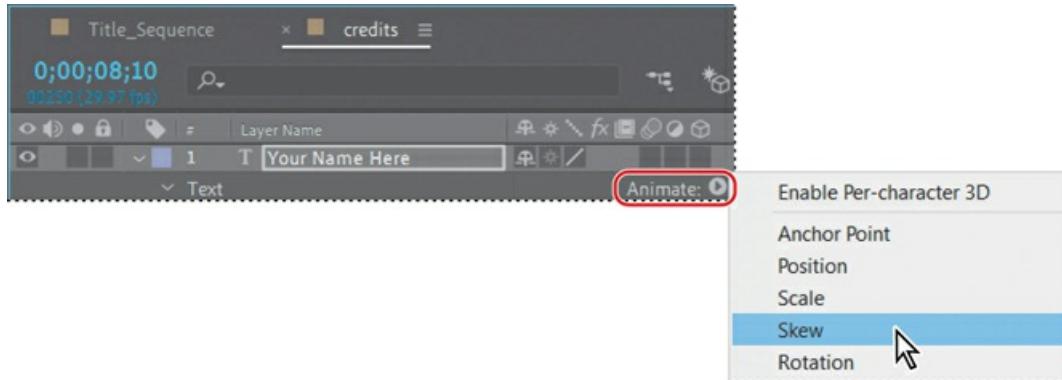
6. Right-click (Windows) or Control-click (macOS) the ending Opacity keyframe, and choose Keyframe Assistant > Easy Ease In.
7. Choose File > Save.

### Using a text animator group

Text animator groups let you animate individual letters within a block of text in a layer. You'll use a text animator group to animate only the characters in your middle name without affecting the tracking and opacity animation of the other names in the layer.

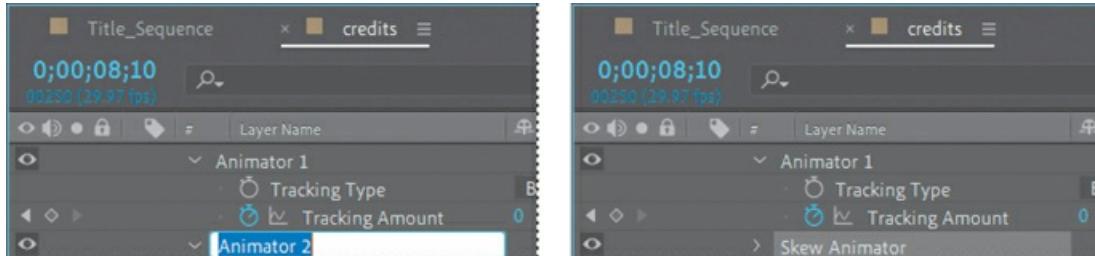
1. In the Timeline panel, go to 8:10.
2. Hide the Opacity property for the Your Name Here layer. Then expand the layer to see its Text property group name.

3. Next to the Text property group name, click the Animate pop-up menu, and choose Skew.



A property group named Animator 2 appears in the layer's Text properties.

4. Select Animator 2, press Enter or Return, and rename it **Skew Animator**. Then press Enter or Return again to accept the new name.

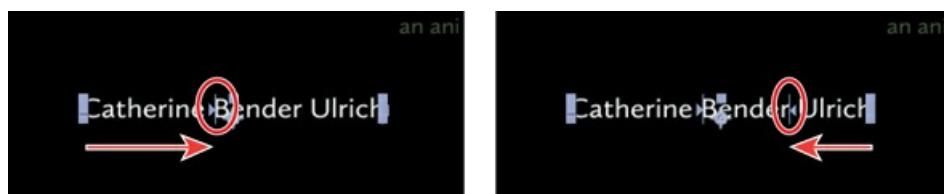


Now you're ready to define the range of letters that you want to skew.

5. Expand the Skew Animator's Range Selector 1 properties.

Each animator group includes a default range selector. Range selectors constrain the animation to particular letters in the text layer. You can add additional selectors to an animator group, or apply multiple animator properties to the same range selector.

6. While watching the Composition panel, drag the Skew Animator's Range Selector 1 Start value up (to the right) until the left selector indicator (▨) is just before the first letter of your middle name (the *B* in *Bender*, in this example).
7. Drag the Skew Animator's Range Selector 1 End value down (to the left) until its indicator (▨) is just after the last letter of your middle name (the *r* in *Bender*, in this example) in the Composition panel.



Now, any properties that you animate with the Skew Animator will affect only the middle name that you selected.

## About text animator groups

A text animator group includes one or more *selectors* and one or more *animator properties*. A selector is like a mask—it specifies which characters or section of a text layer you want an animator property to affect. Using a selector, you can define a percentage of the text, specific characters in the text, or a specific range of text.

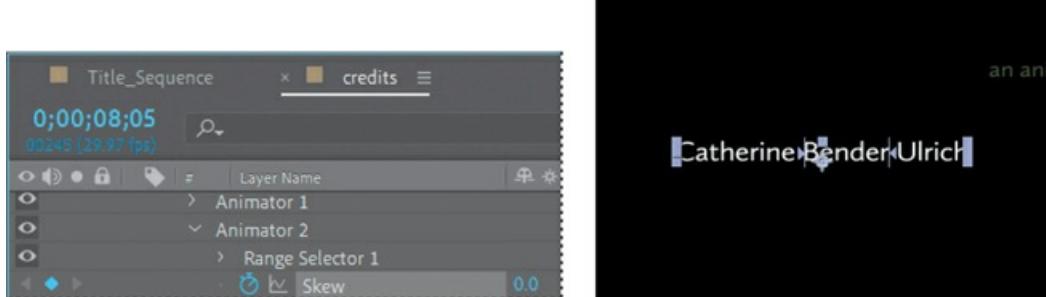
Using a combination of animator properties and selectors, you can create complex text animations that would otherwise require painstaking keyframing. Most text animations require you to animate only the selector values, not the property values. Consequently, text animators use a small number of keyframes even for complex animations.

For more information about text animator groups, see After Effects Help.

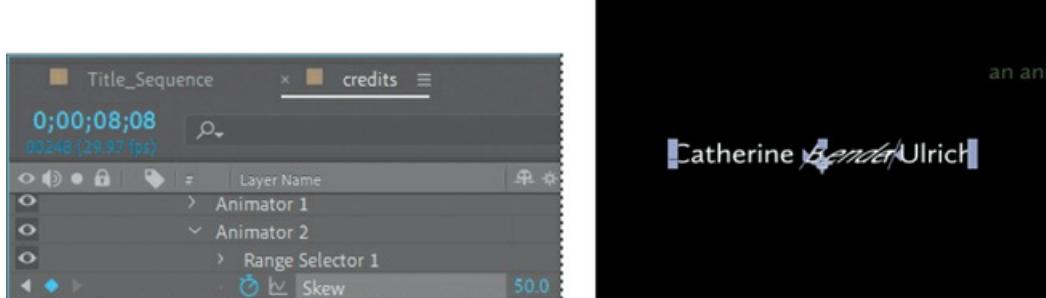
## Skewing the range of text

Now, you'll make that middle name shake and shimmy by setting Skew keyframes.

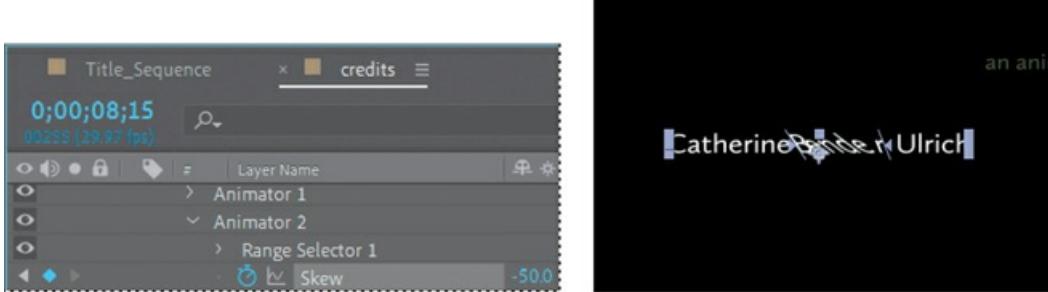
1. Drag the Skew Animator's Skew value left and right, and notice that only the middle name sways. The other names in the line of text remain steady.
2. Set the Skew Animator's Skew value to **0**.
3. Go to 8:05, and click the stopwatch icon (⌚) for Skew to add a keyframe to the property.



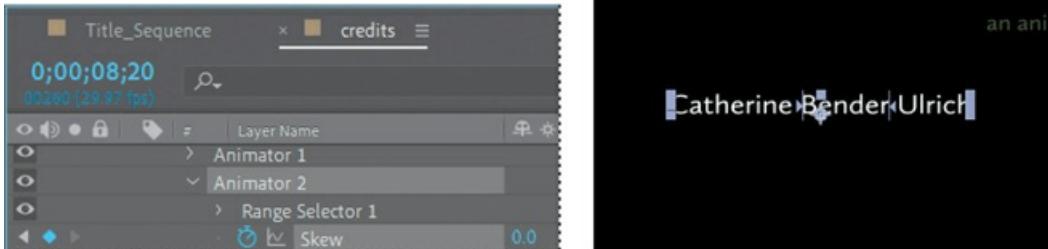
4. Go to 8:08, and set the Skew value to **50**. After Effects adds a keyframe.



5. Go to 8:15, and change the Skew value to **-50**. After Effects adds another keyframe.



6. Go to 8:20, and change the Skew value to **0** to set the final keyframe.



7. Click the Skew property name to select all of the Skew keyframes. Then choose Animation > Keyframe Assistant > Easy Ease to add an Easy Ease to all keyframes.
8. Drag the current-time indicator across the time ruler from 7:10 to 8:20 to see how the director's name fades in and expands onscreen, and the middle name rocks from side to side while the other names are unaffected.
9. Hide the properties for the Your Name Here layer in the Timeline panel.
10. Select the Title\_Sequence tab to open its timeline.
11. Press Home, or go to 0:00, and then preview the entire composition.
12. Press the spacebar to stop playback, and then choose File > Save to save your work.

#### ► Tip

To quickly remove all text animators from a text layer, select the layer in the Timeline panel, and choose Animation > Remove All Text Animators. To remove only one animator, select its name in the Timeline panel, and press Delete.

### Animating a layer's position

You've used several text animation presets to dazzle your audience. But for a simpler effect, you can animate the Transform properties for a text layer, just as you can any other layer.

Currently, your name appears onscreen, but there's no context for it. You'll add the words "directed by," animating them so that they move into position as your name is appearing onscreen.

1. In the Title\_Sequence Timeline panel, go to 9:29, the end of the project.

At this point, all the other text is onscreen, so you can position the “directed by” line accurately.

2. Select the Horizontal Type tool.
3. Make sure no layers are selected, and then click in the Composition panel. Make sure you’re clicking in an area that doesn’t overlap an existing text layer.

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#### ▶ Tip

To make sure no layers are selected, click an empty area in the Timeline panel, press F2, or choose Edit > Deselect All.

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4. Type **directed by**.
5. Select the directed by layer. Then, in the Character panel, choose Minion Pro Regular from the Font Family menu.
6. Set the Font Size to 20 pixels.
7. In the Character panel, click the Fill Color box. Then, in the Text Color dialog box, select white, and click OK. Leave all other options at their default settings.

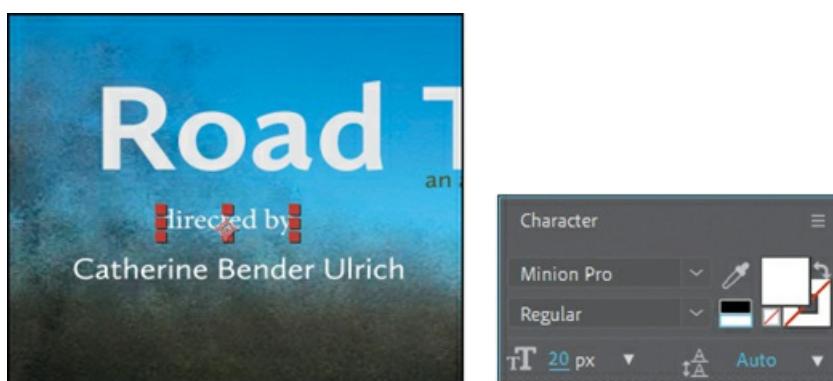
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#### ● Note

If Minion Pro Regular is not an option, choose File > Add Fonts From Adobe, search for the font, and then activate it.

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8. Select the Selection tool, and then drag the directed by layer so that the text is centered over your name.



9. Press P to display the layer’s Position property. Click the stopwatch icon to create an initial keyframe for the layer.
10. Go to 7:00, the point where “documentary” has just finished appearing and your name hasn’t yet started to appear.
11. Drag the directed by layer off the left edge of the Composition window. Press the Shift key as you drag to create a straight path.

- 12.** Preview the animation, and then hide the Position property.



It's simple, but effective. The text moves in from the left side and stops in its final position above your name. To make the text's entrance a little more interesting, you'll add a car graphic that will appear to be dragging the text onscreen.

### Timing layer animations

You'll animate a simple car graphic so that the text appears to trail behind the car onscreen. The words should follow the car and come to rest above your name, while the car continues to fly off screen. The timing will require some adjustment in order to keep the text and the car in sync.

First, you'll import the car graphic and add it to your composition.

- 1.** Double-click an empty area in the Project panel to open the Import File dialog box.
- 2.** In the Lessons/Lesson03/Assets folder, select the car.ai file, choose Composition – Retain Layer Sizes from the Import As menu, and then click Import or Open.
- 3.** Drag the car composition from the Project panel to the top of the layer stack in the Title\_Sequence Timeline panel.
- 4.** Go to 6:25, just before the directed by text begins moving.
- 5.** Select the car layer, and press P to reveal its Position property.
- 6.** Drag the car off the left of the Composition window, so that it overlaps the directed by text.
- 7.** Click the stopwatch icon for the layer's Position property to create an initial keyframe.
- 8.** Go to 9:29, the end of the composition.
- 9.** Drag the car off the right side of the Composition window. The car shouldn't be visible on the screen. Hold down the Shift key as you drag to create a straight path.
- 10.** Manually preview the animation from 6:25 to 9:29.



The text trails the car, but the car picks up speed too quickly so it's not obvious that it's dragging the text. You'll need to make an adjustment to its timing to slow the car down until the text is in place.

- 11.** Go to 8:29.
- 12.** Move the car immediately to the right of the text.

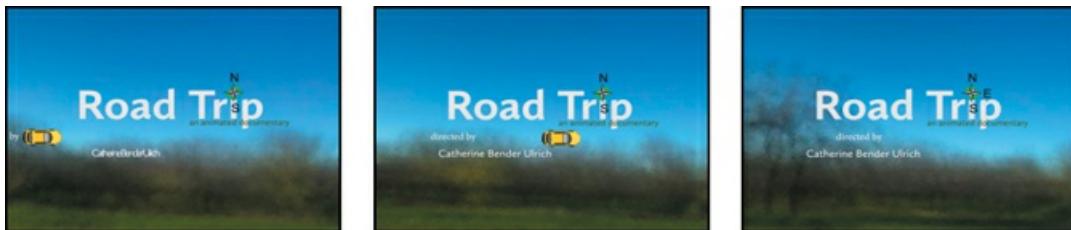
**13.** Preview the animation again.

The timing is better, but now the car overlaps the text at the beginning. One more adjustment should do the trick.

**14.** Go to 7:19.

**15.** Pull the car forward, just ahead of the text.

**16.** Preview the animation again.



Now the car is clearly pulling the text, and it speeds up to roll off the screen before the composition finishes. If you'd like to more precisely control the animation, you can add more keyframes.

**17.** Hide the properties for all layers, and then choose File > Save to save your work.

### Adding motion blur

Motion blur is the blur that occurs as an object moves. You'll apply motion blur to finesse the composition and make the movement look more natural.

1. In the Timeline panel, click the Motion Blur switch ( ) for each layer *except* the background\_movie and credits layers.

Now you'll apply motion blur to the layers in the credits composition.

2. Switch to the credits Timeline panel, and enable motion blur for both layers.
3. Switch back to the Title\_Sequence Timeline panel, and select the Motion Blur switch for the credits layer. Then click the Enable Motion Blur button ( ) at the top of the Timeline panel so that you can see the motion blur in the Composition panel.
4. Preview the entire, completed animation.
5. Choose File > Save.

Give yourself a pat on the back. You just completed some hard-core text animations. If you'd like to export the composition as a movie file, see [Lesson 15, “Rendering and Outputting,”](#) for instructions.

### Review questions

- 1 What are some similarities and differences between text layers and other types of layers in After Effects?
- 2 How can you preview a text animation preset?
- 3 How can you assign one layer's transformations to another layer?
- 4 What are text animator groups?

## Review answers

- 1 In many ways, a text layer is just like any other layer in After Effects. You can apply effects and expressions to text layers, animate them, designate them as 3D layers, and edit 3D text while viewing it in multiple views. However, they differ from most layers in that you can't open text layers in their own Layer panels. Text layers consist entirely of vector graphics, so when you scale the layer or resize the text, it retains crisp, resolution-independent edges. You can animate the text in a text layer using special text animator properties and selectors.
- 2 You can preview text animation presets in Adobe Bridge by choosing Animation > Browse Presets. Adobe Bridge opens and displays the contents of the After Effects Presets folder. Navigate to folders containing categories of text animation presets, such as Blurs or Paths, and watch samples in the Preview panel.
- 3 You can use parenting relationships in After Effects to assign one layer's transformations to another layer (except opacity transformations). When a layer is made a parent to another layer, the other layer is called the *child layer*. Creating a parenting relationship between layers synchronizes the changes in the parent layer with corresponding transformation values of the child layers.
- 4 Text animator groups enable you to animate the properties of individual characters in a text layer over time. Text animator groups contain one or more *selectors*, which are like masks: They let you specify which characters or section of a text layer you want an animator property to affect. Using a selector, you can define a percentage of the text, specific characters in the text, or a specific range of text.

# 4 Working with Shape Layers

## Lesson overview

In this lesson, you'll learn how to do the following:

- Create custom shapes.
- Customize a shape's fill and stroke.
- Use path operations to transform shapes.
- Animate shapes.
- Snap layers into alignment.
- Use the Create Nulls From Paths panel.



This lesson will take approximately an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: ANIMATED ILLUSTRATION

Shape layers make it easy to create expressive backgrounds and intriguing results. You can animate shapes, apply animation presets, and connect them to other shapes to intensify their impact.

### Getting started

Shape layers are created automatically when you draw a shape with any of the drawing tools. You can customize and transform an individual shape or its entire layer to create interesting results. In this lesson, you will use shape layers to create a whimsical animation.

First, you'll preview the final movie and set up the project.

1. Make sure the following files are in the Lessons/Lesson04 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: Background.mov
  - In the Sample\_Movies folder: Lesson04.avi, Lesson04.mov
2. Open and play the Lesson04.avi sample movie in Windows Movies & TV or the Lesson04.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

As you start After Effects, restore the default application settings. See “[Restoring default preferences](#)” on page [3](#).

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences.
4. Click New Project in the Home window.

After Effects opens to display a blank, untitled project.

5. Choose File > Save As > Save As, and then navigate to the Lessons/Lesson04/Finished\_Project folder.
6. Name the project **Lesson04\_Finished.aep**, and then click Save.

## Creating the composition

Next, you'll import the background movie and create the composition.

1. Click New Composition From Footage in the Composition panel.
2. Navigate to the Lessons/Lesson04/Assets folder on your hard disk, select the Background.mov file, and then click Import or Open.

After Effects adds the Background.mov file to the Project panel, creates a composition based on the Background.mov file, and opens the new composition in both the Timeline and Composition panels.

3. Press the spacebar to preview the background movie. In the scene, night turns to day as the sky lightens and the colors brighten. Press the spacebar again to stop playback.



## Adding a shape layer

After Effects includes five shape tools: Rectangle, Rounded Rectangle, Ellipse, Polygon, and Star. When you draw a shape directly in the Composition panel, After Effects adds a new shape layer to the composition. You can apply stroke and fill settings to a shape, modify its path, and apply animation presets. Shape attributes are all represented in the Timeline panel, and you can animate each setting over time.

The same drawing tools can create both shapes and masks. Masks are applied to layers to hide or reveal areas or as input into effects; shapes have their own layers. When you select a drawing tool, you can specify whether the tool draws a shape or a mask.

## Drawing a shape

You'll begin by drawing a star.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Press F2 or click an empty area in the Timeline panel to make sure no layers are selected.

If you draw a shape when a layer is selected, the shape becomes a mask for that layer. If you draw a shape when no layer is selected, After Effects creates a shape layer.

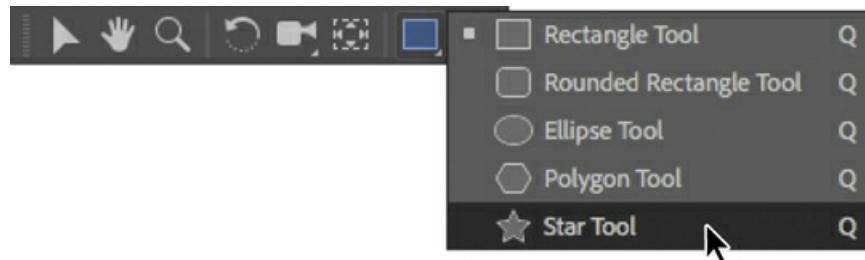
3. Choose Edit > Preferences > General (Windows) or After Effects CC > Preferences >

General (macOS). Select Center Anchor Point In New Shape Layers, and click OK.



The anchor point is the reference point After Effects uses when it changes a layer's position, scale, or rotation. By default, a shape layer's anchor point is at the center of the composition. Selecting Center Anchor Point In New Shape Layers positions the anchor point in the center of the first shape you draw on a layer.

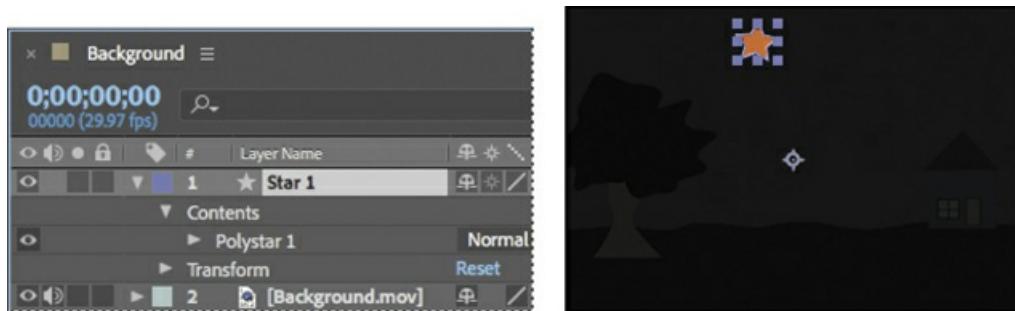
4. Select the Star tool (★), hidden behind the Rectangle tool (□) in the Tools panel.



5. Drag a small star in the sky.

The shape appears in the Composition panel, and After Effects adds a shape layer named Shape Layer 1 to the Timeline panel.

6. Select the Shape Layer 1 layer name, press Enter or Return, change the layer name to **Star 1**, and press Enter or Return to accept the change.

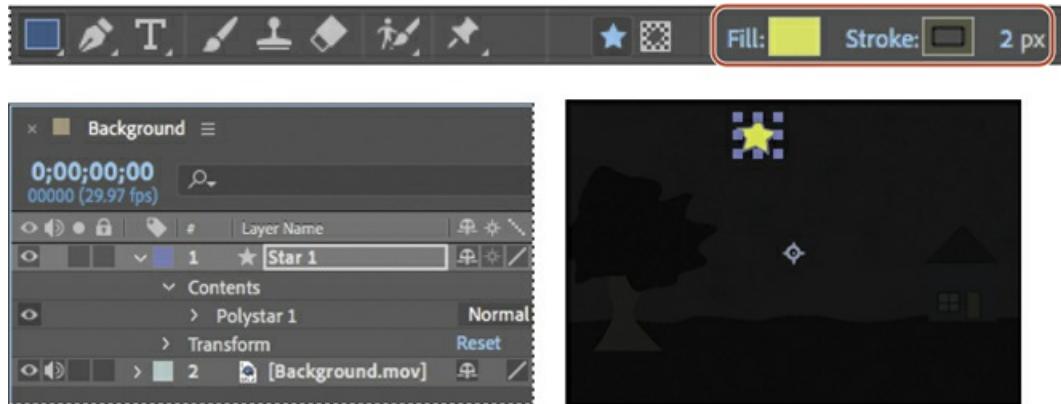


## Applying a fill and stroke

You can change the color of a shape by modifying its Fill settings in the Tools panel. Clicking the word *Fill* opens the Fill Options dialog box, where you can select the kind of fill, its blending mode, and its opacity. Clicking the Fill Color box opens the Adobe Color Picker if the fill is solid or the Gradient Editor if the fill is a gradient.

Similarly, you can change the color and width of the stroke of a shape by modifying its Stroke settings in the Tools panel. Click the word *Stroke* to open the Stroke Options dialog box; click the Stroke Color box to select a color.

1. Select the Star 1 layer in the Timeline panel.
2. Click the Fill Color box (next to *Fill*) to open the Shape Fill Color dialog box.
3. Change the color to a bright yellow (we used R=215, G=234, B=23), and click OK.
4. Click the Stroke Color box in the Tools panel, change the stroke color to a muddy yellow-green color (we used R=86, G=86, B=29), and then click OK.
5. Make sure the Stroke Width value in the Tools panel is **2 px**.

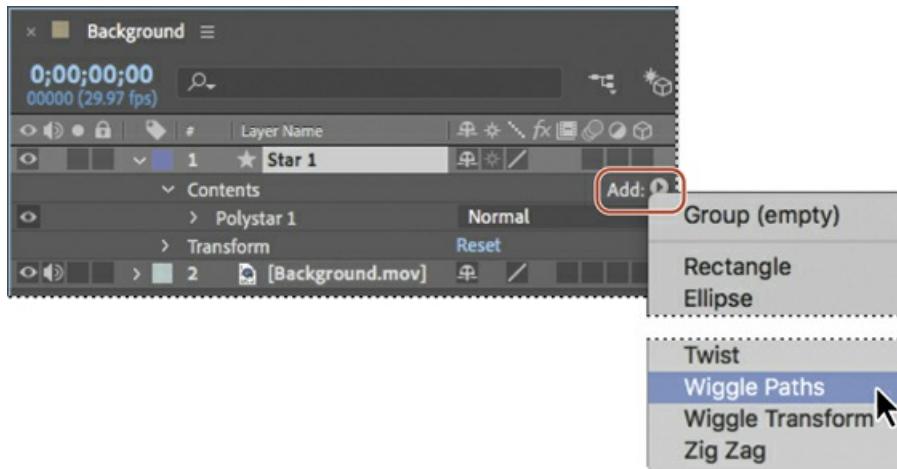


6. Choose File > Save to save your work so far.

### Creating a self-animating shape

Wiggle Paths is a path operation that turns a smooth shape into a series of jagged peaks and valleys. You'll use it to make the star shimmer a little. Because the operation is self-animating, you need to change only a few properties for the entire shape to move on its own.

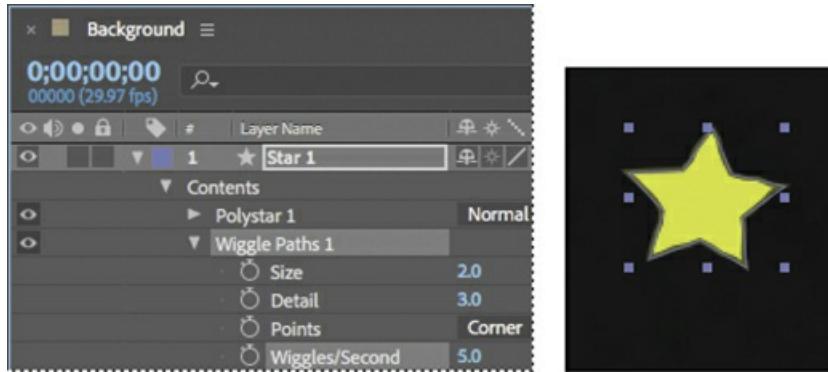
1. Expand the Star 1 layer in the Timeline panel, if it isn't already expanded, and choose Wiggle Paths from the Add pop-up menu.



2. Press the spacebar to play the movie so you can see the effect. Press the spacebar again to stop playback.

The star's edge is too jagged. You'll change the settings for a subtler effect.

3. Expand Wiggle Paths 1. Then change the Size to **2.0** and the Detail to **3.0**.
4. Change Wiggles/Second to **5.0**.
5. Click the Motion Blur switch (⌚) for the layer, and then click the Enable Motion Blur button at the top of the Timeline panel. Then hide the layer properties.

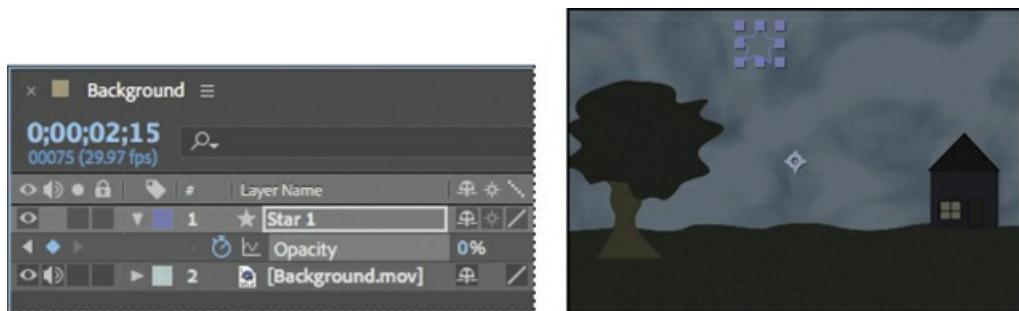


6. Press the spacebar to preview the star's effect. Press the spacebar again to stop playback.



The star shouldn't be visible during the daytime, so you'll animate its Opacity value.

7. Press the Home key or move the current-time indicator to the beginning of the time ruler.
8. Select the Star 1 layer, and press T to reveal its Opacity property.
9. Click the stopwatch (⌚) to create an initial keyframe at 100% opacity.
10. Go to 2:15, and change the Opacity value to **0%**.



11. With the Star 1 layer selected, press T to hide the Opacity property.

## Duplicating a shape

The sky should have more than one star, and they should all shimmer. You'll duplicate the star you created multiple times so that each of the new layers has the same properties as the original. Then you'll adjust each star's position and rotation separately.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Select the Star 1 layer in the Timeline panel.
3. Choose Edit > Duplicate.

After Effects adds a Star 2 layer at the top of the layer stack. It is identical to the Star 1 layer, including its position.

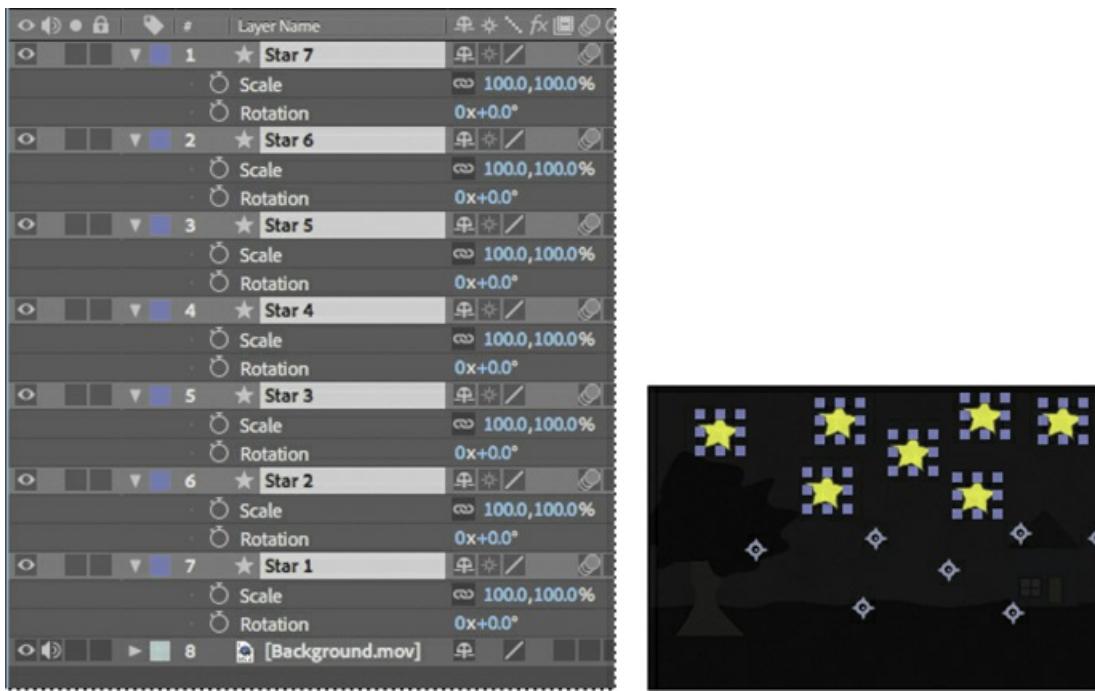
4. Press Ctrl+D (Windows) or Command+D (macOS) five more times to create five additional star layers.



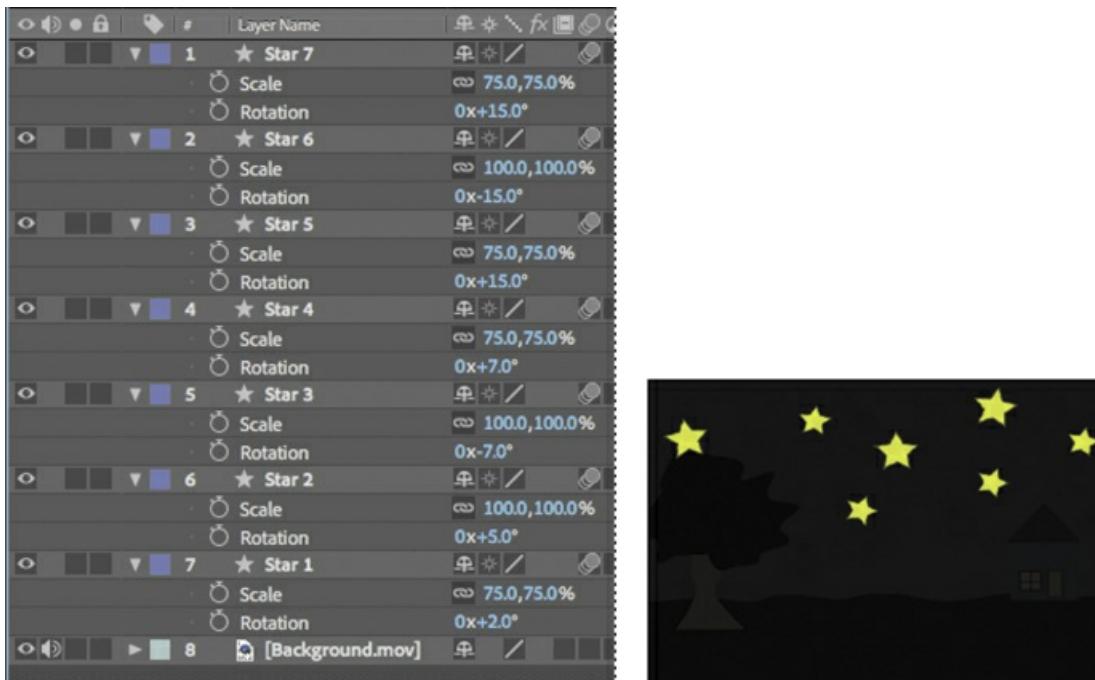
5. Select the Selection tool (▶) in the Tools panel, and press F2 to deselect all layers in the Timeline panel.
6. Using the Selection tool, drag each star to a different position in the sky.



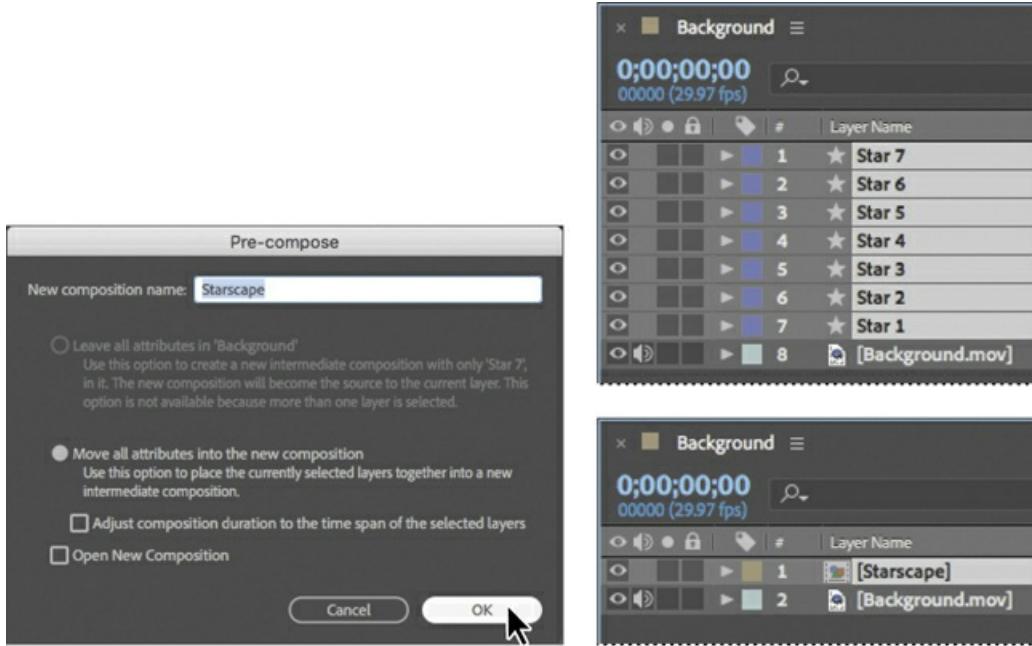
7. Select the Star 1 layer, and then Shift-select the Star 7 layer. With all the star layers selected, press R, and then press Shift+S to reveal the Rotation and Scale properties for each layer.



8. Press F2 or click an empty area in the Timeline panel to deselect all layers. Then adjust the Rotation and Scale properties for each layer to create variation among the stars. You can also use the Selection tool to adjust the stars' positions.



9. Press the spacebar to preview the animation. The stars twinkle and fade as night turns to day. Press the spacebar again to stop the playback.
10. Hide the properties for all layers. Then select the Star 1 layer and Shift-select the Star 7 layer to select all the star layers again.
11. Choose Layer > Pre-compose, name the new composition **Starscape**, and click OK.



After Effects creates a new composition named Starscape that contains the seven star shapes; the new composition replaces the layers in the Background composition. You can continue to edit the star layers by opening the Starscape composition, but precomposing the layers keeps the Timeline panel organized.

- 12.** Choose File > Save to save your work so far.

### Creating custom shapes

You can use the five shape tools to create a wide variety of shapes. However, the real power in using shape layers is that you can draw any shape and manipulate it in a myriad of ways.

### Drawing a shape with the Pen tool

You'll use the Pen tool to draw a shape that resembles the bottom of a flowerpot. You'll also animate its color so that the flowerpot is dark at the beginning of the scene, but gets lighter as the sky lightens.

- 1.** Make sure no layers are selected in the Timeline panel, and then go to 1:10.
- 2.** Select the Pen tool ( ) in the Tools panel.
- 3.** In the Composition panel, click an initial vertex, and add three more to draw a shape that resembles the bottom of a flowerpot, as in the illustration. Click again in the initial vertex to close the shape.



When you create the first vertex, After Effects automatically adds a shape layer—Shape Layer 1—to the Timeline panel.

4. Select Shape Layer 1, press Enter or Return, and change the layer's name to **Base of Flowerpot**. Press Enter or Return to accept the new name.
5. With the Base of Flowerpot layer selected, click the Fill Color box in the Tools panel, and select a dark brown color (we used R=62, G=40, B=22).
6. Click the word *Stroke* in the Tools panel to open the Stroke Options dialog box. Select the None option, and then click OK.
7. Expand the Base of Flowerpot layer, and then expand the Contents, Shape 1, and Fill 1 properties.
8. Click the stopwatch (⌚) next to the Color property to create an initial keyframe.

9. Go to 4:01, click the Fill Color box, and change the fill color to a lighter brown. (We used R=153, G=102, B=59.) Then click OK.

10. Hide all layer properties. Press F2 or click an empty area in the Timeline panel to deselect all layers.

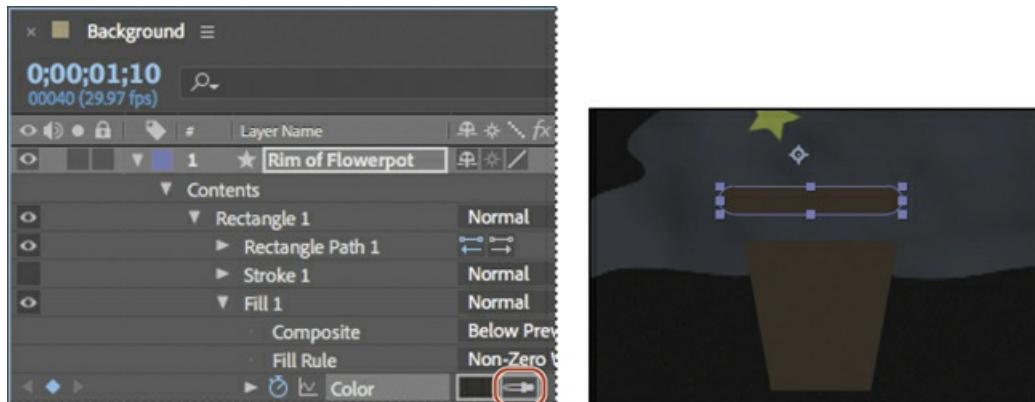
## Positioning layers with snapping

Now you'll create the rim of the flowerpot and position it atop the base using the snapping feature in After Effects.

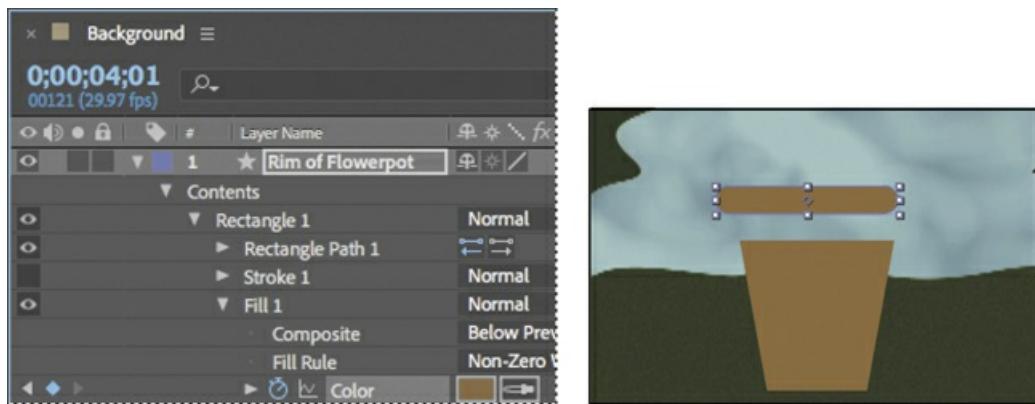
## Creating a shape with rounded corners

You'll use the Rounded Rectangle tool to create the rim of the flowerpot.

1. Go to 1:10.
2. Select the Rounded Rectangle tool (□), hidden beneath the Star tool (★) in the Tools panel.
3. In the Composition panel, drag a shape a little wider than the top of the flowerpot. Draw the shape a little bit above the base of the pot.
4. Select Shape Layer 1, press Enter or Return, and change the layer's name to **Rim of Flowerpot**. Press Enter or Return to accept the new name.
5. With the Rim of Flowerpot layer selected, expand the Contents, Rectangle 1, and Fill 1 properties.
6. Click the eyedropper next to the Color property, and then click the base of the flowerpot in the Composition panel to sample the color.
7. Click the stopwatch (⌚) next to the Color property to create an initial keyframe.



8. Go to 4:01, and use the eyedropper again to change the fill color to match the lighter brown in the flowerpot base.



9. Hide all layer properties. Press F2 or click an empty area in the Timeline panel to deselect

all layers.

## Snapping layers into position

The flowerpot layers currently have no relationship to each other in the composition. You'll use the Snapping option in After Effects to quickly align the layers. When the Snapping option is enabled, the layer feature that is closest to your pointer when you click becomes the snapping feature. As you drag the layer near other layers, features on other layers are highlighted, showing you where the snapping feature would snap if you released the mouse button.

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### Note

You can snap two shape layers together, but not two shapes within a single layer. Also, a layer must be visible to snap to it. 2D layers can snap to 2D layers, and 3D layers can snap to 3D layers.

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1. Select the Selection tool (>) in the Tools panel.
2. Select Snapping in the options section of the Tools panel, if it's not already selected.



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### Tip

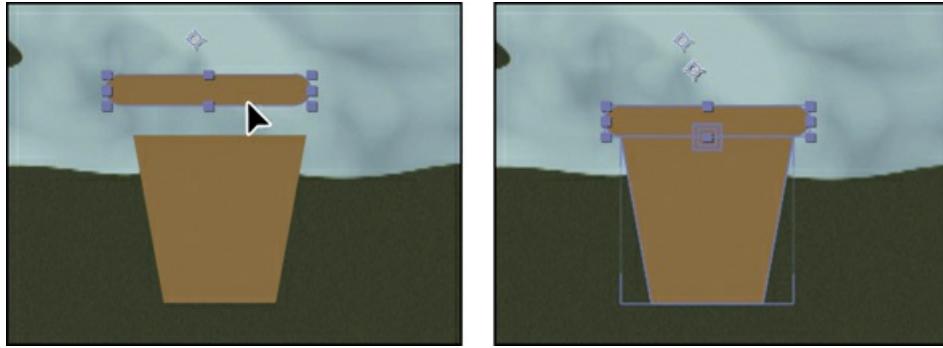
If the Snapping option isn't selected, you can temporarily enable it: Click a layer and start dragging, and then press Ctrl (Windows) or Command (macOS) as you drag the layer.

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3. Select the Rim of Flowerpot layer in the Composition panel.

When you select a layer in the Composition panel, After Effects displays the layer handles and anchor point. You can use any of these points as the snapping feature for a layer.

4. Click near the bottom of the rim, and drag it near the upper edge of the Base of Flowerpot layer until it snaps into place. Be careful not to drag the corner itself, or you'll resize the layer.



As you drag the layer, a box appears around the handle you selected, indicating that it is the snapping feature.

5. Use the Selection tool to adjust the size of the rim or base of the flowerpot if you need to.
6. Press F2 or click an empty area in the Timeline panel to deselect all layers.
7. Choose File > Save to save your work.

## Animating a shape

You can animate the Position, Opacity, and other Transform properties of shape layers just as you animate them in other layers. But shape layers provide additional opportunities for animation, including fills, strokes, paths, and path operations.

You'll create another star, and then use the Pucker & Bloat path operation to transform it into a flower as it falls toward the flowerpot and changes color.

## Animating a path operation

Path operations are similar to effects. They modify a shape's path while preserving the original path. Path operations are live, so you can modify or remove them at any time. You used the Wiggle Paths path operation earlier. Now you'll apply a Pucker & Bloat path operation.

Pucker & Bloat pulls the vertices of a path outward while curving the segments inward (puckering), or pulls the vertices inward while curving the segments outward (bloating). You can animate the degree of pucker or bloat over time.

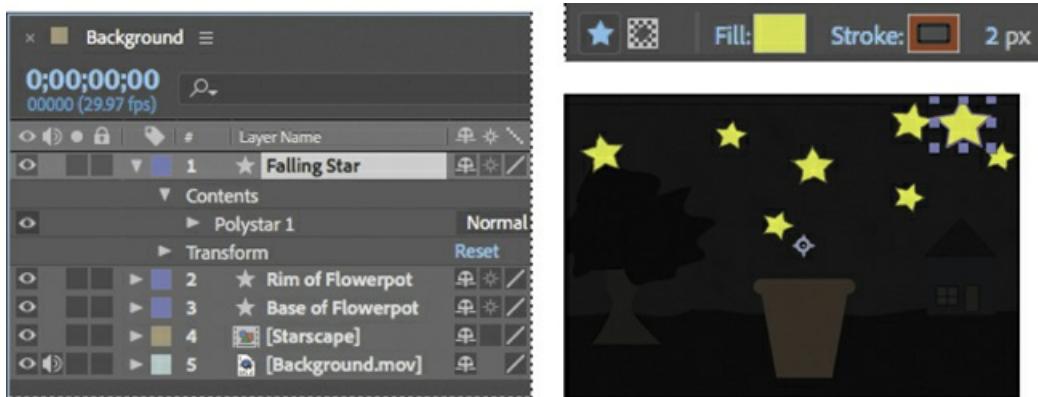
1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Select the Star tool (★), hidden behind the Rounded Rectangle tool (□) in the Tools panel, and draw another star in the upper right area of the sky.

After Effects adds a Shape Layer 1 layer to the Timeline panel.

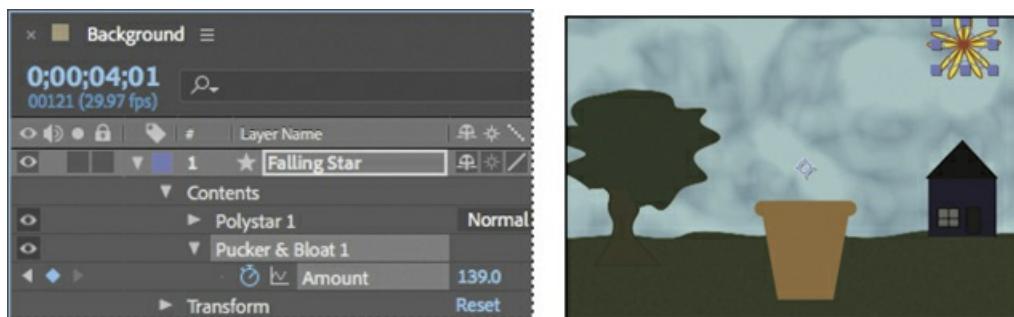
3. Click the Fill Color box, and change the fill color to the same bright yellow you used for the other stars. (We used R=215, G=234, B=23.) Then click OK.
4. Click the Stroke Color box, change the stroke color to a red color (we used R=159, G=38, B=24), and then click OK.

After Effects automatically changes the stroke options from None to Solid Color when you change the stroke color.

- Select the Shape Layer 1 layer, press Enter or Return, change its name to **Falling Star**, and press Enter or Return again.



- In the Timeline panel, choose Pucker & Bloat from the Add pop-up menu in the Falling Star layer.
- Expand the Pucker & Bloat 1 properties in the Timeline panel.
- Change the Amount to **0**, and click the stopwatch icon (⌚) to create an initial keyframe.
- Go to **4:01**, and change the amount to **139**.



The star shape becomes a flower. After Effects creates a keyframe.

## Animating position and scale

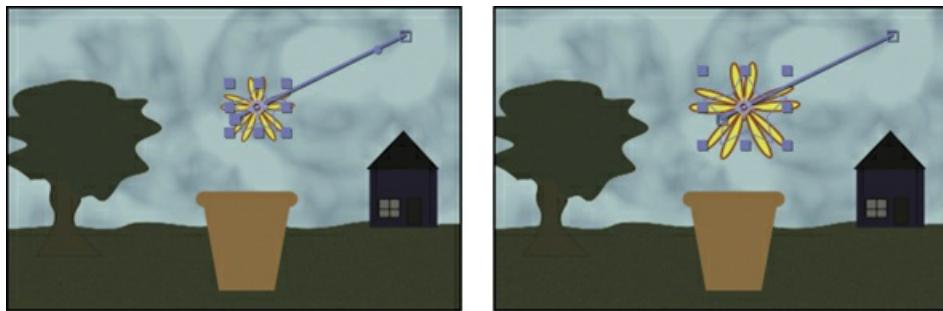
The star becomes a flower, but it should be falling as it changes. You'll animate its position and scale now.

- Press the Home key or move the current-time indicator to the beginning of the time ruler.
- Select the Falling Star layer, and press P to reveal its Position property. Press Shift+S to reveal its Scale property, too.
- Click the stopwatch (⌚) next to each of the properties to create initial keyframes at their current values.
- Select the Selection tool, and go to **4:20**. Then move the star to the center of the screen, hovering above the flowerpot between the tree and the house, so that it's in its final position. (You may need to deselect Snapping in the Tools panel to position the flower where you want it.) At this point, the star has become a flower, but it hasn't changed size.



After Effects creates a Position keyframe.

5. Go to 4:01. Increase the Scale value so that the flower is about the width of the flowerpot. The value you use depends on the original size of the star and on the width of the flowerpot.



6. Press the spacebar to preview the animation. The star falls as it becomes a flower, but its trajectory is straight. You want it to fall in a slight arc. Press the spacebar again to stop playback.
7. Go to 2:20, and adjust the star's position up, so that its path becomes a gentler arc.

8. Press the spacebar to preview the star's path again, and then press the spacebar to stop playback. If you want to change the path, you can add Position keyframes at other points in the time ruler.

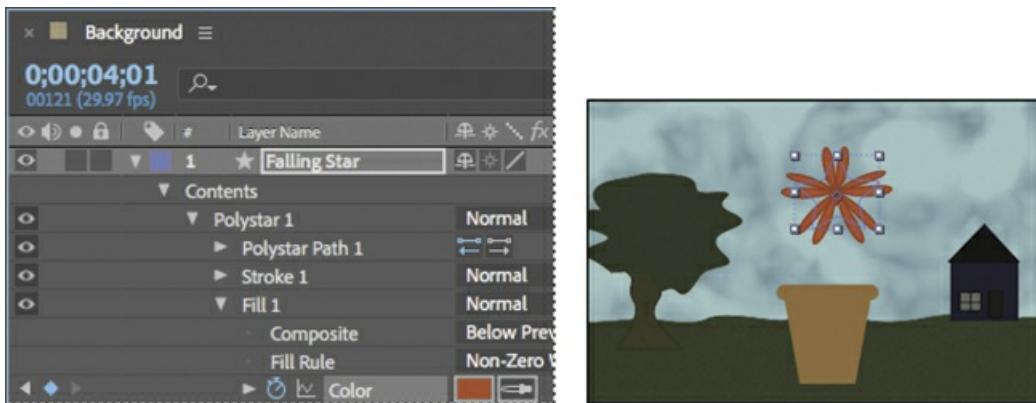


9. Hide the properties for the Falling Star layer.

### Animating fill color

Currently, the star remains yellow with a red stroke as it becomes a flower. You'll animate its fill color so that the final flower is red.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Expand the Falling Star layer, and then expand the Contents, Polystar 1, and Fill 1 properties.
3. Click the stopwatch (⌚) next to the Color property to create an initial keyframe.
4. Go to 4:01, and change the fill color to a red color. (We used R=192, G=49, B=33.)



5. Hide all layer properties. Press F2 or click an empty area in the Timeline panel to deselect all layers.
6. Press the spacebar to preview your animation. Press the spacebar again to stop playback.
7. Choose File > Save.

### Creating nulls from paths

When you parent one layer to another, the child layer adopts the parent layer's attributes. But it's a bit trickier when you want to create a relationship between a single point on a shape and another layer. The Create Nulls From Paths panel makes it easier to do just that. A null object is an invisible layer that has all the same properties as other layers so that it can serve as a parent to any layer. The Create Nulls From Paths panel creates null objects based on specific points, which you can then parent to other layers without having to write complex expressions.

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#### ● Note

The Create Nulls From Paths panel works only with masks or with Bezier shapes (shapes drawn with the Pen tool). To convert a shape drawn with a shape tool to a Bezier path, expand the shape layer contents, right-click the path (e.g., Rectangle 1), and choose Convert To Bezier Path.

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You'll draw a stem and leaves that emerge from the flowerpot to meet the falling star. You can simply parent the layers to each other to move the stem and leaves in unison, but to attach the stem to the flower, you'll need to create a null.

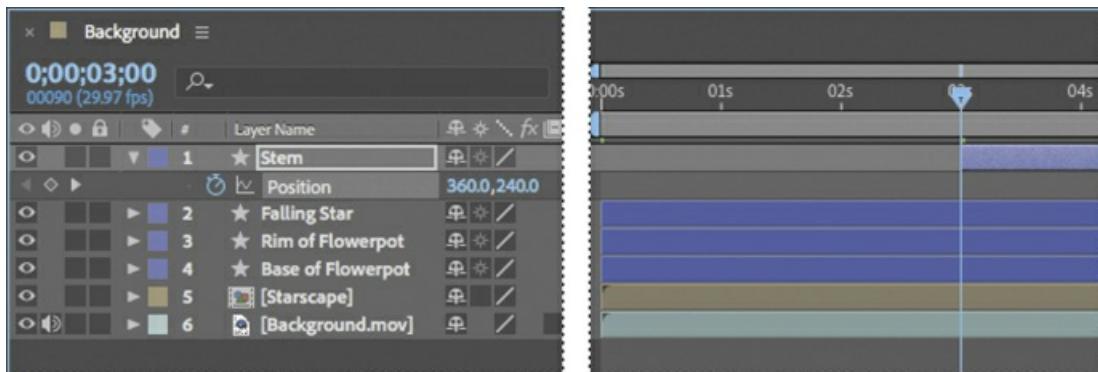
### Drawing curved shapes with the Pen tool

First you'll draw the stem. It will have a slightly thicker stroke than the flower, but no fill, and it will rise to meet the flower. The leaves will have a fill but no stroke.

1. Go to 4:20, when the flower is in its final position.
2. Select the Pen tool in the Tools panel.
3. Click the word *Fill* to open the Fill Options dialog box, and then select the None option, and click OK.
4. Click the Stroke Color box in the Tools panel, change the stroke color to green (we used R=44, G=73, B=62), and then click OK. Change the Stroke Width to **3 px**.
5. Click just below the rim of the flowerpot to create an initial vertex, and then click at the center of the flower. Before releasing the mouse, drag the Bezier handle to create a subtle curve in the stem.



6. Select the Shape Layer 1 layer, press Enter or Return, change its name to **Stem**, and press Enter or Return again.
7. With the Stem layer selected, press P to reveal its Position property. Then click the stopwatch icon (⌚) to create an initial keyframe at its final position.
8. Go to 3:00, and press Alt+[ (Windows) or Option+[ (macOS) to set the In point of the layer to the current time.



9. Select the Selection tool (▶) in the Tools panel, and drag the stem down so that it is completely below the top of the flowerpot. Press Shift as you drag to move it straight down.



### ► Tip

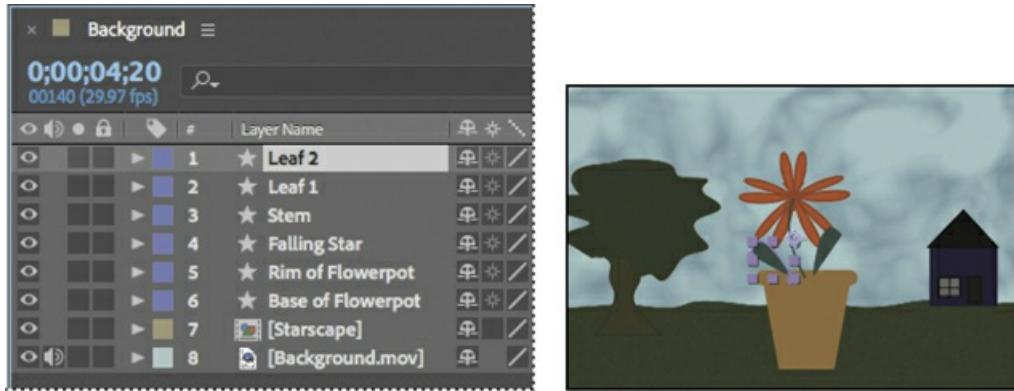
If you haven't already deselected the Snapping option, you may need to deselect it now in order to position the stem where you want it.

The stem will begin to emerge from the pot at 3:00. Now you'll draw the leaves.

10. Go to 4:20, where the flower is in its final position.
11. Press F2 or click an empty area of the Timeline panel to deselect all layers. Then select the Pen tool in the Tools panel, click the Fill Color box, select a color that is similar to the green stroke color (we used R=45, G=74, B=63), and click OK. Click the word *Stroke*, select None in the Stroke Options dialog box, and click OK.
12. Click an initial vertex for the leaf near the base of the stem, and then click one for the other end of the leaf. Before you release the mouse, drag the Bezier handle to create a curved leaf.



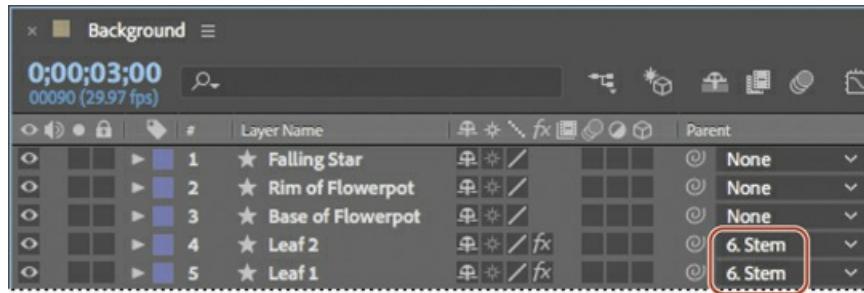
13. Press F2 to deselect the layer, and then repeat step 12 to draw another leaf for the other side of the stem.
14. Select Shape Layer 1, press Return or Enter, rename it **Leaf 1**, and then press Return or Enter. Then rename Shape Layer 2 **Leaf 2**.



## Parenting layers

You'll parent the leaves to the stem so they'll emerge with it.

1. Move the Stem, Leaf 1, and Leaf 2 layers beneath the Base of Flowerpot layer in the Timeline panel so that the stem and leaves will be behind the flowerpot as they rise.
2. Hide all layer properties, and deselect all layers.
3. Drag the pick whip (⌚) from the Leaf 1 layer to the Stem layer, and then drag the pick whip from the Leaf 2 layer to the Stem layer.



The Leaf 1 and Leaf 2 layers will move in relationship to the Stem layer.

The layers aren't needed until the stem begins to emerge at 3:00, so you'll set their In point to match the stem's.

4. Go to 3:00. Select the Leaf 1 layer and Shift-select the Leaf 2 layer. Then press Alt+[ (Windows) or Option+[ (macOS) to set the In point for both of the layers.

## Using nulls to connect points

There are three options in the Create Nulls From Paths panel: Points Follow Nulls creates nulls that *control* the position of the path points; Nulls Follow Points creates nulls that *are controlled* by the positions of the path points; and Trace Path creates a single null with its position linked to the coordinates of the path.

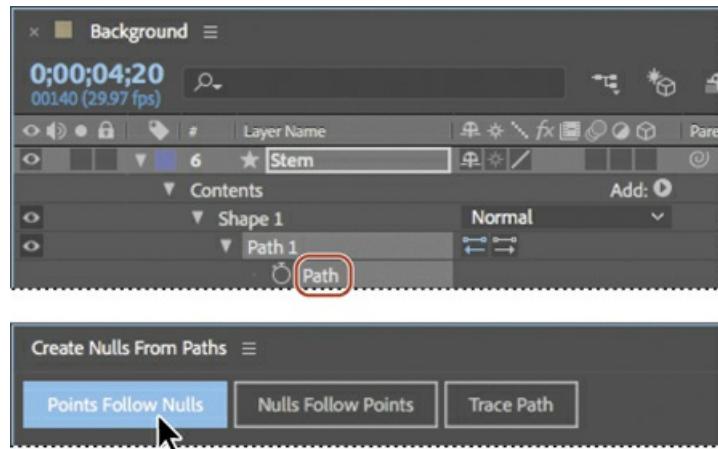
You'll create a null for the point at the top of the stem, and then you'll parent that null to the flower so the two remain connected even as the flower moves.

1. Go to 4:20 so you can see the stem and leaves well.

2. Choose Window > Create Nulls From Paths.jsx.
3. Expand the Stem layer in the Timeline panel, and then expand Contents, Shape 1, Path 1.
4. Select Path.

You must select a path in the Timeline panel in order to create a null using the options in the Create Nulls From Paths panel.

5. Click Points Follow Nulls in the Create Nulls From Paths panel.

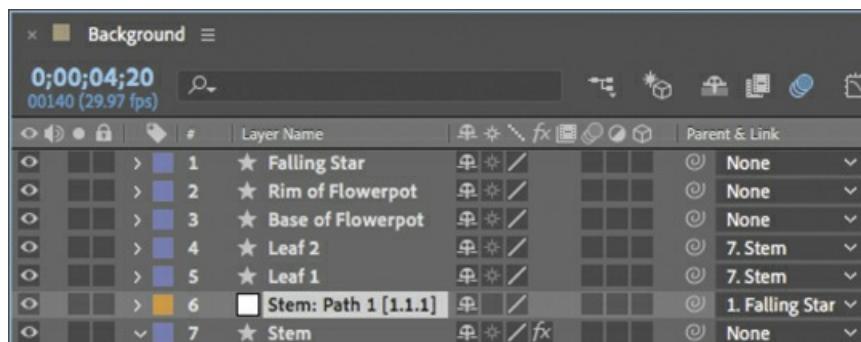


After Effects creates two nulls, corresponding to the two points on the stem path. The null objects appear in gold in the Composition panel, and as layers named Stem: Path 1 [1.1.0] and Stem: Path 1 [1.1.1] in the Timeline panel. You only need the null for the top point.

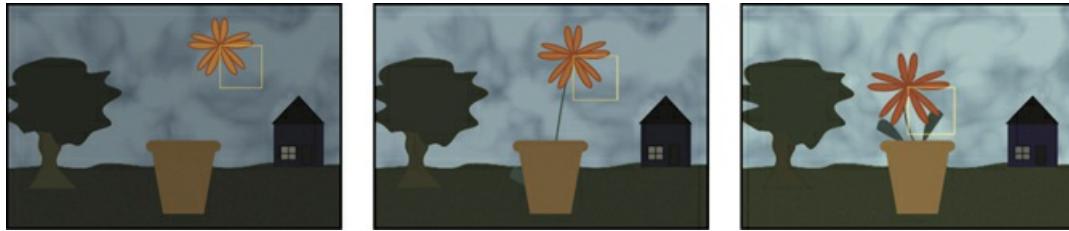
### ● Note

After you create the nulls, you can close the Create Nulls From Paths panel, or you can leave it open.

6. Select the null that corresponds to the bottom point of the stem, and delete it.
7. In the Timeline panel, drag the pick whip (⌚) from the Stem: Path 1 [1.1.1] layer to the Falling Star layer.

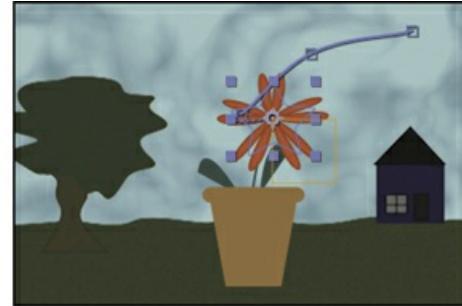
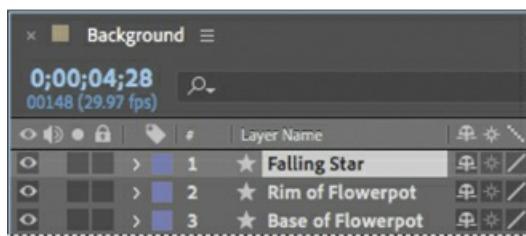


8. Move the current-time indicator across the time ruler to see how the stem connects to the flower.

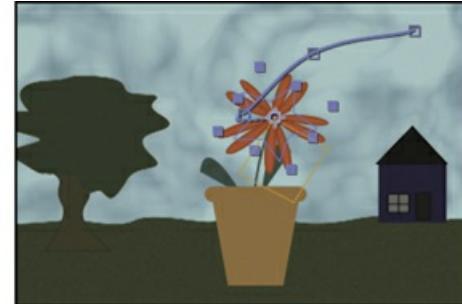
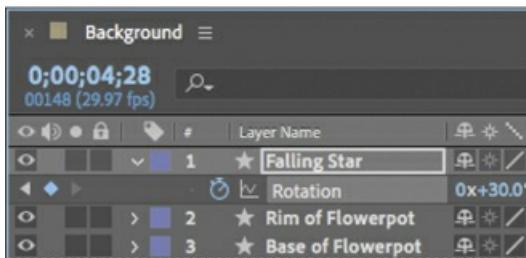


You'll animate the flower subtly, and the stem will move with it.

9. Go to 4:28, and use the Selection tool to move the flower a bit to the right as if it had been moved by the wind.



10. Select the Falling Star layer, and press R to reveal its Rotation property. Then go to 4:20, and click the stopwatch icon to create an initial keyframe at its original rotation. Go to 4:28, and change the rotation to 30°.



11. Choose File > Save to save your work.

## Previewing the composition

You've created several shape layers using shape tools and the Pen tool, animated them, and used null objects to parent them. It's time to see how it all comes together.

1. Hide all layer properties, and then press F2 to deselect all layers.
2. Press the Home key or move the current-time indicator to the beginning of the time ruler.
3. Press the spacebar to preview your animation. Press the spacebar again to stop playback.



4. Make any adjustments you need to make. For example, if the leaves protrude from the flowerpot as they rise with the stem, use the Selection tool to adjust their position or rotation, or animate the leaves' opacity so that they are visible only as they emerge from the pot.

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#### ▶ Tip

To rotate a leaf from its tip, use the Pan Behind tool to move its anchor point to the tip.

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5. Choose File > Save to save the final project.

## Animating layers to match audio

You can time animation to match the beat of an audio file. First you need to create keyframes from the amplitude of the audio (which determines loudness), and then sync the animation to those values.

- To create keyframes from audio amplitude, right-click or Control-click the audio layer in the Timeline panel, and choose Keyframe Assistant > Convert Audio to Keyframes. After Effects adds the Audio Amplitude layer. The new layer is a null object layer, meaning it has no size or shape and won't appear in a final render. After Effects creates keyframes that specify the amplitude of the audio file in each frame of the layer.
- To sync an animated property with the audio amplitude, select the Audio Amplitude layer, and press E to display the effects properties for the layer. Expand the channel you want to use. Then Alt-click (Windows) or Option-click (macOS) the stopwatch for the property whose animation you want to sync with to add an expression; with the expression selected in the time ruler, click the pick whip icon (⌚) on the Expression:

[property name] line, and drag it to the Slider property name in the Audio Amplitude layer. When you release the mouse, the pick whip snaps, and the expression in the shape layer time ruler now means that the property values for the layer will depend on the Slider values of the Audio Amplitude layer.

### Review questions

- 1 What is a shape layer, and how do you create one?
- 2 How can you create multiple copies of a layer, including all of its properties?
- 3 How can you snap one layer to another?
- 4 What does the Pucker & Bloat path operation do?

### Review answers

- 1 A shape layer is simply a layer that contains a vector graphic called a shape. To create a shape layer, draw a shape directly in the Composition panel, using any of the drawing tools or the Pen tool.
- 2 To duplicate a layer, select it, and choose Edit > Duplicate, or press Ctrl+D (Windows) or Command+D (macOS). All of the original layer's properties, keyframes, and other attributes are included in the new layer.
- 3 To snap one layer to another in the Composition panel, select Snapping in the options section of the Tools panel. Then click next to the handle or point you want to use as a snapping feature, and drag the layer close to the point to which you want to align it. After Effects highlights the points to which it will align when you release the mouse button.
- 4 Pucker & Bloat pulls the vertices of a path outward while curving the segments inward (puckering), or pulls the vertices inward while curving the segments outward (bloating). You can animate the degree of pucker or bloat over time.

# 5 Animating a Multimedia Presentation

## Lesson overview

In this lesson, you'll learn how to do the following:

- Create a complex animation with multiple layers.
- Adjust the duration of a layer.
- Animate with Position, Scale, and Rotation keyframes.
- Use parenting to sync the animation of layers.
- Use Bezier curves to smooth a motion path.
- Animate a precomposed layer.
- Apply effects to a solid layer.
- Fade out audio.



This lesson will take about an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: ANIMATED VIDEO

Animation by Lee Daniels, [www.leedanielsart.com](http://www.leedanielsart.com)

Adobe After Effects projects typically use a variety of imported footage, arranged in a composition, that is edited and animated using the Timeline panel. In this lesson, you'll become more familiar with animation fundamentals as you build a multimedia presentation.

### Getting started

In this project, you will animate a hot air balloon floating through the sky. All seems peaceful until a gust of wind blows the balloon's colorful canvas off to cover the clouds.

1. Make sure the following files are in the Lessons/Lesson05 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: Balloon.ai, Fire.mov, Sky.ai, Soundtrack.wav
  - In the Sample\_Movies folder: Lesson05.mov, Lesson05.avi
2. Open and play the Lesson05.avi sample movie in Windows Movies & TV or the Lesson05.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

As you start After Effects, restore the default application settings. See “[Restoring default preferences](#)” on page [3](#).

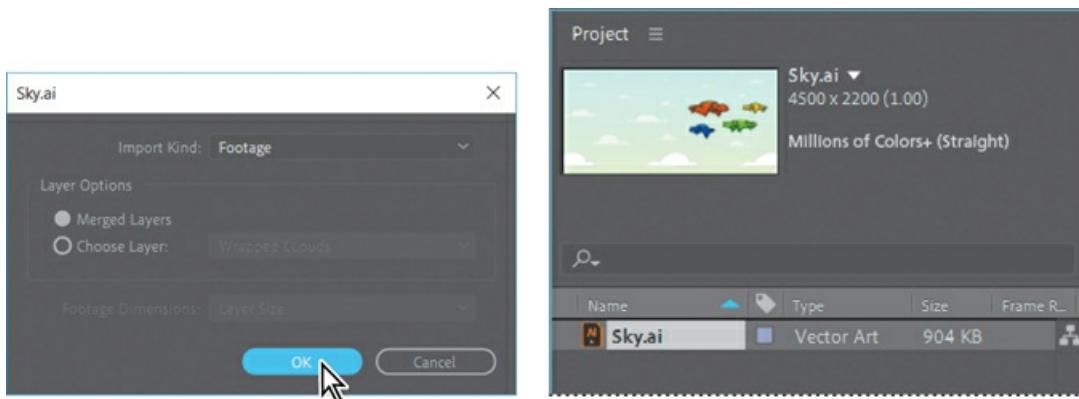
3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences.
4. Click New Project in the Home window.

5. Choose File > Save As > Save As.
6. In the Save As dialog box, navigate to the Lessons/Lesson05/Finished\_Project folder. Name the project **Lesson05\_Finished.aep**, and then click Save.

## Importing the footage

Next, you'll import the footage you need for the project, including the balloon.ai composition.

1. Double-click an empty area of the Project panel to open the Import File dialog box.
2. Navigate to the Lessons/Lesson05/Assets folder on your hard disk, and select the Sky.ai file.
3. Choose Footage from the Import As menu, and then click Import or Open.
4. In the Sky.ai dialog box, make sure Merged Layers is selected, and then click OK.



5. Double-click an empty area of the Project panel, navigate to the Lessons/Lesson05/Assets folder, and select the Balloon.ai file.
6. Choose Composition – Retain Layer Sizes from the Import As menu, and click Import or Open.
7. Press Ctrl+I (Windows) or Command+I (macOS) to open the Import File dialog box again.

## Using Creative Cloud Libraries in After Effects



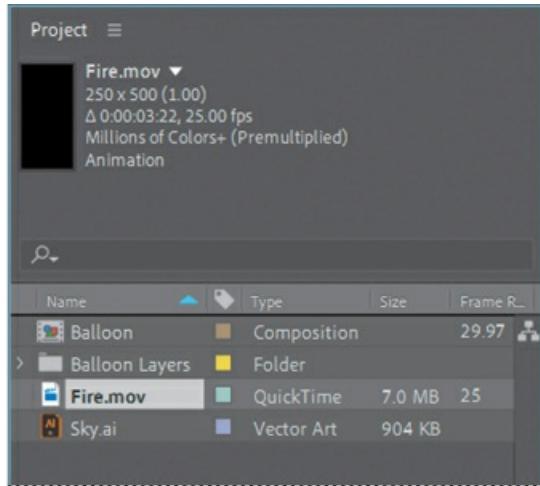
Easily access images, videos, colors, and other assets you've created in After Effects and other Adobe applications. Through Creative Cloud Libraries, you can also use Looks, shapes, and other assets you create with Adobe Capture CC and other mobile apps. Creative Cloud Libraries also make it easy to access After Effects motion graphic templates in Adobe Premiere Pro.

Even Adobe Stock images and videos are available in the Libraries panel: Search and browse assets within the panel, download watermarked versions to see how they work with your projects, and license the ones you want to keep—all without leaving After Effects.

The same search bar you use to search Adobe Stock makes it easier to find specific items in your Creative Cloud Libraries, too.

To learn more about all the ways you can use Creative Cloud Libraries, see After Effects Help.

- 8.** Navigate to the Lessons/Lesson05/ Assets folder, and select the Fire.mov file.
- 9.** Make sure Footage is chosen in the Import As menu, and click Import or Open.



## Creating the composition

You'll create the composition and add the sky.

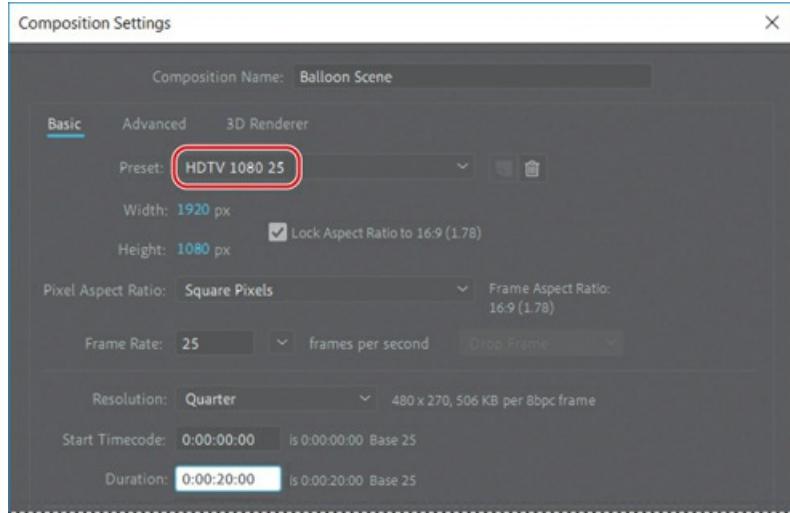
1. Click New Composition in the Composition panel.
2. In the Composition Settings dialog box, do the following:
  - o Name the composition **Balloon Scene**.
  - o Choose HDTV 1080 25 from the Preset menu.
  - o Make sure Square Pixels is chosen from the Pixel Aspect Ratio menu.
  - o Make sure the Width is **1920** px and Height is **1080** px.
  - o Choose Quarter for the Resolution.
  - o Set Duration to **20** seconds (20:00).
  - o Click OK.

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### Note

If you change Pixel Aspect Ratio or Width settings, the Preset name may change to Custom in the Composition Settings panel.

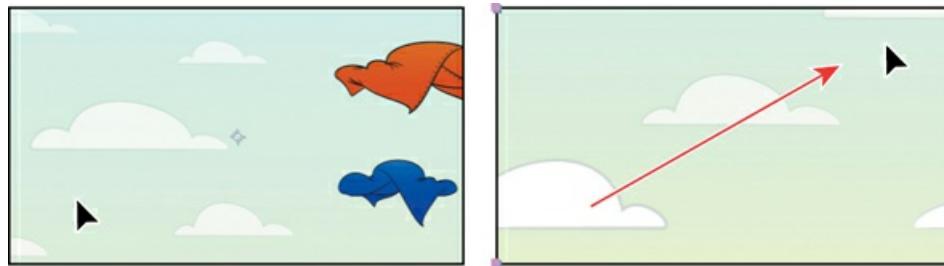
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3. Drag the Sky.ai footage item from the Project panel into the Timeline panel.

The balloon will float across the Sky.ai image. The far right of the image contains the canvas-wrapped clouds that appear at the end of the scene. The wrapped clouds shouldn't be visible earlier in the movie.

4. In the Composition window, drag the Sky layer so that its lower left corner is even with the lower left corner of the composition.

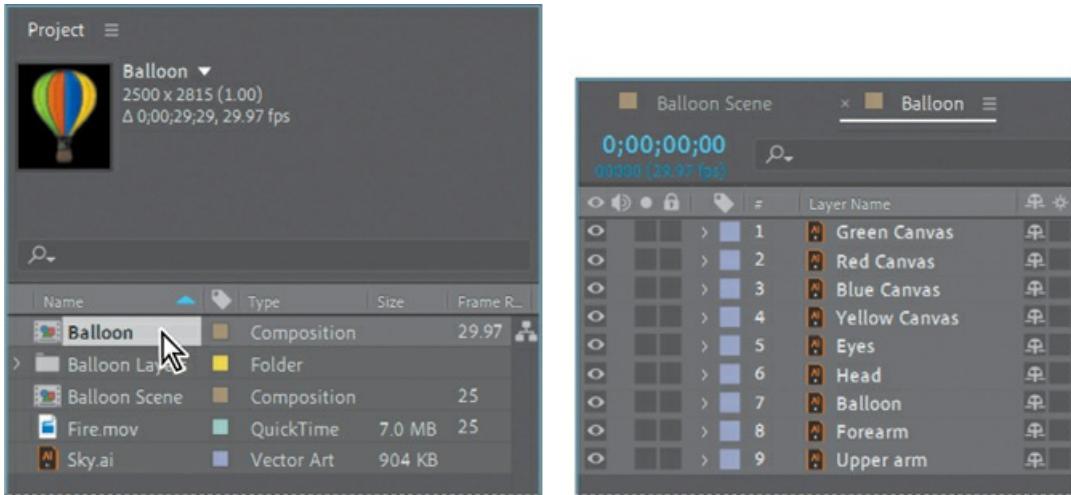


### Adjusting anchor points

The anchor point is the point around which transformations, such as scaling or rotation, are performed. By default, a layer's anchor point is at the center of the layer.

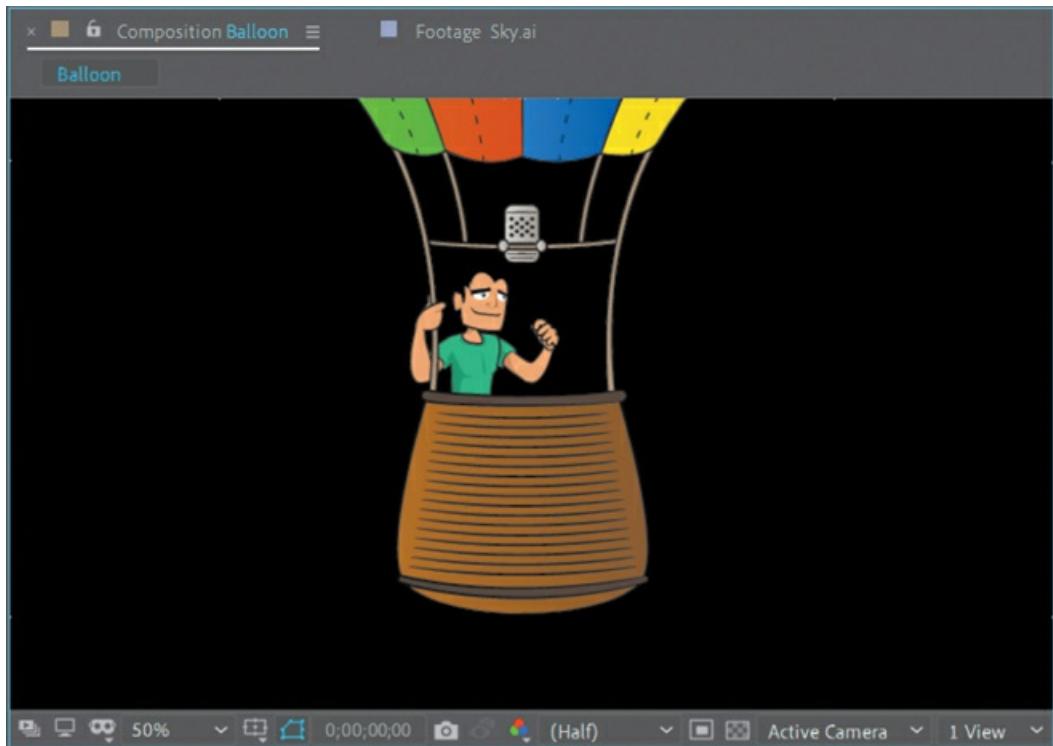
You'll change the anchor points for the character's arm and head so that you can better control the character's movements as he tugs on the cord to ignite the fire and as he looks up and down.

1. Double-click the Balloon composition in the Project panel to open it in the Composition panel and the Timeline panel.



The Balloon composition includes layers for the canvas colors, the balloon itself, and the character's eyes, head, forearm, and upper arm.

2. Choose 50% from the Magnification Ratio pop-up menu at the bottom of the Composition panel so you can see the balloon's detail more clearly.
3. Select the Hand tool ( ) in the Tools panel, and then pan so that the character is centered in the Composition panel.



4. Select the Selection tool ( ) in the Tools panel.
5. Select the Upper arm layer in the Timeline panel.
6. Select the Pan Behind tool ( ) in the Tools panel (or press Y to activate it).



With the Pan Behind tool, you can move the anchor point without moving the entire layer in the Composition window.

7. Move the anchor point to the character's shoulder.
8. Select the Forearm layer in the Timeline panel, and then move its anchor point to the elbow.
9. Select the Head layer in the Timeline panel, and move its anchor point to the character's neck.

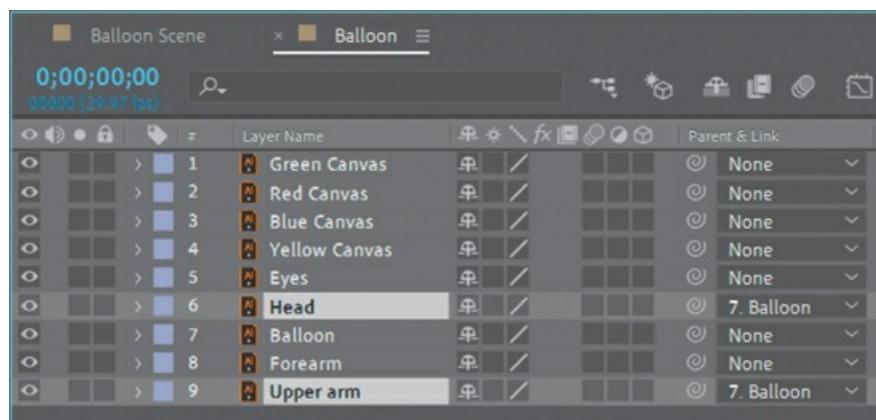


10. Select the Selection tool in the Tools panel.
11. Choose File > Save to save your work so far.

## Parenting layers

This composition includes several layers that need to move together. For example, as the balloon floats, the character's arm and head should move along with it. As you've seen in previous lessons, a parenting relationship synchronizes changes in the parent layer with corresponding changes in the child layer. You'll establish parenting relationships among the layers in this composition, and you'll add the fire video as well.

1. Deselect all layers in the Timeline panel, and then press Ctrl (Windows) or Command (macOS) as you select the Head and Upper arm layers.
2. In the Parent column for either of the selected layers, choose 7. Balloon from the pop-up menu.



This establishes both the Head and Upper arm layers as child layers of the Balloon layer. When the Balloon layer moves, the other two layers will move with it.

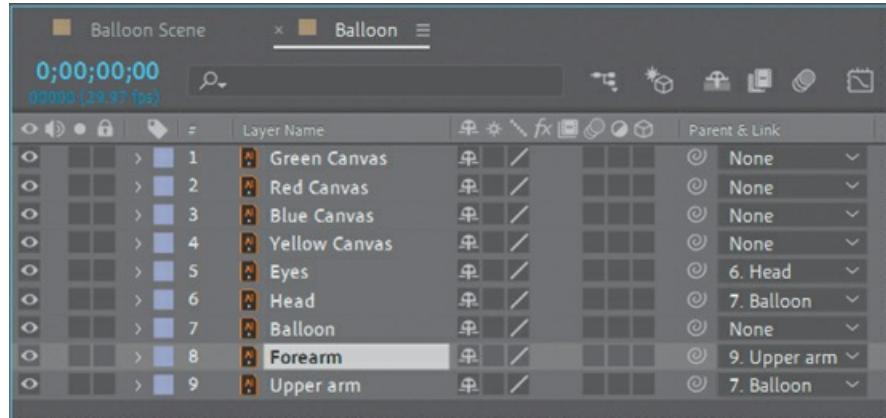
The eyes not only need to move with the balloon, they need to move with the head, so you'll

create that parenting relationship next.

3. In the Parent column for the Eyes layer, choose 6. Head from the pop-up menu.

The forearm should move with the upper arm as well.

4. In the Parent column for the Forearm layer, choose 9. Upper arm from the pop-up menu.

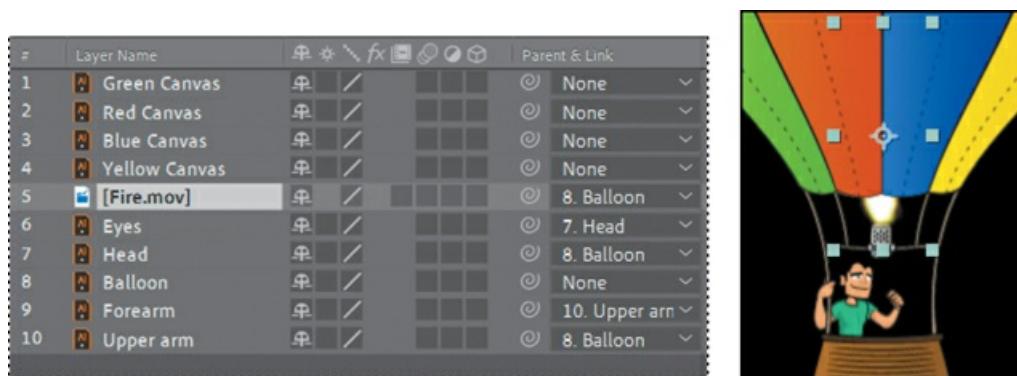


Now you need to ensure that the fire video travels with the balloon.

5. Drag the Fire.mov file from the Project panel to the Timeline panel, positioning it directly below the canvas layers so that the fire will appear to go inside the balloon, rather than outside it. (The Fire layer should be between the Yellow Canvas layer and the Eyes layer.)

The fire video is positioned in the center of the composition, so you'll need to zoom out a bit to see it.

6. Choose 25% from the Magnification Ratio pop-up menu so that you can see the outline of the selected video.
7. In the Composition window, drag the fire video over the burner. To see the flame in action so you can position it correctly, drag the current-time marker across the first second of the time ruler.
8. When you're satisfied with the Fire layer's position, choose 8. Balloon from the pop-up menu in the Fire layer's Parent column.

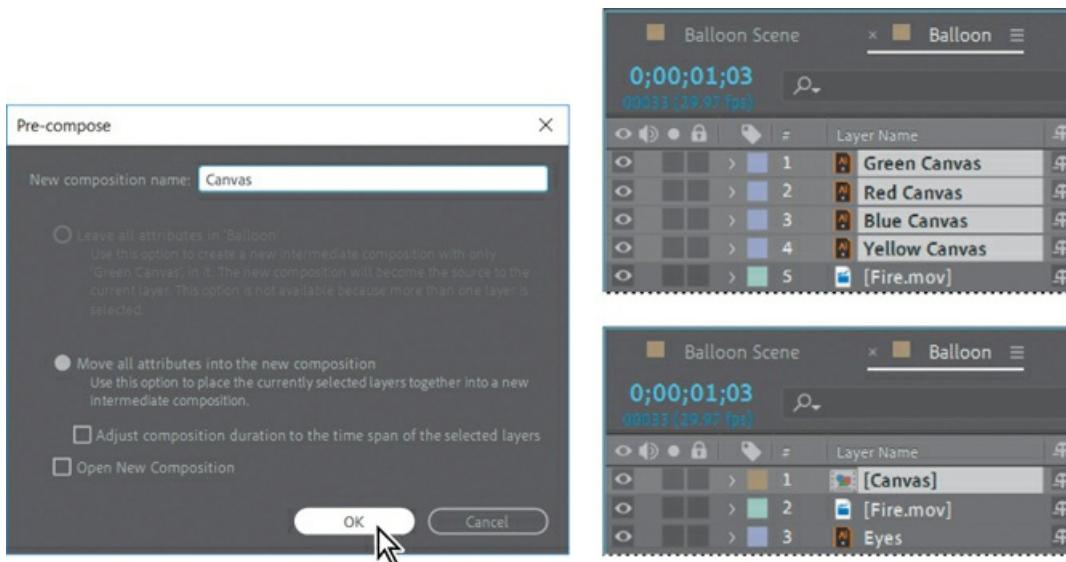


9. Choose File > Save to save your work so far.

## Precomposing layers

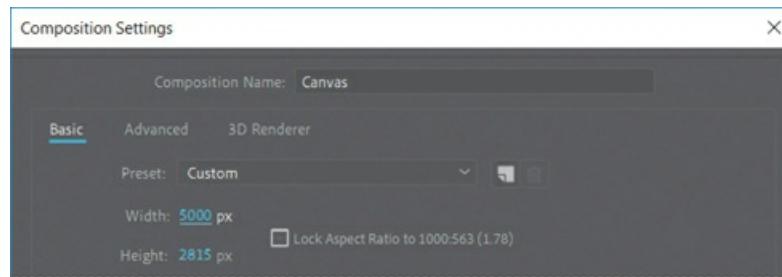
As you've seen in previous lessons, sometimes it's easier to work with a set of layers. Precomposing layers moves them to a new composition, nested inside the original composition. You'll precompose the canvas layers so that you can work with them separately when you animate them sailing off the balloon.

1. In the Balloon Timeline panel, Shift-click the Green Canvas and Yellow Canvas layers to select all four canvas layers.
2. Choose Layer > Pre-compose.
3. In the Pre-compose dialog box, name the composition **Canvas**, select Move All Attributes Into The New Composition, and click OK.

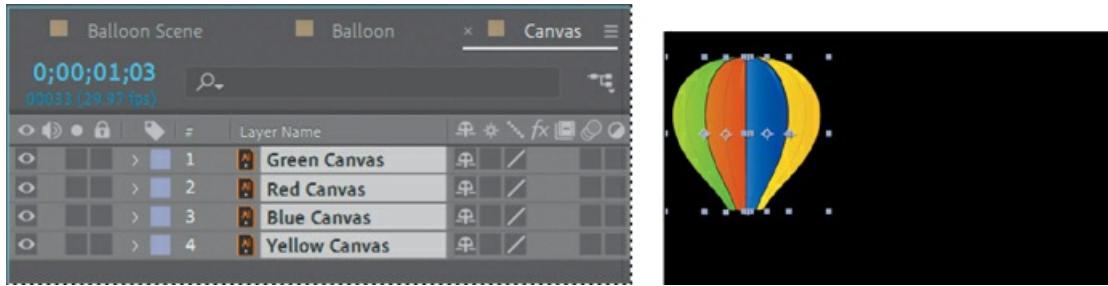


The four layers you selected in the Timeline panel are replaced by a single Canvas composition layer.

4. Double-click the Canvas layer in the Timeline panel to edit the composition.
5. Choose Composition > Composition Settings.
6. In the Composition Settings dialog box, deselect Lock Aspect Ratio, change the Width value to **5000 px**, and click OK.



7. Shift-select all four layers in the Timeline panel, and then drag them to the far left side of the Composition panel. You may need to change the magnification.

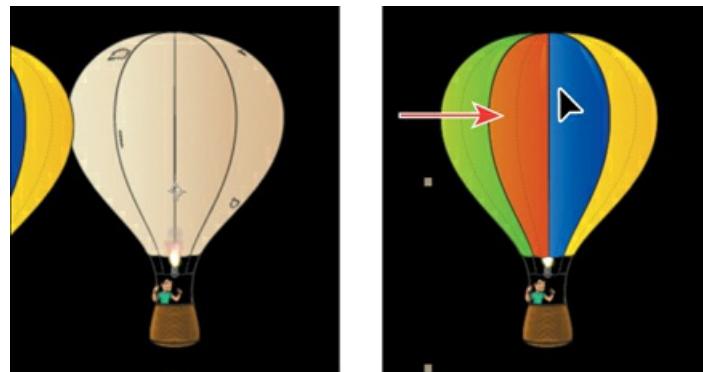


Increasing the width of the composition and then moving the canvas to the far left side will give you room to animate the canvas layers later.

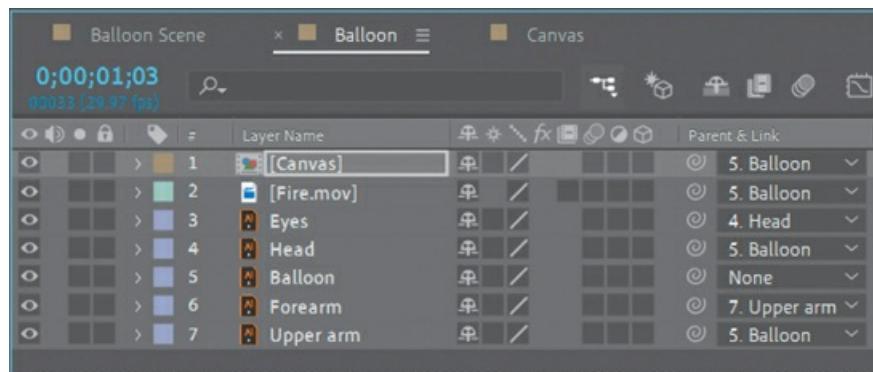
#### 8. Switch to the Balloon Timeline panel.

You moved the canvas to the far left side of the Canvas composition, revealing the uncovered balloon in the Balloon composition. At the beginning of the animation, though, the canvas should be *on* the balloon. You'll reposition the Canvas layer.

9. Choose Fit from the Magnification Ratio pop-up menu in the Composition panel so you can see the full balloon.
10. Select the Canvas layer in the Timeline panel, and then drag the layer so that it covers the bare balloon in the Composition panel.



11. In the Parent column of the Canvas layer, choose 5. Balloon from the pop-up menu so that the canvas will follow the balloon.



### Keyframing a motion path

Now that all the initial pieces are set up, you're ready to animate the balloon and the character

using position and rotation keyframes.

## Copying layers into a composition

You've worked with the balloon, character, and fire layers in the Balloon composition. Now, you'll copy those layers into the Balloon Scene composition.

1. In the Balloon Timeline panel, Shift-click the Canvas and Upper arm layers to select all the layers in the composition.

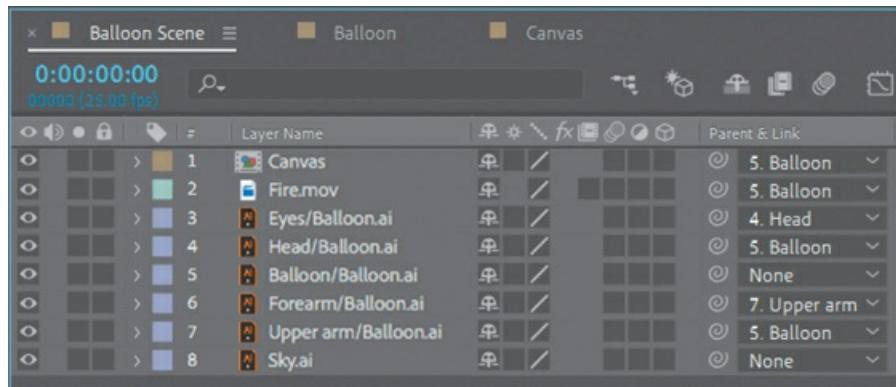
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### Note

Make sure to select the Canvas layer first and then Shift-click the Upper arm layer to copy layers in their original order.

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2. Press Ctrl+C (Windows) or Command+C (macOS) to copy all the layers.
3. Switch to the Balloon Scene Timeline panel.
4. Press Ctrl+V (Windows) or Command+V (macOS) to paste the layers.
5. Click an empty area in the Timeline panel to deselect all layers.



The layers appear in the same order they were when you copied them, and they retain all the properties they had in the Balloon composition, including parenting relationships.

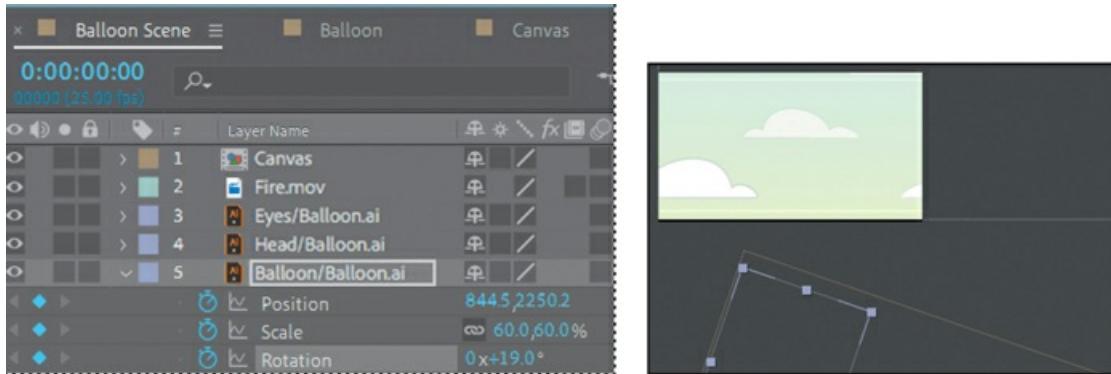
## Placing initial keyframes

The balloon will enter the scene from the bottom, drift through the sky, and eventually depart from the upper right corner of the frame. You'll keyframe the balloon's starting and ending points first.

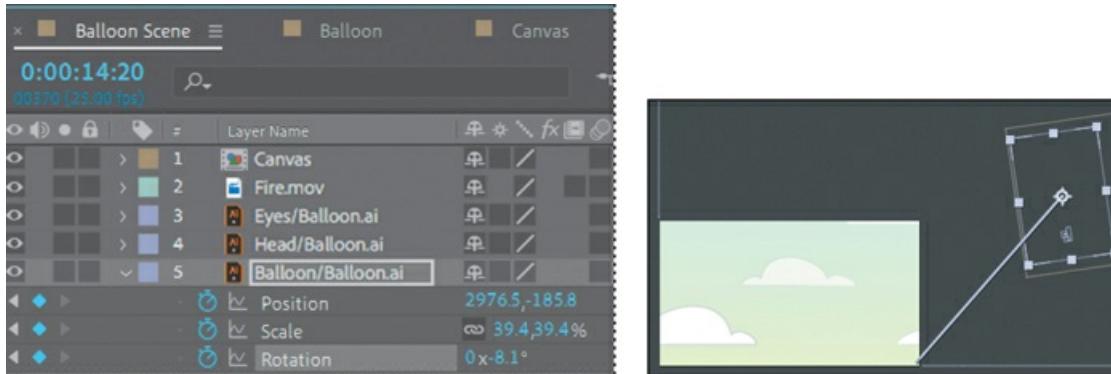
1. Select the Balloon/Balloon.ai layer, and press S to reveal its Scale property.
2. Press Shift+P to display its Position property, and then press Shift+R to display the Rotation property.
3. Change the Scale property to **60%**.

The balloon and all of its child layers scale to 60%.

4. Choose 12.5% from the Magnification Ratio pop-up menu in the Composition panel so that you can see the pasteboard around the composition.
5. In the Composition panel, drag the balloon and its child layers offscreen, below the scene. (We used Position values 844.5, 2250.2.)
6. Drag the Rotation value to rotate the balloon so it tilts to the right. (We used 19 degrees.)
7. Click the stopwatch icons (⌚) for the Position, Scale, and Rotation properties to create initial keyframes.



8. Go to 14:20.
9. Scale the balloon to about one-third its original size. We used 39.4%.
10. Drag the balloon off the upper right corner of the frame, tilted slightly to the left. We used the following values: Position 2976.5, -185.8; Rotation -8.1 degrees.

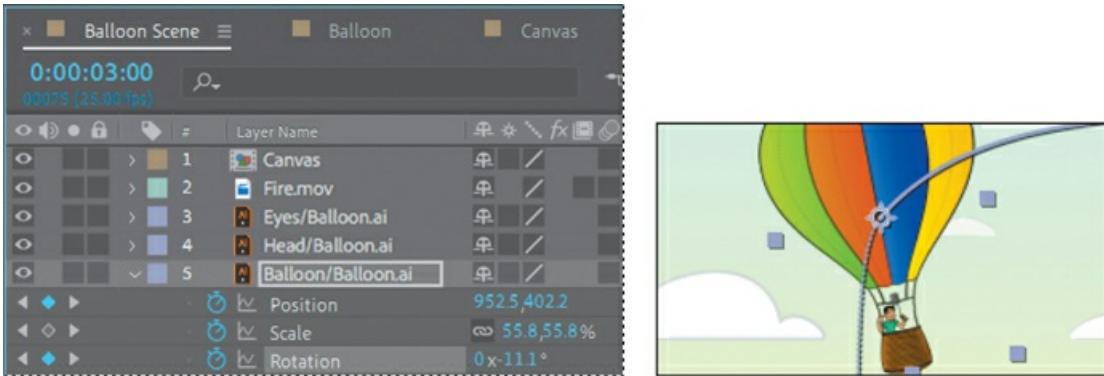


11. Move the current-time indicator across the timeline to see the animation so far.

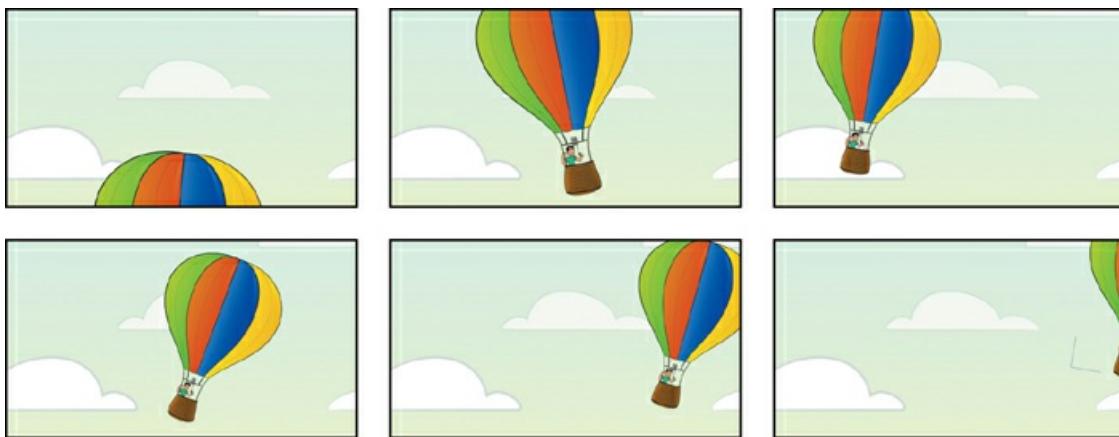
## Customizing a motion path

The balloon moves through the scene, but its path isn't very interesting, and it isn't onscreen long. You'll customize the path between its start point and end point. You can use the values we used or create your own path, as long as the balloon stays fully visible on the screen until a little after 11 seconds, and then slowly makes its way offscreen.

1. Go to 3:00.
2. Drag the balloon straight up so that the character and the basket are fully visible, and then rotate it slightly to the left. (We used Position 952.5, 402.2; Rotation -11.1 degrees.)



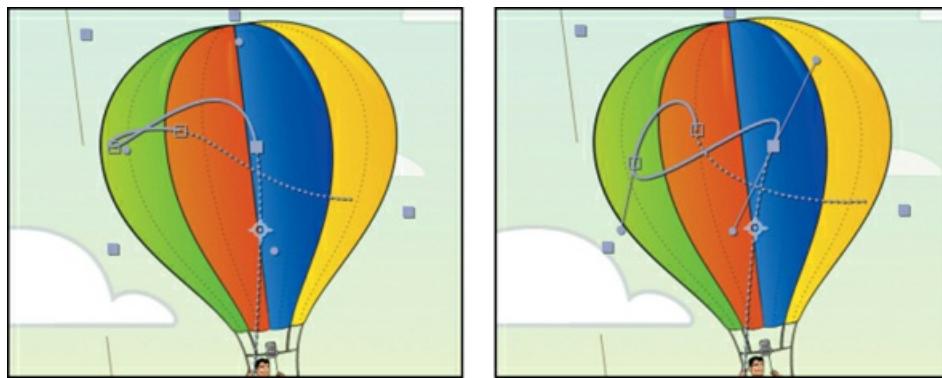
3. Go to 6:16.
4. Shift the balloon's rotation the other direction. (We used 9.9 degrees.)
5. Move the balloon to the left side of the scene. (We used Position 531.7, 404.)
6. Go to 7:20.
7. Change the scale to 39.4%.
8. Set additional Rotation keyframes to create swirling motions. If you're using our values, do the following:
  - At 8:23, change the Rotation value to **-6.1**.
  - At 9:16, change the Rotation value to **22.1**.
  - At 10:16, change the Rotation value to **-18.3**.
  - At 11:24, change the Rotation value to **11.9**.
  - At 14:19, change the Rotation value to **-8.1**.
9. Set additional Position keyframes to move the balloon. If you're using our values, do the following:
  - At 9:04, change the Position to **726.5, 356.2**.
  - At 10:12, change the Position to **1396.7, 537.1**.
10. Press the spacebar to preview the balloon's current path, and then press the spacebar again to stop the preview. Save your work so far.



## Using Bezier handles to smooth a motion path

The basic path is in place, but you can smooth it out a bit. Each keyframe includes Bezier handles that you can adjust to change the angle of the curve. You'll learn more about Bezier curves in [Lesson 7](#).

1. Choose 50% from the Magnification Ratio pop-up menu in the Composition panel.
2. Make sure the Balloon/Balloon.ai layer is selected in the Timeline panel. Then move the current-time indicator to a position where you can clearly see the motion path in the Composition panel. (Between 4 and 6 seconds is probably good.)
3. Click a keyframe point in the Composition panel to reveal its Bezier handles, if they aren't already shown.
4. Drag a Bezier handle to change the curve for that keyframe.
5. Continue to drag Bezier handles for the keyframe points until you achieve the path you want. Our final path is shown below in the image on the right.

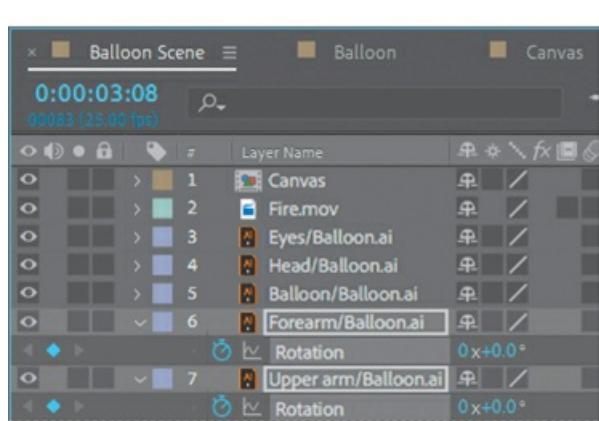


6. Preview the balloon on the path by moving the current-time indicator across the time ruler. Make any adjustments you want. You can also make adjustments later, after you've animated the canvas and sky.
7. Hide the properties for the Balloon layer, and save your work so far.

## Animating additional elements

The balloon swoops and swirls through the sky, and its child layers go with it. But the character is currently static in his balloon. You'll animate his arm tugging on the cord to ignite the burner.

1. Go to 3:08.
2. Choose 100% from the Magnification Ratio pop-up menu in the Composition window so that you can see the character clearly. Use the Hand tool to adjust the image in the Composition window if you need to.
3. Shift-select the Forearm/Balloon.ai layer and the Upper arm/Balloon.ai layer.
4. Press R to reveal the Rotation property for both layers.
5. Click the stopwatch icon next to one of the Rotation properties to create an initial keyframe for each.



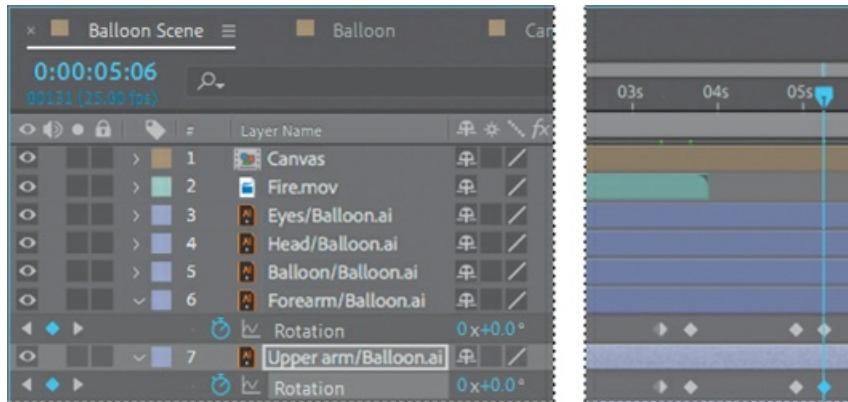
6. Go to 3:17, the point at which the character will tug the cord to ignite the burner.
7. Deselect the layers.
8. Change the Rotation property for the Forearm layer to **-35** and the Rotation property for the Upper arm layer to **46**.

The character tugs the cord down. You may need to deselect the layers so you can see the action clearly in the Composition window.

9. Go to 4:23.
10. Change the Rotation property for the Forearm layer to **-32.8**.



11. Click the Add Or Remove Keyframe At Current Time button (◆) to the left of the Rotation property for the Upper arm layer.
12. Go to 5:06.
13. Change the Rotation value for both layers to **0**.

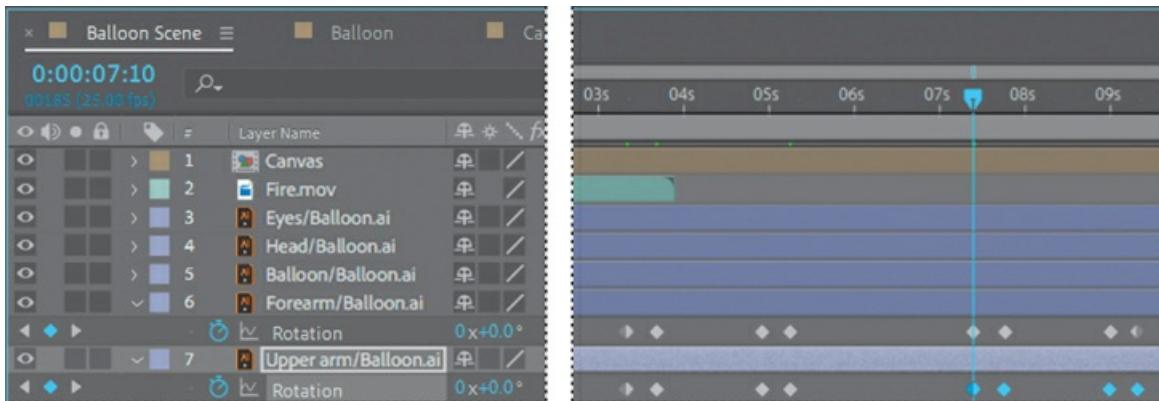


14. Deselect both layers, and then manually preview from 3:00 to 5:07 to see the character tug the cord. You may need to zoom out to see the animation.

## Duplicating keyframes to repeat an animation

Now that you've created the initial movements, you can easily repeat them at different times in the timeline. You'll duplicate the tugging arm, and then create corresponding head and eye movements.

1. Select the Rotation property for the Forearm layer to select all its keyframes.
2. Press Ctrl+C (Windows) or Command+C (macOS) to copy the keyframes.
3. Go to 7:10, the point at which the character tugs the cord again.
4. Press Ctrl+V (Windows) or Command+V (macOS) to paste the keyframes.
5. Repeat steps 1–4 to copy the Upper arm Rotation property keyframes.



6. Hide the properties for all layers.
7. Select the Head layer, and press R to reveal its Rotation property.
8. Go to 3:08, and click the stopwatch icon to create an initial keyframe.
9. Go to 3:17, and change the Rotation property to **-10.3**.
10. Go to 4:23, and click the Add Or Remove Keyframe At Current Time icon to add a keyframe at the current value.
11. Go to 5:06, and change the Rotation property to **0**.
12. Select the Rotation property to select all of its keyframes, and press Ctrl+C (Windows) or

Command+C (macOS) to copy them.

13. Go to 7:10, and press Ctrl+V (Windows) or Command+V (macOS) to paste them.

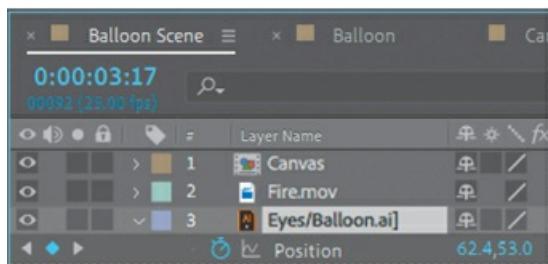
14. Press R to hide the Rotation property for the Head layer.

Now the character tilts his head up each time he tugs the cord. You'll also animate the position of his eyes to create a subtle change each time he tilts his head.

15. Select the Eyes layer, and press P to reveal the Position property.

16. Go to 3:08, and click the stopwatch icon to create an initial keyframe at the current value (62, 55).

17. Go to 3:17, and change the Position value to **62.4, 53**.



18. Go to 4:23, and create a keyframe at the current value.

19. Go to 5:06, and change the Position value to **62, 55**.

20. Select the Position property to select all its keyframes, and then copy them.

21. Go to 7:10, and paste the keyframes.

22. Hide all layer properties, and then deselect all layers.

23. Choose Fit from the Magnification Ratio pop-up menu in the Composition window so that you can see the entire scene. Then preview the animation.



24. Save your work.

## Positioning and duplicating a video

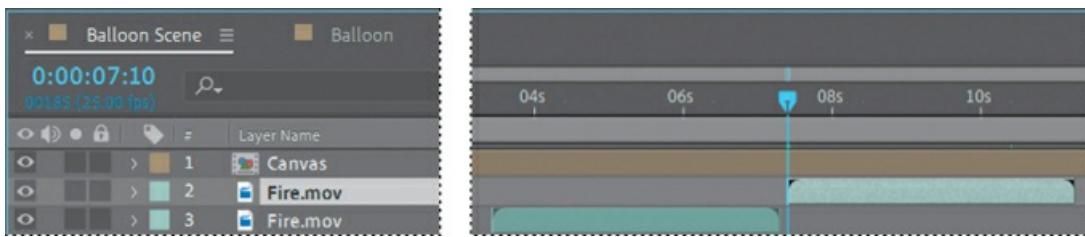
When the character tugs the cord, flame should emerge from the burner. You'll use the four-second Fire.mov video to represent the flame each time the cord is tugged.

1. Go to 3:10.

2. Drag the Fire.mov video in the Timeline panel so that it starts at 3:10.

3. Select the Fire.mov layer, and choose Edit > Duplicate.

4. Go to 7:10.
5. Press the left bracket key ([) on your keyboard to move the In point of the duplicate Fire.mov layer to 7:10.



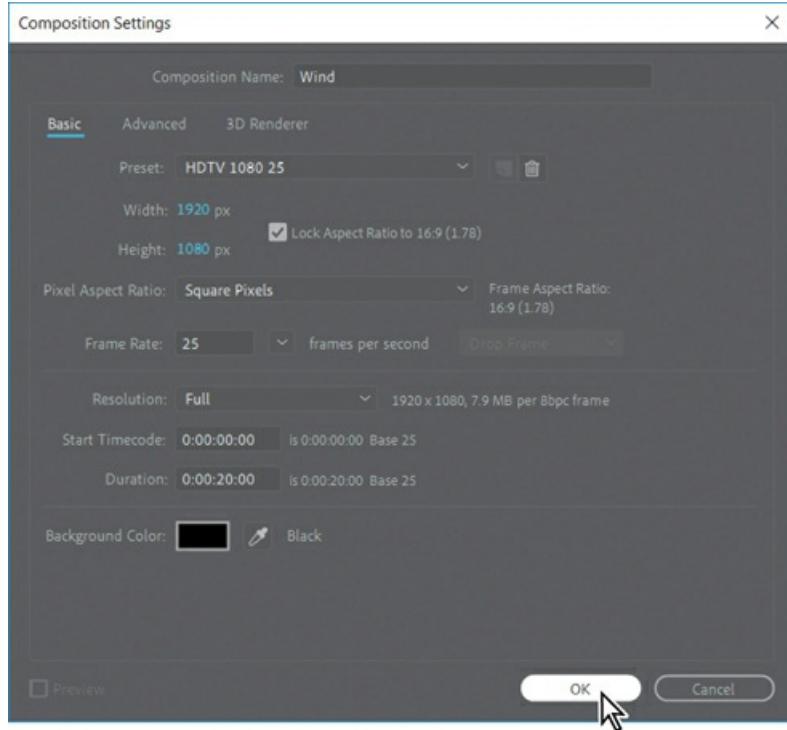
## Applying an effect

Now that the balloon and character are taken care of, you'll create the gust of wind that blows the canvas off the balloon. The Fractal Noise and Directional Blur effects will work well.

## Adding a solid-color layer

You need to apply the effects on their own layer, which will be a solid-color layer. You'll create a new composition for the layer.

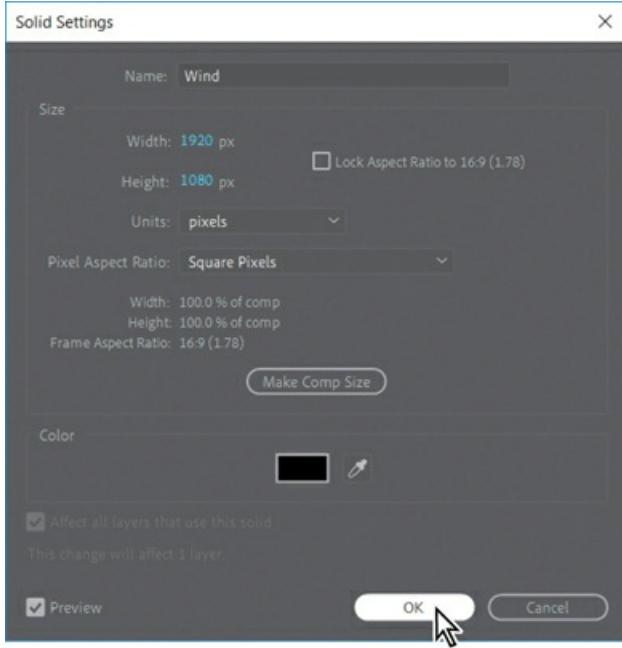
1. Press Ctrl+N (Windows) or Command+N (macOS) to create a new composition.
2. In the Composition Settings dialog box, do the following:
  - Name the composition **Wind**.
  - Change the width to **1920** px.
  - Change the height to **1080** px.
  - Change the duration to **20** seconds.
  - Change the Frame Rate to **25** fps to match the Balloon Scene composition.
  - Click OK.



## About solid-color layers

Use solid layers to color a background or to create simple graphic images. You can create solid images of any color or size (up to 30,000 x 30,000 pixels) in After Effects. After Effects treats solids as it does any other footage item: You can modify the mask, transform properties, and apply effects to a solid layer. If you change settings for a solid that is used by more than one layer, you can apply the changes to all layers that use the solid or to only the single occurrence of the solid.

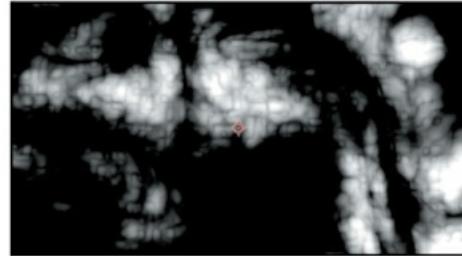
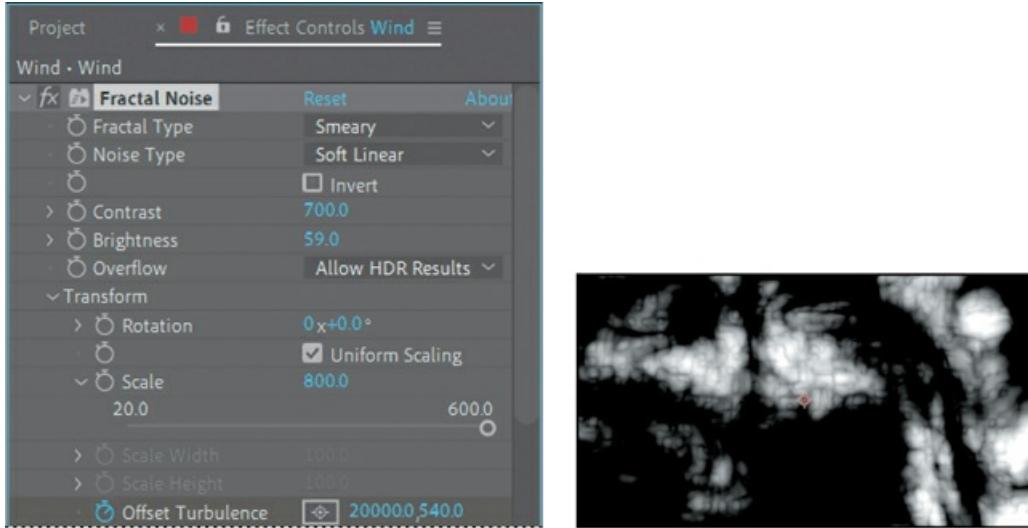
3. Right-click or Control-click in the Timeline panel, and choose New > Solid.
4. In the Solid Settings dialog box, do the following:
  - Name the layer **Wind**.
  - Select black for the color.
  - Click the Make Comp Size button.
  - Click OK.



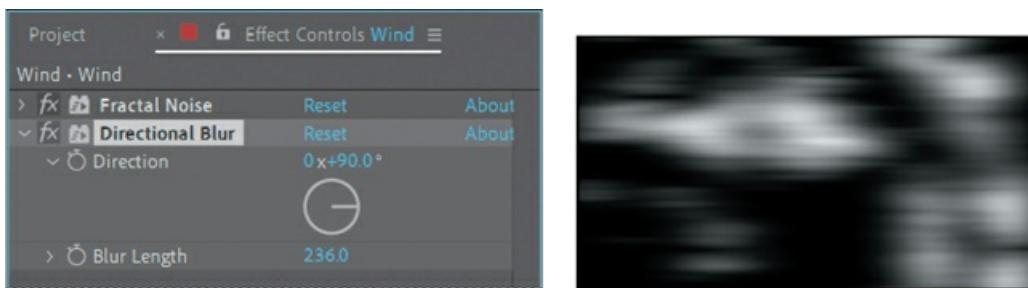
## Applying the effects

You're ready to apply the effects to the solid layer. The Fractal Noise effect will create the gust of wind. The Directional Blur effect will create a blur in the direction the canvas flies.

1. In the Effects & Presets panel, search for the Fractal Noise effect; it's in the Noise & Grain category. Double-click the Fractal Noise effect to apply it.
2. In the Effect Controls panel, do the following:
  - o Choose Smeary for the Fractal Type.
  - o Choose Soft Linear for the Noise Type.
  - o Set the Contrast to **700**.
  - o Set the Brightness to **59**.
  - o Expand the Transform properties, and set the Scale to **800**.
3. Click the stopwatch next to Offset Turbulence to create an initial keyframe at the beginning of the time ruler.
4. Go to 2:00, and change the x value for Offset Turbulence to **20,000 px**.



5. Hide the Fractal Noise properties in the Effect Controls panel.
6. In the Effects & Presets panel, search for the Directional Blur effect, and then double-click it to apply it.
7. In the Effect Controls panel, set the Direction to **90** degrees and the Blur Length to **236**.

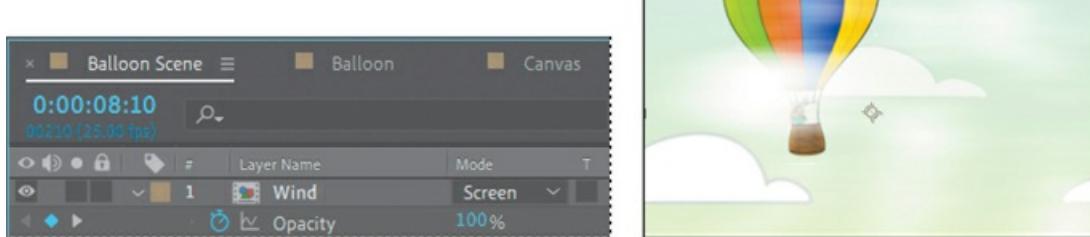


You've created a sense of motion. Now you need to add the Wind composition to the Balloon Scene composition.

8. Switch to the Balloon Scene Timeline panel.
9. Click the Project tab, and then drag the Wind composition from the Project window into the Balloon Scene Timeline above all the other layers.
10. Go to 8:10, and then press the left bracket key ([) so that the Wind layer starts at 8:10.

Finally, you'll apply a blending mode and adjust the opacity to make the effect of the wind more subtle.

11. Click Toggle Switches/Modes at the bottom of the Timeline panel to view the Mode column.
12. Choose Screen from the Wind layer's Mode pop-up menu.
13. Press T to reveal the Opacity property for the Wind layer, and then click the stopwatch to create an initial keyframe at the beginning of the layer (8:10).

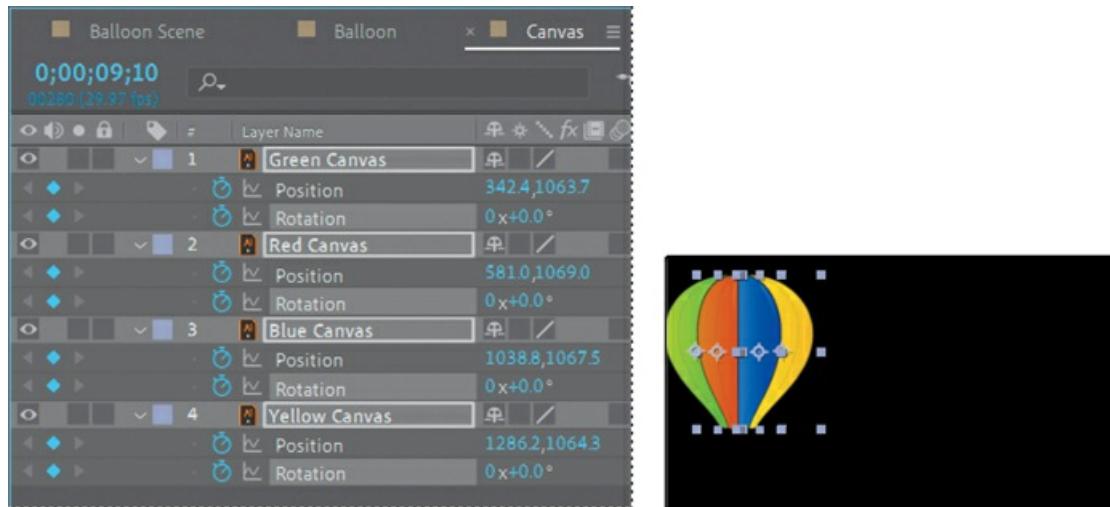


14. Go to 8:20, and change the opacity to **35%**.
15. Go to 10:20, and change the opacity to **0%**.
16. Press T to hide the Opacity property, and then save your work so far.

### Animating precomposed layers

Earlier, you precomposed the four canvas layers, creating a composition called Canvas. You then positioned the Canvas composition layer to match the balloon, and parented the two. Now, you'll animate the canvas layers so that they blow off the balloon when the gust of wind occurs.

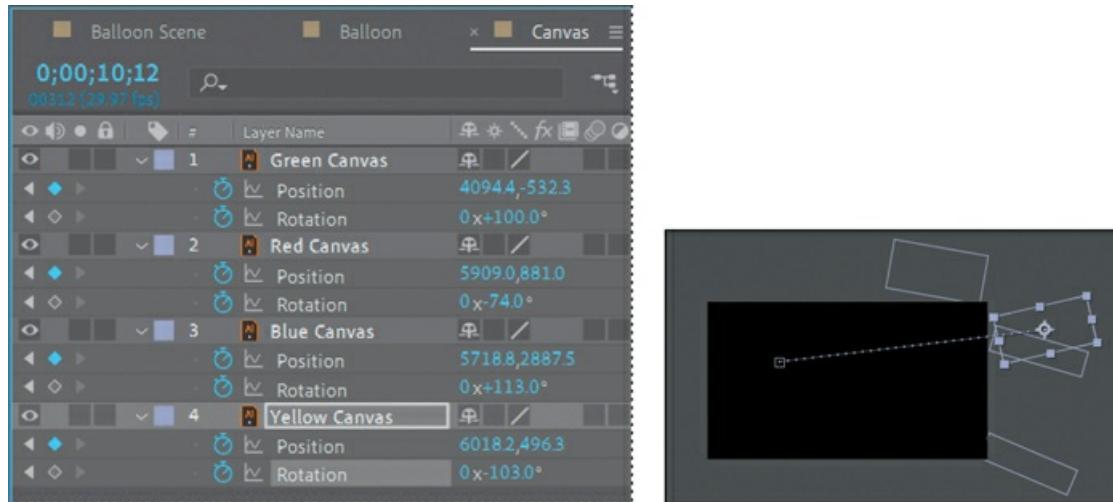
1. Double-click the Canvas layer to open the Canvas composition in the Composition panel and the Timeline panel.
2. Go to 9:10, which is about a second after the wind effect begins.
3. Shift-select all four layers, and then press R to display their Rotation properties; press Shift+P to display the Position properties, too.
4. With all layers still selected, click the stopwatch icons for the Position and Rotation properties in one of the layers to create initial keyframes for all of them.



5. Go to 9:24.
6. With all layers still selected, drag a Rotation value until the canvas is nearly horizontal (about 81 degrees). All four canvas layers become nearly horizontal.
7. Press F2 or click an empty area in the Timeline panel to deselect all areas so you can adjust their Rotation values separately.
8. Adjust each Rotation value, using positive and negative numbers so that there is some variation in their appearance. (We used these values: Green +100, Red -74, Blue +113,

Yellow -103.)

9. Go to 10:12.
10. Move all the canvas layers off the screen to the right. Vary their motion paths to make them more interesting. You can add intermediate rotation and position keyframes (between 10:06 and 10:12), edit Bezier curves, or just drag the canvas layers off the edge. If you edit the Bezier curves, make changes only to the keyframes on the right side of the motion path (at 10:12) so you don't disturb the original balloon formation.



11. Move the current-time indicator across the time ruler to preview the animation, and then make any adjustments you want.



12. Hide the properties for all layers, and save your work.

## Adding an adjustment layer

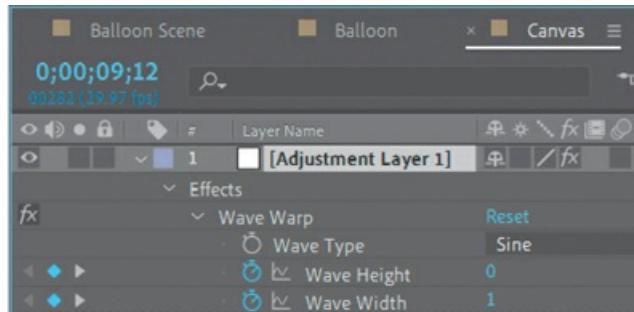
You'll add a warp effect to the canvas. You can use an adjustment layer to apply an effect to all the layers beneath it at once.

1. Click an empty area in the Timeline panel to deselect all layers.
2. Choose Layer > New > Adjustment Layer.

A new adjustment layer is automatically added to the top of the layer stack.

3. In the Effects & Presets panel, navigate to the Wave Warp effect in the Distort category, and then double-click the effect.
4. Go to 9:12.
5. In the Effect Controls panel, change Wave Height to **0** and Wave Width to **1**. Then click the stopwatch icons to create initial keyframes for each of them.

6. Go to 9:16.
7. Change the Wave Height value to **90** and the Wave Width value to **478**.



## Trimming a layer

You don't need the Wave Warp effect until the canvas flies off the balloon, but even if the values are 0, After Effects will have to calculate the effect for the entire layer. So you'll trim the layer to speed up the time it takes to render the file.

1. Go to 9:12.
2. Press Alt+[ (Windows) or Option+[ (macOS) to set the In point to **9:12**.
3. Return to the Balloon Scene Timeline panel.
4. Press the spacebar to preview the movie. Press the spacebar again to stop the preview.

### Note

Press [ to move the In point of a clip without changing its duration. Press Alt+[ or Option+[ to trim a clip to a new In point, shortening its duration.



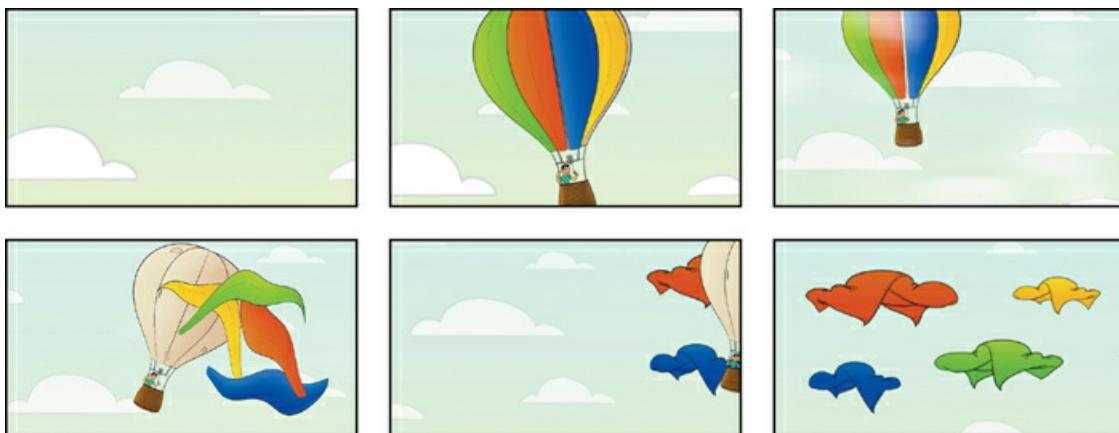
5. Save your work so far.

## Animating the background

The movie should end with the revelation that the canvas from the balloons has been draped on the clouds. But right now, the canvas flies off and the balloon floats away. You need to animate the sky so that the canvas-covered clouds are centered at the end of the scene.

1. In the Balloon Scene Timeline panel, go to the beginning of the time ruler (0:00).
2. Select the Sky layer, and press P to display its Position property.
3. Click the stopwatch icon to create an initial keyframe.

4. Go to 16:00, and drag the Sky layer down and to the left until the wrapped clouds are in the center of the frame. (Our values are -236.4, 566.7.)
5. Go to 8:00, and move the wrapped clouds completely off the screen, far off to the right.
6. Right-click or Control-click the first keyframe, and choose Keyframe Assistant > Easy Ease Out.
7. Right-click the middle keyframe, and choose Keyframe Assistant > Easy Ease, and then right-click the last keyframe, and choose Keyframe Assistant > Easy Ease In.
8. Move the current-time indicator through the time ruler to see how the departure of the canvas matches up with the appearance of the canvas-colored clouds. The canvas should be completely offscreen before the canvas-colored clouds appear.
9. Move the middle keyframe forward and backward in the time ruler to adjust the sky animation so that it matches the progress of the canvas and the balloon. The bare balloon should float in front of at least a few of the canvas-colored clouds before it disappears.
10. Press the spacebar to preview the entire video. Press the spacebar again to stop the preview.



11. Adjust the motion paths and rotations for the balloon, canvas pieces, or the sky as necessary.
12. Hide the properties for all layers, and save the project.

## Adding an audio track

Give yourself a hand—you've done a lot of animating in this project. But you're not quite done. You'll add a soundtrack that matches the lighthearted mood of the video, and fade it out. You'll also shorten the composition, since the last few seconds are static.

1. Click the Project tab to bring the Project panel forward. Then, double-click an empty area of the Project panel to open the Import File dialog box.
2. Navigate to the Lessons/Lesson05/Assets folder, and double-click the Soundtrack.wav file.
3. Drag the Soundtrack.wav item from the Project panel into the Balloon Scene Timeline panel, placing it at the bottom of the layer stack.
4. Preview the movie. The music changes just as the canvas flies off the balloon.
5. Go to 18:00, and press N to move the work area end point to the current time.
6. Choose Composition > Trim Comp to Work Area.
7. Go to 16:00. Expand the Soundtrack.wav layer and the Audio properties.

8. Click the stopwatch icon to create an initial keyframe for the Audio Levels value.
9. Go to 18:00, and change the Audio Levels value to **-40** dB.
10. Preview the animation, and then save it.

Congratulations. You've just created a complex animation, practicing all kinds of After Effects techniques and capabilities along the way.

## Supported audio file formats

You can import any of the following types of audio files into After Effects:

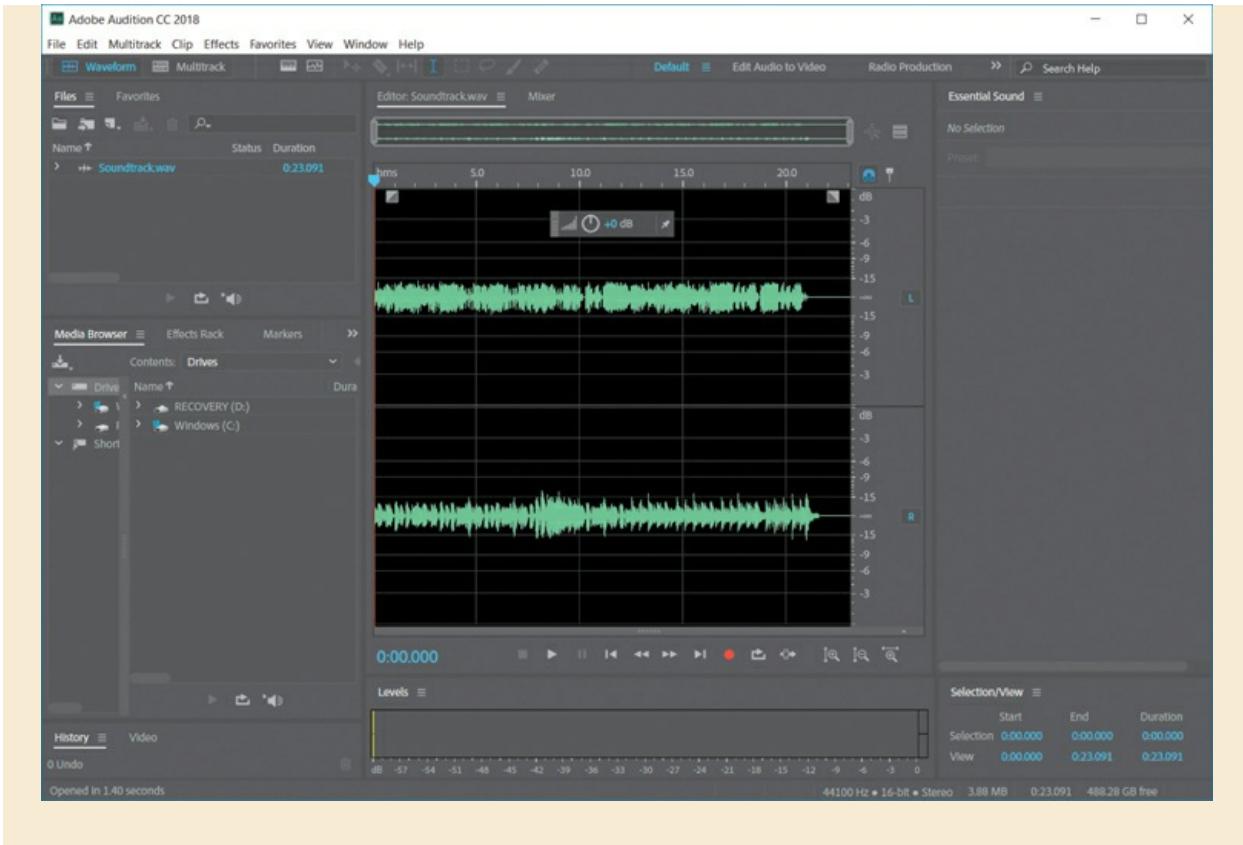
- Advanced Audio Coding (AAC, M4A)
- Audio Interchange File Format (AIF, AIFF)
- MP3 (MP3, MPEG, MPG, MPA, MPE)
- Waveform (WAV)

## Editing audio files in Adobe Audition

You can make some very simple changes to audio in After Effects. For more substantial edits, use Adobe Audition. Audition is available with a full Adobe Creative Cloud membership.

You can use Audition to change the length of an audio file, alter its pitch, or change its tempo. You can apply effects, record new audio, mix multitrack sessions, and more.

To edit an audio clip you've used in After Effects, select the file in the Project panel, and choose Edit > Edit In Adobe Audition. Then, make your changes in Audition, and save the file. The changes you made are automatically reflected in your After Effects project.



## Review questions

- 1 How does After Effects display an animation of the Position property?
- 2 What is a solid-color layer, and what can you do with it?
- 3 What types of audio can you import into an After Effects project?

## Review answers

- 1 When you animate the Position property, After Effects displays the movement as a motion path. You can create a motion path for the position of the layer or for the anchor point of a layer. A position motion path appears in the Composition panel; an anchor-point motion path appears in the Layer panel. The motion path appears as a sequence of dots, where each dot marks the position of the layer at each frame. A box in the path marks the position of a keyframe.
- 2 You can create solid images of any color or size (up to 30,000 x 30,000 pixels) in After Effects. After Effects treats solids as it does any other footage item: You can modify the mask, transform properties, and apply effects to the solid layer. If you change settings for a solid that is used by more than one layer, you can apply the changes to all layers that use the solid or to only the single occurrence of the solid. Use solid layers to color a background or create simple graphic images.
- 3 You can import any of the following types of audio files into After Effects: Advanced Audio Coding (AAC, M4A), Audio Interchange File Format (AIF, AIFF), MP3 (MP3, MPEG, MPG, MPA, MPE), and Waveform (WAV).

# 6 Animating Layers

## Lesson overview

In this lesson, you'll learn how to do the following:

- Animate a layered Adobe Photoshop file.
- Create an expression using the pick whip.
- Work with imported Photoshop layer styles.
- Apply a track matte to control the visibility of layers.
- Animate a layer using the Corner Pin effect.
- Apply the Lens Flare effect to a solid layer.
- Use time remapping and the Layer panel to dynamically retime footage.
- Edit Time Remap keyframes in the Graph Editor.



This lesson will take approximately an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



### PROJECT: SUNRISE EFFECT IN A FILM SHORT

Animation is all about making changes over time—changes to an object or image’s position, opacity, scale, and other properties. This lesson provides more practice animating the layers of a Photoshop file, including dynamically remapping time.

#### Getting started

Adobe After Effects provides several tools and effects that let you simulate motion video using a layered Photoshop file. In this lesson, you will import a layered Photoshop file of the sun

appearing through a window, and then animate it to simulate the motion of the sun rising behind the panes of glass. This is a stylized animation in which the motion is first accelerated, and then slows down and reverses.

First, you'll preview the final movie and set up the project.

1. Make sure the following files are in the Lessons/Lesson06 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - o In the Assets folder: clock.mov, sunrise.psd
  - o In the Sample\_Movies folder: Lesson06\_regular.avi, Lesson06\_regular.mov, Lesson06\_retimed.avi, Lesson06\_retimed.mov
2. Open and play the Lesson06\_regular.avi file in Windows Movies & TV or the Lesson06\_regular.mov file in QuickTime Player to see the straightforward time-lapse animation you will create in this lesson.
3. Open and play the Lesson06\_retimed.avi file or Lesson06\_retimed.mov file to see the same animation after time has been remapped, later in the lesson.
4. When you're done, quit Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

When you begin the lesson, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page [3](#).

5. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences file.
6. Click New Project in the Home window.

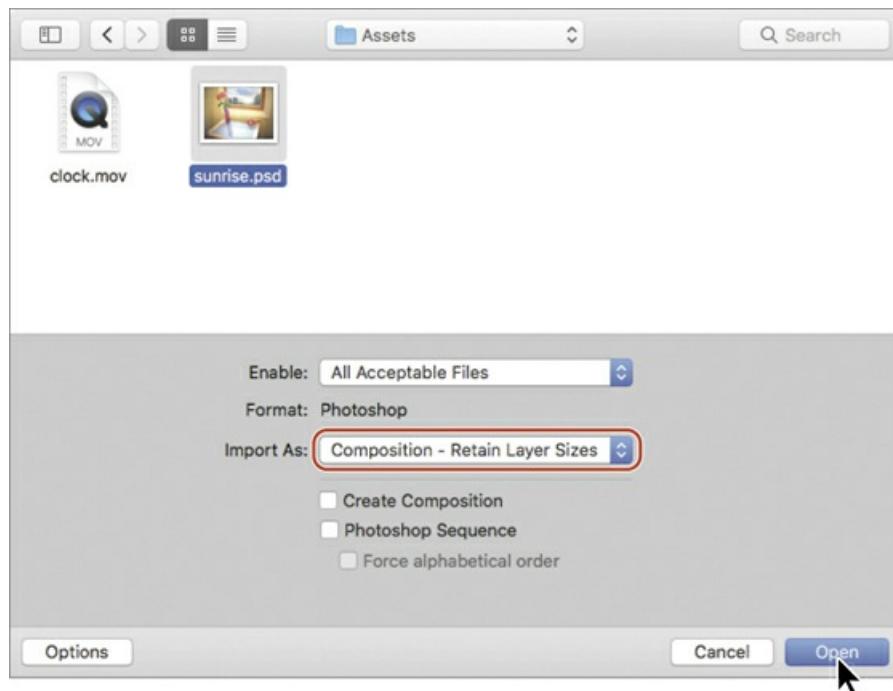
After Effects opens to display an empty, untitled project.

7. Choose File > Save As > Save As.
8. In the Save As dialog box, navigate to the Lessons/Lesson06/Finished\_Project folder.
9. Name the project **Lesson06\_Finished.aep**, and then click Save.

## Importing the footage

You need to import one source item for this lesson.

1. Double-click an empty area of the Project panel to open the Import File dialog box.
2. Navigate to the Lessons/Lesson06/Assets folder on your hard disk, and select the sunrise.psd file.
3. Choose Composition – Retain Layer Sizes from the Import As menu, so the dimensions of each layer will match the layer's content. (In macOS, you may need to click Options to see the Import As menu.)



4. Click Import or Open.
5. In the sunrise.psd dialog box, make sure Composition – Retain Layer Sizes is selected in the Import Kind menu, and click OK.

Before continuing, take a moment to study the layers of the file you just imported.

6. In the Project panel, expand the sunrise Layers folder to see the Photoshop layers. Resize the Name column to make it wider and easier to read, if necessary.

Name	Type	Size
sunrise	Composition	
sunrise Layers	Folder	
Background Lit/sunrise.psd	Photoshop	
Background/sunrise.psd	Photoshop	
Birds/sunrise.psd	Photoshop	
Clouds/sunrise.psd	Photoshop	
Shadows/sunrise.psd	Photoshop	
Sun/sunrise.psd	Photoshop	
Window Lit/sunrise.psd	Photoshop	
Window Pane/sunrise.psd	Photoshop	
Window/sunrise.psd	Photoshop	

Each of the elements you'll animate in After Effects—the shadows, birds, clouds, and sun—is on

a separate layer. In addition, there is one layer representing the initial, predawn lighting conditions in the room (Background) and a second layer that represents the final, bright daylight conditions in the room (Background Lit). Similarly, there are two layers for the two lighting conditions outside the window: Window and Window Lit. The Window Pane layer includes a Photoshop layer style that simulates a pane of glass.

After Effects preserves the layer order, transparency data, and layer styles from the source Photoshop document. It also preserves other features, such as adjustment layers and type, which you don't happen to be using in this project.

## Preparing layered Photoshop files

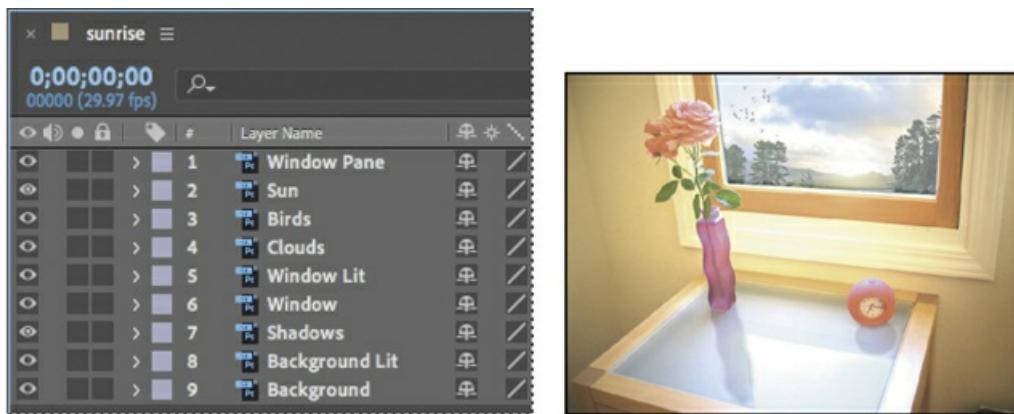
Before you import a layered Photoshop file, name its layers carefully to reduce preview and rendering time, and to avoid problems importing and updating the layers:

- Organize and name layers. If you change a layer name in a Photoshop file after you have imported the file into After Effects, After Effects retains the link to the original layer. However, if you delete an imported layer in Photoshop, After Effects will be unable to find the original layer and will list it as missing in the Project panel.
- To avoid confusion, make sure that each layer has a unique name.

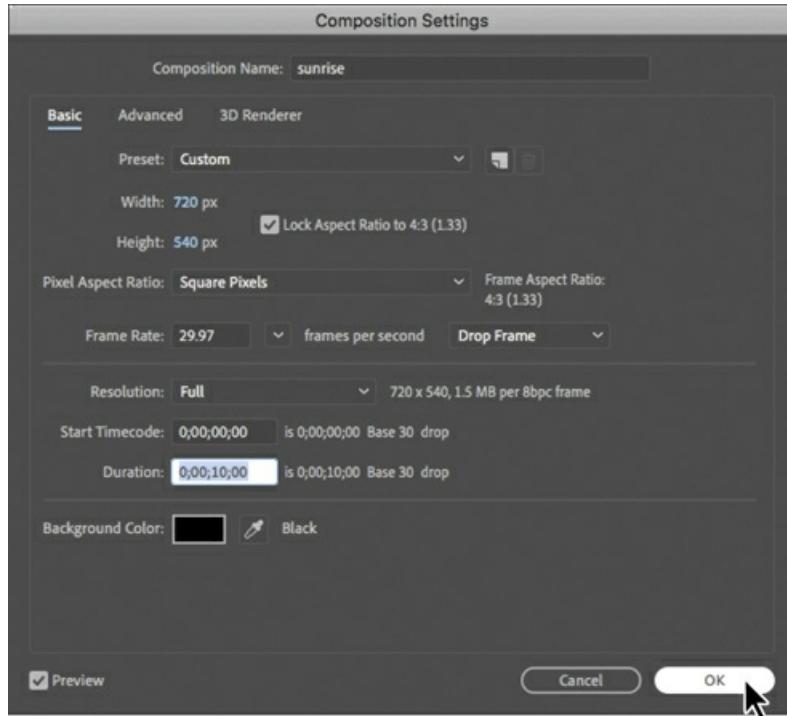
## Creating the composition

For this lesson, you'll use the imported Photoshop file as the basis of the composition.

1. Double-click the sunrise composition in the Project panel to open it in the Composition panel and in the Timeline panel.



2. Choose Composition > Composition Settings.
3. In the Composition Settings dialog box, change the Duration to **10:00** to make the composition 10 seconds long, and then click OK.



## About Photoshop layer styles

Adobe Photoshop provides a variety of layer styles—such as shadows, glows, and bevels—that change the appearance of a layer. After Effects can preserve these layer styles when you import Photoshop layers. You can also apply layer styles in After Effects.

Though layer styles are referred to as *effects* in Photoshop, they behave more like blending modes in After Effects. Layer styles follow transformations in the standard render order, whereas effects precede transformations. Another difference is that each layer style blends directly with the underlying layers in the composition, whereas an effect is rendered on the layer to which it's applied, the result of which then interacts with the underlying layers as a whole.

The layer style properties are available for the layer in the Timeline panel.

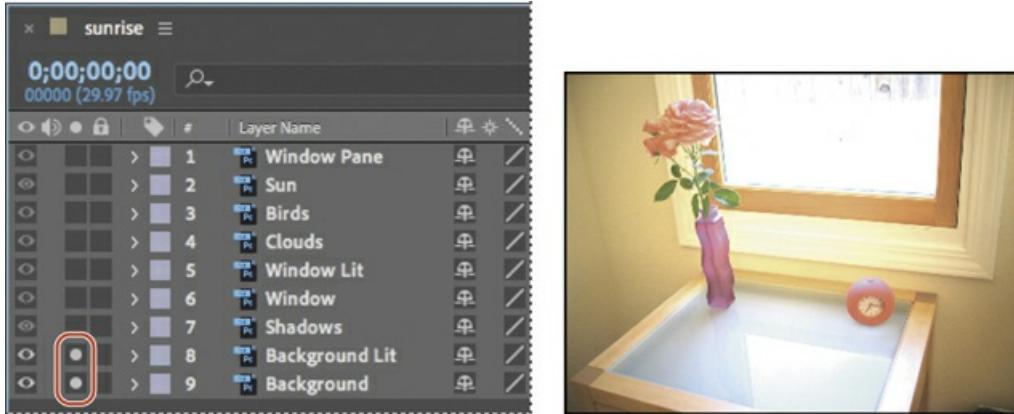
To learn more about working with layer styles in After Effects, see [After Effects Help](#).

## Simulating lighting changes

The first part of the animation involves lightening the dark room. You'll use Opacity keyframes to animate the light.

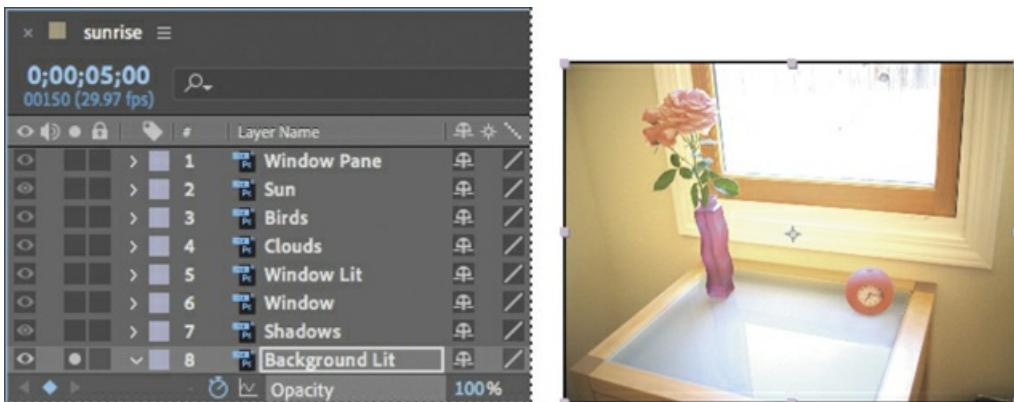
1. In the Timeline panel, click the Solo switch (●) for both the Background Lit and Background layers.

Soloing the layers isolates them to speed animating, previewing, and rendering.

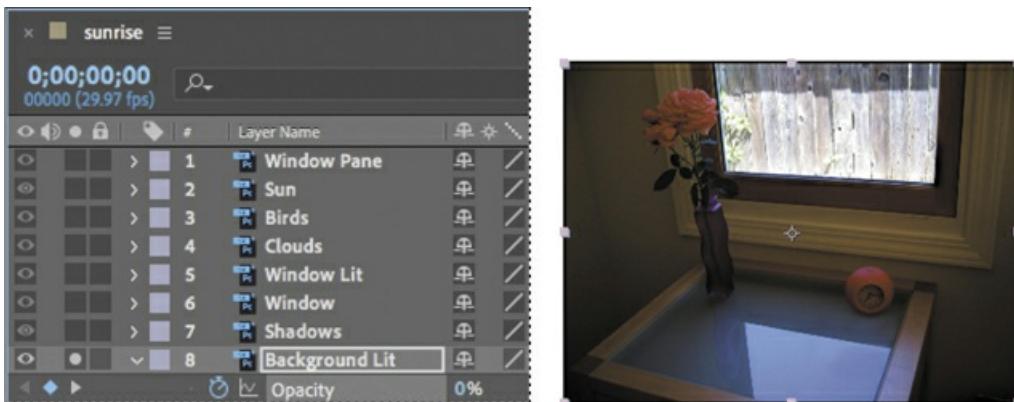


Currently, the lit background is on top of the regular (darker) background, obscuring it so the initial frame of the animation is bright. However, you want the room to appear dark and then lighten. To accomplish this, you will make the Background Lit layer initially transparent, and then animate its opacity so that it appears to lighten the background over time.

2. Go to 5:00.
3. Select the Background Lit layer in the Timeline panel, and press T to reveal its Opacity property.
4. Click the stopwatch icon (⌚) to set an Opacity keyframe. Note that the Opacity value is 100%.

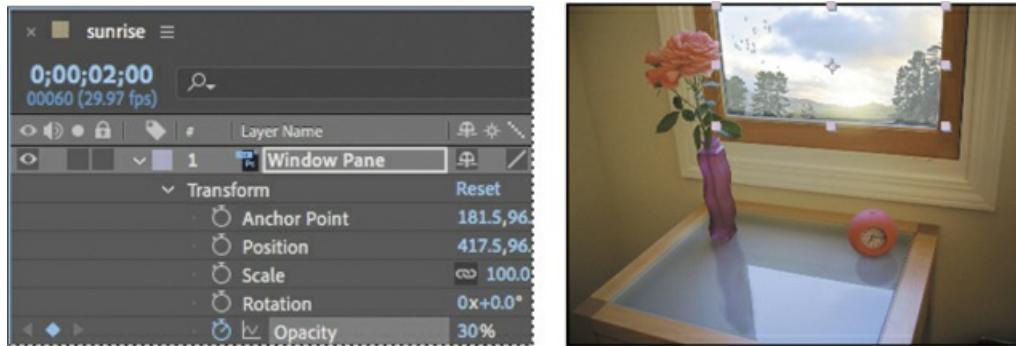


5. Press the Home key or drag the current-time indicator to 0:00. Then set the Opacity for the Background Lit layer to 0%. After Effects adds a keyframe.

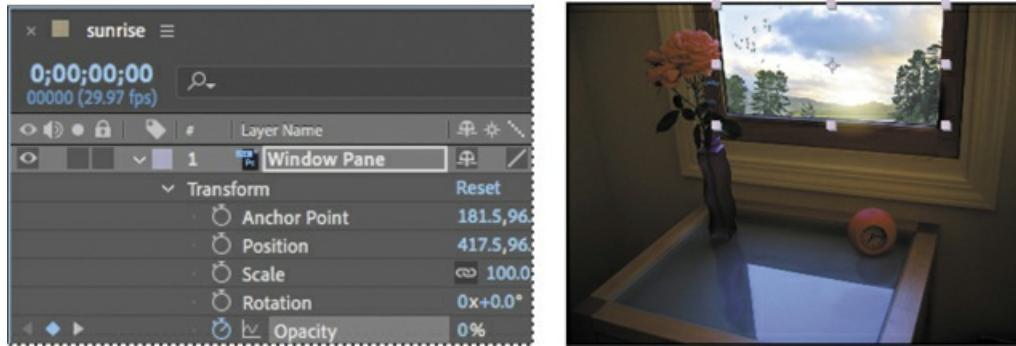


Now, when the animation begins, the Background Lit layer is transparent, which allows the dark Background layer to show through.

6. Click the Solo switches (●) for the Background Lit and Background layers to restore the view of the other layers, including Window and Window Lit. Make sure to leave the Opacity property for the Background Lit layer visible.
7. Expand the Window Pane layer's Transform properties. The Window Pane layer has a Photoshop layer style that creates a bevel on the window.
8. Go to 2:00, and click the stopwatch next to the Opacity property for the Window Pane layer to create a keyframe at the current value, 30%.



9. Press the Home key or drag the current-time indicator to the beginning of the time ruler, and change the Opacity property to **0%**.



10. Hide the Window Pane properties.
11. Click the Play/Pause button (▶) in the Preview panel, or press the spacebar, to preview the animation.

The interior of the room transitions gently from dimly to brightly lit.

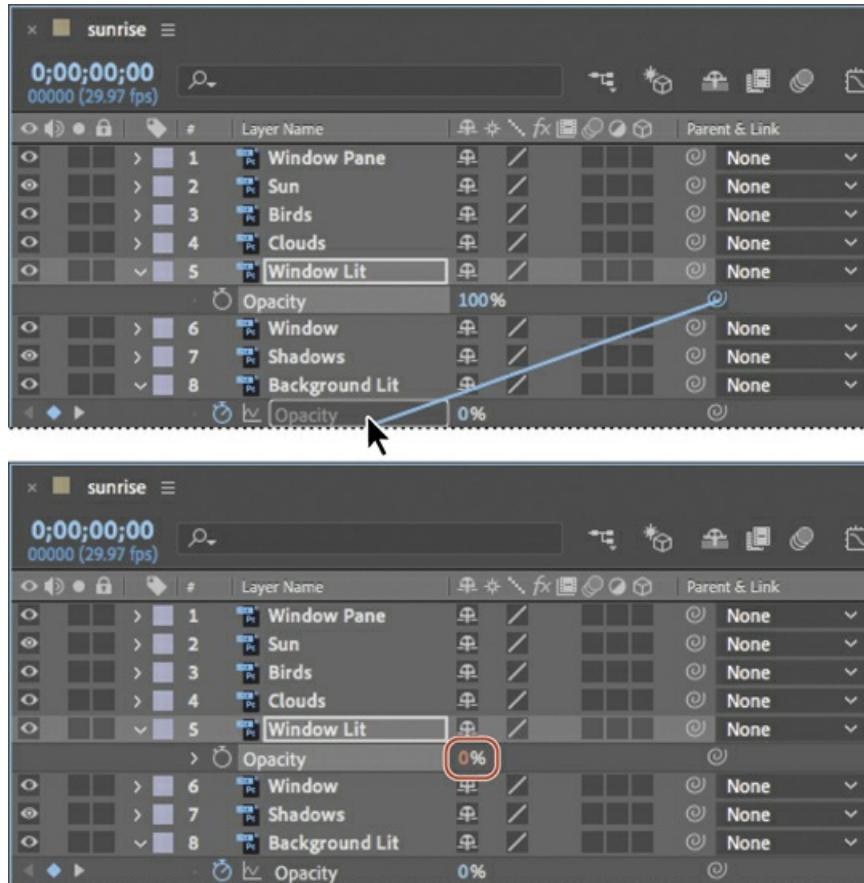
12. Press the spacebar to stop playback at any time after 5:00.
13. Choose File > Save.

### Duplicating an animation using the pick whip

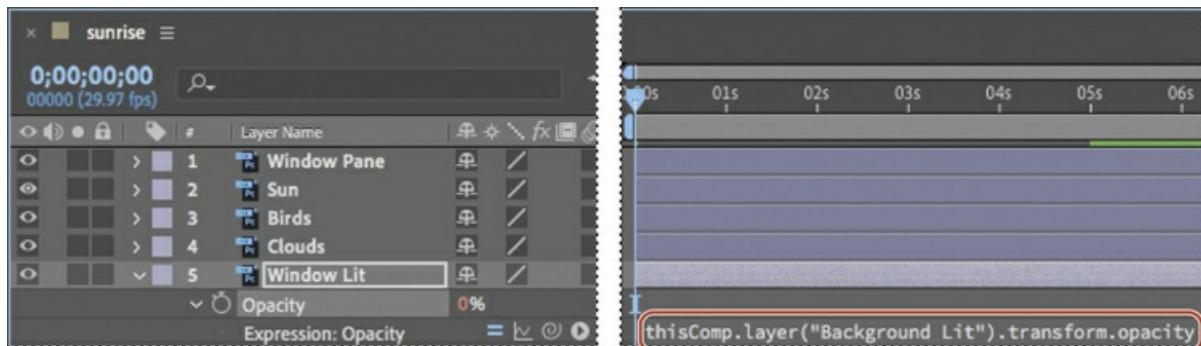
Now you need to lighten the view through the window. To do this, you'll use the pick whip to duplicate the animation you just created. You can use the pick whip to create expressions that link the values of one property or effect to another.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.

- Select the Window Lit layer, and press T to reveal its Opacity property.
- Click the pick whip icon (⌚) on the Opacity property line for the Window Lit layer, and drag it to the Opacity property name in the Background Lit layer. When you release the mouse, the pick whip snaps, and the first Opacity property is red.



- Expand the Opacity property for the Window Lit layer. An expression in the Window Lit layer time ruler now reads `thisComp.layer("Background Lit").transform.opacity`. This means that the Opacity value for the Background Lit layer (0%) replaces the previous Opacity value (100%) for the Window Lit layer.



- Drag the current-time indicator from 0:00 to 5:00. Notice that the Opacity values for the two layers match.
- Go to the beginning of the time ruler, and then press the spacebar to preview the animation

again. Notice that the sky outside the window lightens as the room inside the window does.

7. Press the spacebar to stop playback.
8. Hide the Window Lit and Background Lit layers' properties to keep the Timeline panel tidy for your next task.
9. Choose File > Save to save your project.

## About expressions

When you want to create and link complex animations, such as multiple car wheels spinning, but want to avoid creating tens or hundreds of keyframes by hand, you can use *expressions* instead. With expressions, you can create relationships between layer properties and use one property's keyframes to dynamically animate another layer. For example, if you set rotation keyframes for a layer and then apply the Drop Shadow effect, you can use an expression to link the Rotation property's values with the Drop Shadow effect's Direction values; that way, the drop shadow changes with the layer as it rotates.

You work with expressions in the Timeline panel or the Effect Controls panel. You can use the pick whip to create expressions, or you can enter and edit expressions manually in the expression field—a text field in the time graph under the property.

Expressions are based on the JavaScript language, but you don't need to know JavaScript to use them. You can create expressions using the pick whip, by using simple examples and modifying them to suit your needs, or by chaining objects and methods together.

For more information about expressions, see After Effects Help.

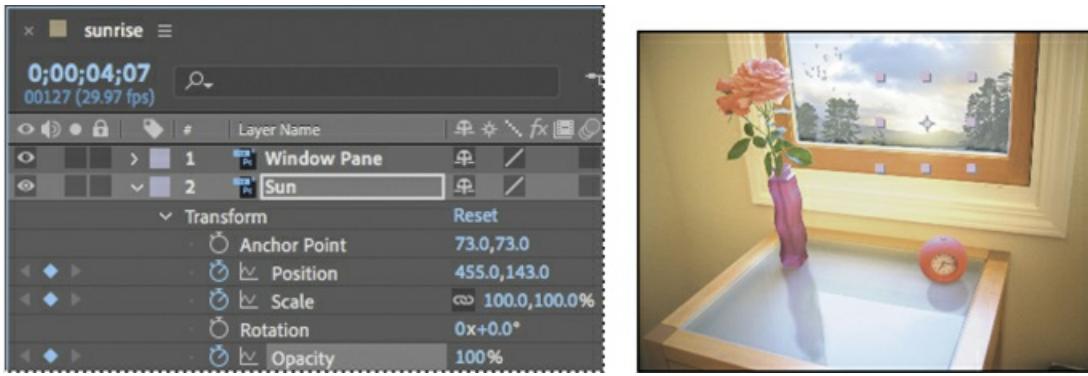
## Animating movement in the scenery

The scenery outside the window is unrealistically static. For one thing, the sun should actually rise. In addition, shifting clouds and flying birds would bring this scene to life.

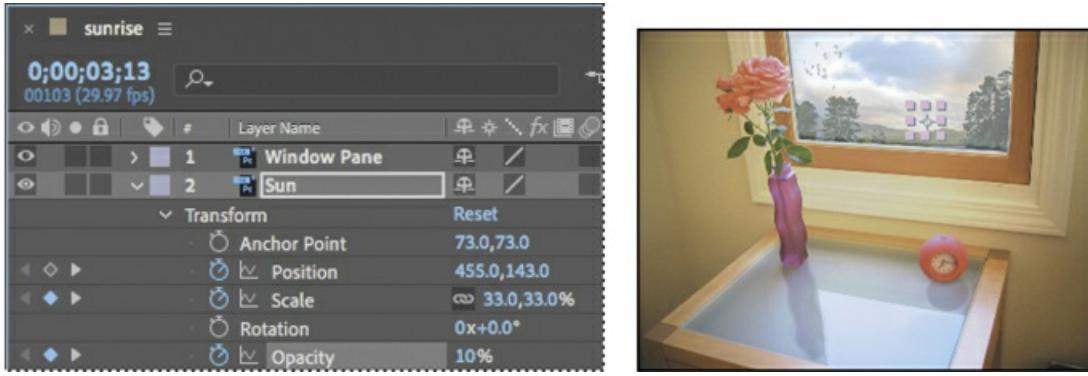
## Animating the sun

To make the sun rise in the sky, you'll set keyframes for its Position, Scale, and Opacity properties.

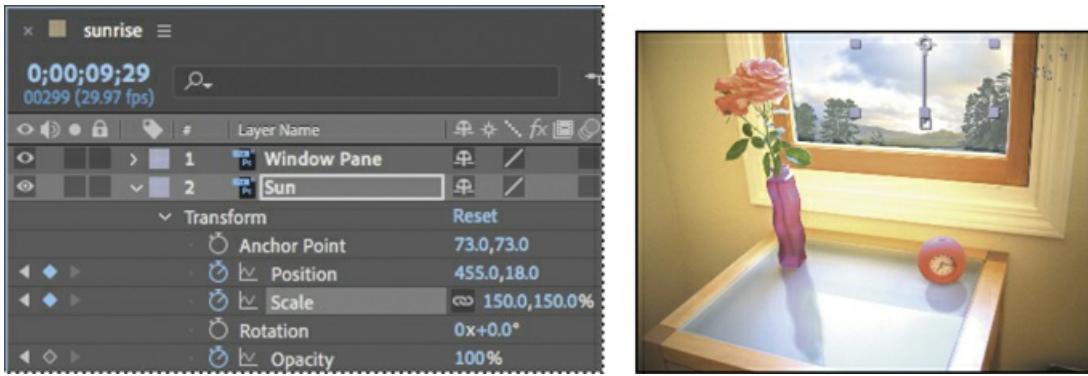
1. In the Timeline panel, select the Sun layer, and expand its Transform properties.
2. Go to 4:07, and click the stopwatch icons (⌚) to set keyframes for the Position, Scale, and Opacity properties at their default values.



3. Go to 3:13.
4. Still working with the Sun layer, set its Scale to **33, 33%** and its Opacity to **10%**. After Effects adds a keyframe for each property.



5. Press the End key, or move the current-time indicator to the end of the composition.
6. For the Position property of the Sun layer, set the y value to **18**, and then set the Scale values to **150, 150%**. After Effects adds two keyframes.



You've just set keyframes that instruct the sun to move up and across the sky and to become slightly larger and brighter as it rises.

7. Hide the Sun layer's properties.

## Animating the birds

Next, you'll animate the motion of the birds flying by. To create the animation faster, you'll take

advantage of the Auto-keyframe option. When Auto-keyframe is enabled, After Effects automatically creates a keyframe whenever you change a value.

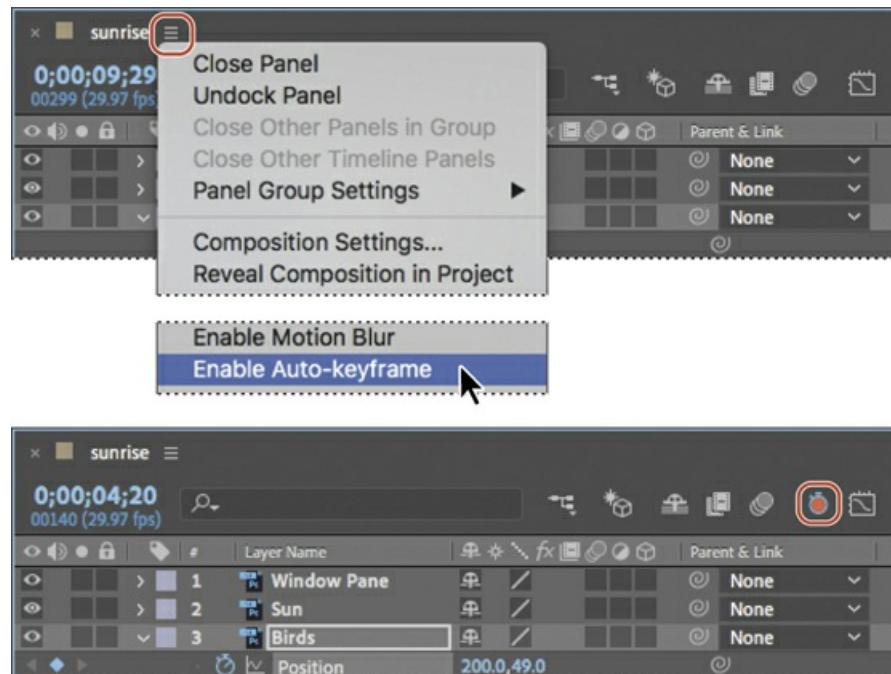
### ● Note

While the Auto-keyframe option can make your life easier, it can also create more keyframes than you intended. Choose Enable Auto-keyframe only when you need it for a specific task, and remember to disable it when you're done with that task!

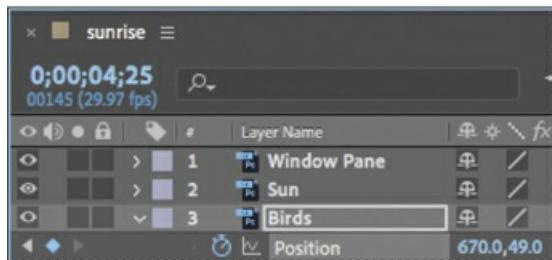
1. Select the Birds layer in the Timeline panel, and press P to reveal its Position property.
2. From the Timeline panel menu, choose Enable Auto-keyframe.

A red stopwatch icon appears at the top of the Timeline panel to remind you that Auto-keyframe is selected.

3. Go to 4:20, and set the Position values for the Birds layer to **200, 49**. After Effects automatically adds a keyframe.



4. Go to 4:25, and set the Position values of the Birds layer to **670, 49**. After Effects adds a keyframe.

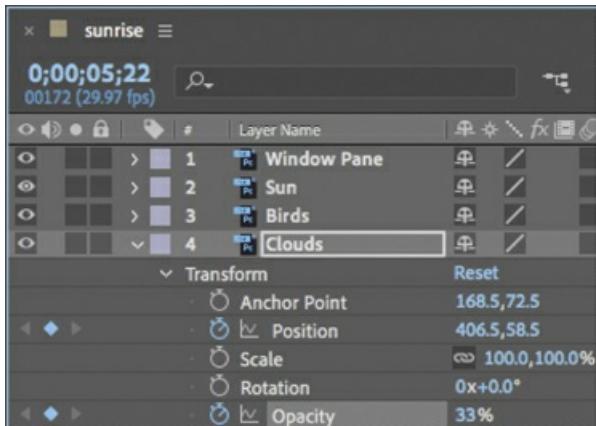


- Select the Birds layer, and press P to hide its Position property.

## Animating the clouds

Next, you'll animate the clouds drifting across the sky.

- Select the Clouds layer in the Timeline panel, and expand its Transform properties.
- Go to 5:22, and click the stopwatch icon (⌚) for the Position property to set a Position keyframe at the current value (406.5, 58.5).
- Still at 5:22, set the Opacity for the Clouds layer to 33%.

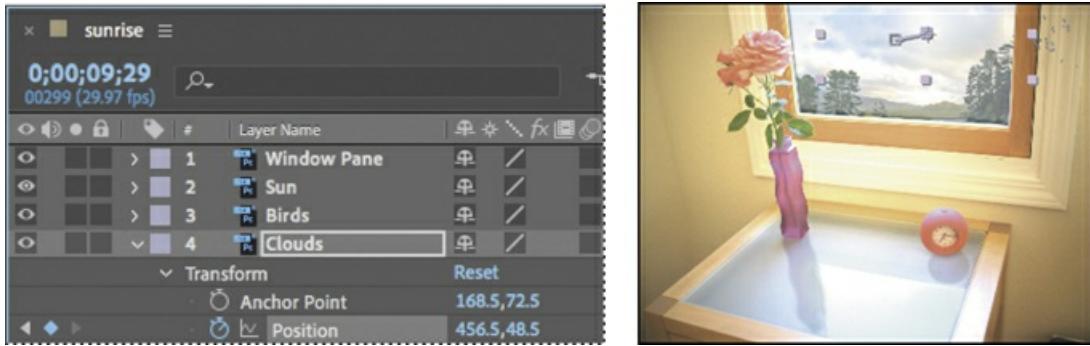


After Effects automatically adds a keyframe, because Auto-keyframe is still enabled.

- Choose Enable Auto-keyframe from the Timeline panel menu to deselect it.
- Go to 5:02, and set the Clouds layer Opacity value to 0%.

After Effects adds a keyframe, even though you disabled Auto-keyframe. After Effects adds a keyframe whenever you change the value for a property that already has a keyframe in the timeline.

- Go to 9:07, and set the Clouds layer Opacity value to 50%. After Effects adds a keyframe.
- Press the End key, or move the current-time indicator to the last frame of the composition.
- Set the Position of the Clouds layer to 456.5, 48.5. After Effects adds a keyframe.



## Previewing the animation

Now, see how it all comes together.

1. Press the Home key or go to 0:00.
2. Press F2 or click an empty area in the Timeline panel to deselect everything, and then press the spacebar to preview the animation.

The sun rises in the sky, the birds fly by (very quickly), and the clouds drift. So far, so good! However, there's a fundamental problem: These elements all overlap the window frame—the birds even appear to be flying inside the room. You'll solve this next.



3. Press the spacebar to stop playback.
4. Hide the properties for the Clouds layer, and then choose File > Save.

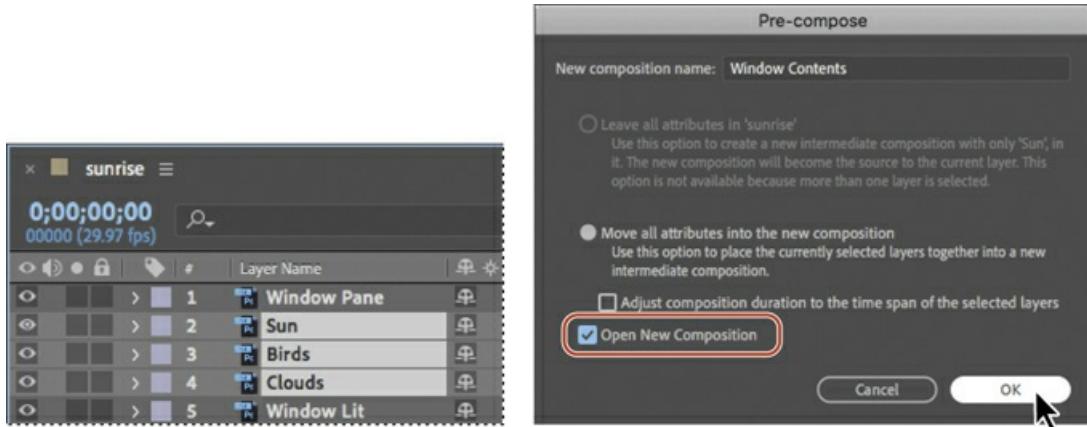
## Adjusting the layers and creating a track matte

To solve the problem of the sun, birds, and clouds overlapping the window frame, you must first adjust the hierarchy of the layers within the composition. Then you'll use an alpha track matte to allow the outside scenery to show through the window, but not appear to be inside the room.

## Precomposing layers

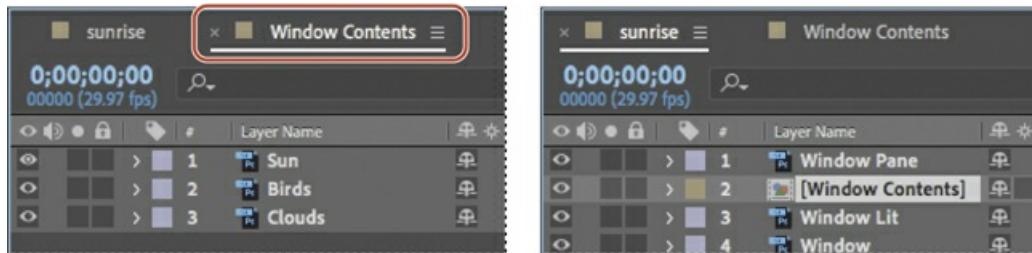
You'll start by precomposing the Sun, Birds, and Clouds layers into one composition.

1. Shift-click to select the Sun, Birds, and Clouds layers in the Timeline panel.
2. Choose Layer > Pre-compose.
3. In the Pre-compose dialog box, name the new composition **Window Contents**. Make sure the Move All Attributes Into The New Composition option is selected, and select Open New Composition. Then click OK.



A new Timeline panel named Window Contents appears. It contains the Sun, Birds, and Clouds layers you selected in step 1 above. The Window Contents composition also appears in the Composition window.

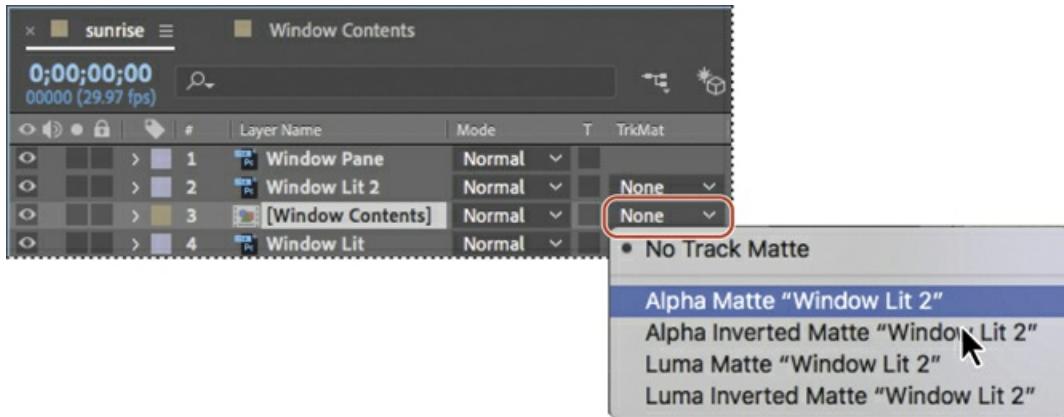
- Click the sunrise Timeline panel to see the contents of the main composition. Notice that the Sun, Birds, and Clouds layers have been replaced by the Window Contents layer, which refers to the Window Contents composition.



## Creating the track matte

Now, you will create the track matte to hide the outside scenery behind all areas of the image except the windowpane. To do that, you'll duplicate the Window Lit layer and use its alpha channel.

- In the sunrise Timeline panel, select the Window Lit layer.
- Choose Edit > Duplicate.
- Drag the duplicate layer, Window Lit 2, up in the layer stack so that it's above the Window Contents layer.
- Click Toggle Switches/Modes at the bottom of the Timeline panel to display the TrkMat column, so you can apply the track matte.
- Select the Window Contents layer, and choose Alpha Matte “Window Lit 2” from the TrkMat pop-up menu.



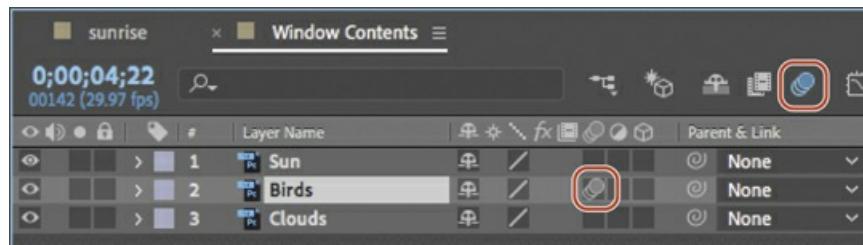
The alpha channel of the layer above (Window Lit 2) is used to set transparency for the Window Contents layer, so the scenery outside the window shows through the transparent areas of the windowpane.

6. Press the Home key or move the current-time indicator to the beginning of the time ruler, and then press the spacebar to preview the animation. Press the spacebar again when you're done.
7. Choose File > Save to save your project.

## Adding motion blur

The birds will look more authentic if they include motion blur. You'll add the motion blur and then set the shutter angle and phase, which control the intensity of the blur.

1. Switch to the Window Contents Timeline panel.
2. Go to 4:22—the middle of the birds' animation. Then select the Birds layer, and choose Layer > Switches > Motion Blur to turn on motion blur for the layer.
3. Click the Enable Motion Blur button (a camera icon) at the top of the Timeline panel to display the motion blur for the Birds layer in the Composition panel.



4. Choose Composition > Composition Settings.
5. In the Composition Settings dialog box, click the Advanced tab, and reduce the Shutter Angle to **30** degrees.

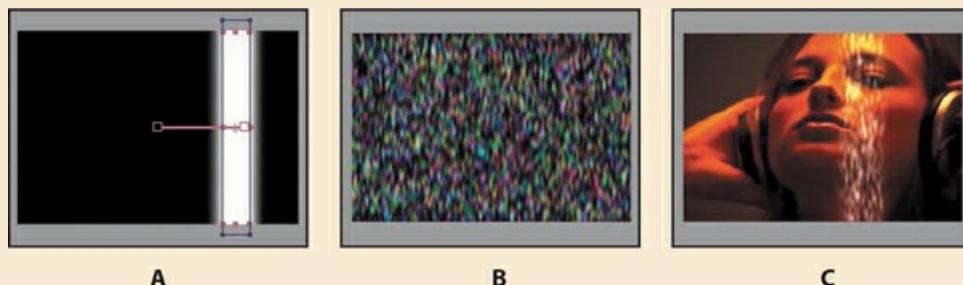
The Shutter Angle setting imitates the effect of adjusting a shutter angle on a real camera, which controls how long the camera aperture is open, gathering light. Larger values create more motion blur.

## About track mattes and traveling mattes

When you want one layer to show through a hole in another layer, set up a *track matte*. You'll need two layers—one to act as a matte, the other to fill the hole in the matte. You can animate either the track matte layer or the fill layer. When you animate the track matte layer, you create a *traveling matte*. If you want to animate the track matte and fill layers using identical settings, you can precompose them.

You define transparency in a track matte using values from either its alpha channel or the luminance of its pixels. Using luminance is handy when you want to create a track matte from a layer without an alpha channel, or a layer imported from a program that can't create an alpha channel. In both alpha-channel mattes and luminance mattes, pixels with higher values are more transparent. In most cases, you use a high-contrast matte so that areas are either completely transparent or completely opaque. Intermediate shades should appear only where you want partial or gradual transparency, such as along a soft edge.

After Effects preserves the order of a layer and its track matte after you duplicate or split the layer. Within the duplicated or split layers, the track matte layer remains on top of the fill layer. For example, if your project contains layers X and Y, where X is the track matte and Y the fill layer, duplicating or splitting both of these layers results in the layer order XYXY.



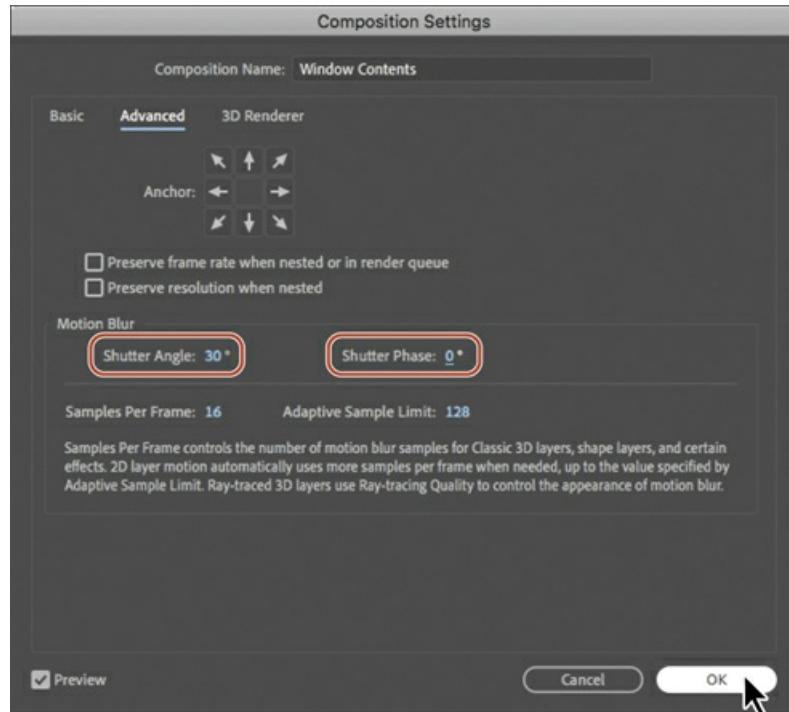
Anatomy of a traveling matte

**A. Track matte layer:** a solid with a rectangular mask, set to Luma Matte. The mask is animated to travel across the screen.

**B. Fill layer:** a solid with a pattern effect.

**C. Result:** The pattern is seen in the track matte's shape and added to the image layer, which is below the track matte layer.

6. Change the Shutter Phase to **0** degrees, and then click OK.



## Animating the shadows

It's time to turn your attention to the shadows cast on the table by the clock and the vase. In a realistic time-lapse image, those shadows would shorten as the sun rises.

There are a few ways to create and animate shadows in After Effects. For example, you could use 3D layers and lights. In this project, however, you'll use the Corner Pin effect to distort the Shadows layer of the imported Photoshop image. Using the Corner Pin effect is like animating with the Photoshop Free Transform tool—the effect distorts an image by repositioning each of its four corners. You can use it to stretch, shrink, skew, or twist an image, or to simulate perspective or movement that pivots from the edge of a layer, such as a door opening.

1. Switch to the sunrise Timeline panel, and make sure you're at the beginning of the time ruler.
2. Select the Shadows layer in the Timeline panel, and then choose Effect > Distort > Corner Pin. Small circles appear around the corner points of the Shadows layer in the Composition panel.

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### Note

If you don't see the controls, choose View Options from the Composition panel menu. In the View Options dialog box, select the Handles and Effect Controls options, and then click OK.

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You'll start by setting the four corners of the Shadows layer to correspond to the four corners of

the glass tabletop. Begin about midway into the animation, when the sun is high enough to start affecting the shadow.

3. Go to 6:00, and then drag each of the four corner-pin handles to the respective corners of the glass tabletop. Notice that the x and y coordinates update in the Effect Controls panel.

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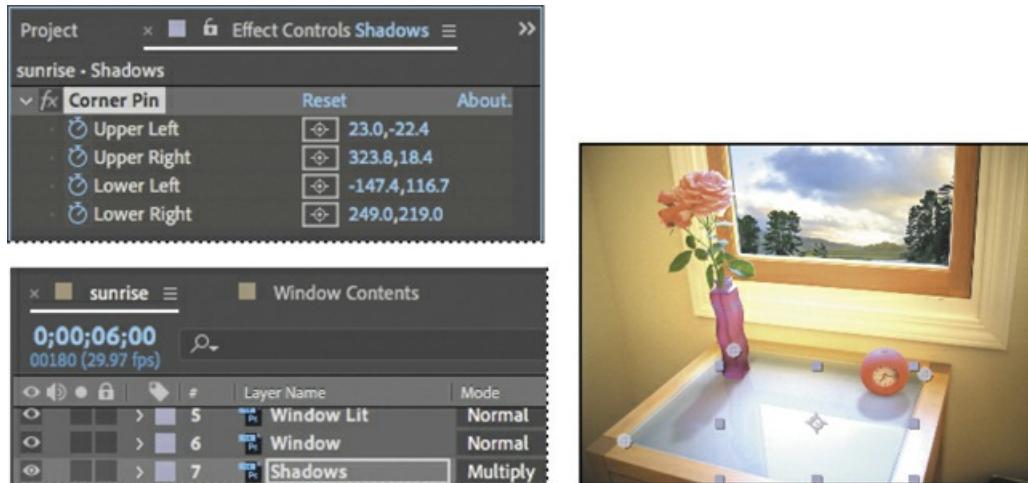
#### ► Tip

The lower right corner of the Shadows layer is offscreen. To adjust that corner, use the Hand tool ( ) to drag the composition so that you can see the pasteboard below the image. Then use the Selection tool ( ) to drag the lower right corner-pin handle to the approximate location.

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If you have trouble getting the shadows to look right, you can manually enter the values shown in the figure that follows step 4.

4. Set a keyframe for each corner at 6:00 by clicking the stopwatch icon ( ) for each position in the Effect Controls panel.



5. Press the End key, or move the current-time indicator to the last frame of the composition.
6. Using the Selection tool ( ), shorten the shadows: Drag the two lower corner-pins about 25% closer to the back edge of the tabletop. You may also need to move the two upper corners in slightly so that the bases of the shadows still align properly with the vase and the clock. Your corner-pin locations should be similar to those in the figure below. After Effects adds keyframes.

7. If necessary, select the Hand tool (), and drag the composition down to center it vertically in the Composition panel. Then switch back to the Selection tool, and deselect the layer.
8. Go to 0:00, and then press the spacebar to preview the entire animation, including the corner-pin effect. When you're done, press the spacebar again.



9. Choose File > Save to save your project.

### Adding a lens flare effect

In photography, when bright light (such as sunlight) reflects off the lens of a camera, it causes a flare effect. Lens flares can be bright, colorful circles and halos, depending on the type of lens in the camera. After Effects offers a few lens flare effects. You'll add one now to enhance the realism of this time-lapse photography composition.

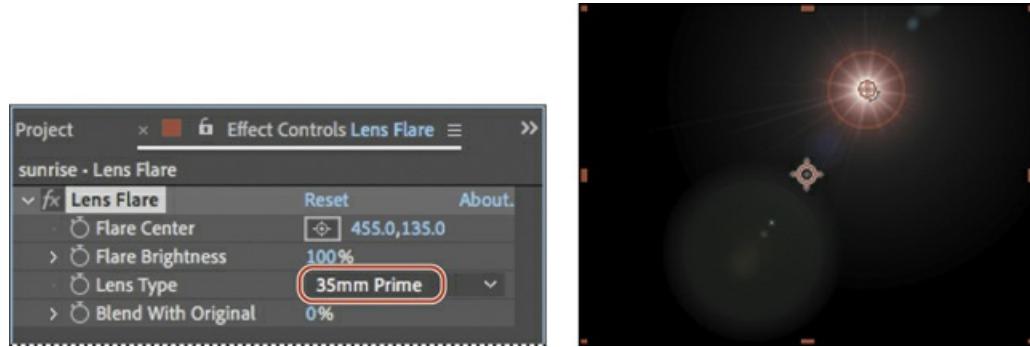
1. Go to 5:10, where the sun is shining brightly into the lens of the camera.
2. With no layers selected in the Timeline panel, choose Layer > New > Solid.
3. In the Solid Settings dialog box, name the layer **Lens Flare**, and click the Make Comp Size button. Then set the Color to black by clicking the swatch and setting all the RGB values to 0 in the Solid Color dialog box. Click OK to return to the Solid Settings dialog box.
4. Click OK to create the Lens Flare layer.



- With the Lens Flare layer selected in the sunrise Timeline panel, choose Effect > Generate > Lens Flare.

The Composition panel and the Effect Controls panel display the visual and numeric default Lens Flare settings, respectively; you'll customize the effect for this composition.

- Drag the Flare Center cross-hairs icon (⊕) in the Composition panel to the center of the sun. Since you cannot see the sun in the Composition panel, position the cross-hairs so that the x, y coordinates in the Effect Controls or Info panel are approximately 455, 135.
- In the Effect Controls panel, change the Lens Type to 35mm Prime, a more diffuse flare effect.



### Tip

You can also enter the Flare Center values directly in the Effect Controls panel.

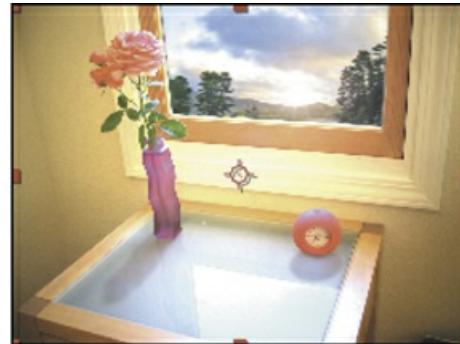
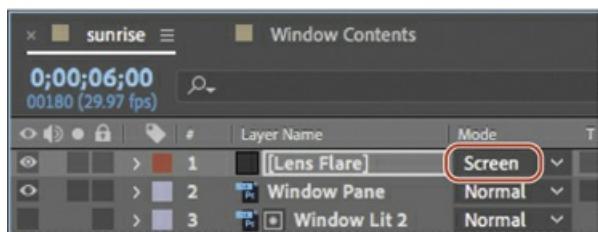
- Make sure you're still at 5:10. In the Effect Controls panel, click the stopwatch icon (⌚) for the Flare Brightness property to set a keyframe at the default value of 100%.
- Adjust the brightness of the lens flare to peak when the sun is highest:

- Go to 3:27, and set the Flare Brightness value to **0%**.
- Go to 6:27, and set the Flare Brightness value to **0%** as well.
- Go to 6:00, and set the Flare Brightness to **100%**.

**10.** With the Lens Flare layer selected in the Timeline panel, choose Layer > Blending Mode > Screen to change the blending mode.

### Tip

You can also choose Screen from the Mode pop-up menu in the Timeline panel.



11. Press the Home key or move the current-time indicator to the beginning of the time ruler, and then press the spacebar to preview the Lens Flare effect. When you're done, press the spacebar again.
12. Click Toggle Switches/Modes at the bottom of the Timeline panel, and then choose File > Save to save your project.

### Adding a video animation

The animation now looks very much like a time-lapse photo—except the clock isn't working yet! The hands of the clock should be spinning quickly to show the progress of time. To show this, you will add an animation that was created specifically for this scene. The animation was created in After Effects as a set of 3D layers that are lit, textured, and masked to blend into the scene.

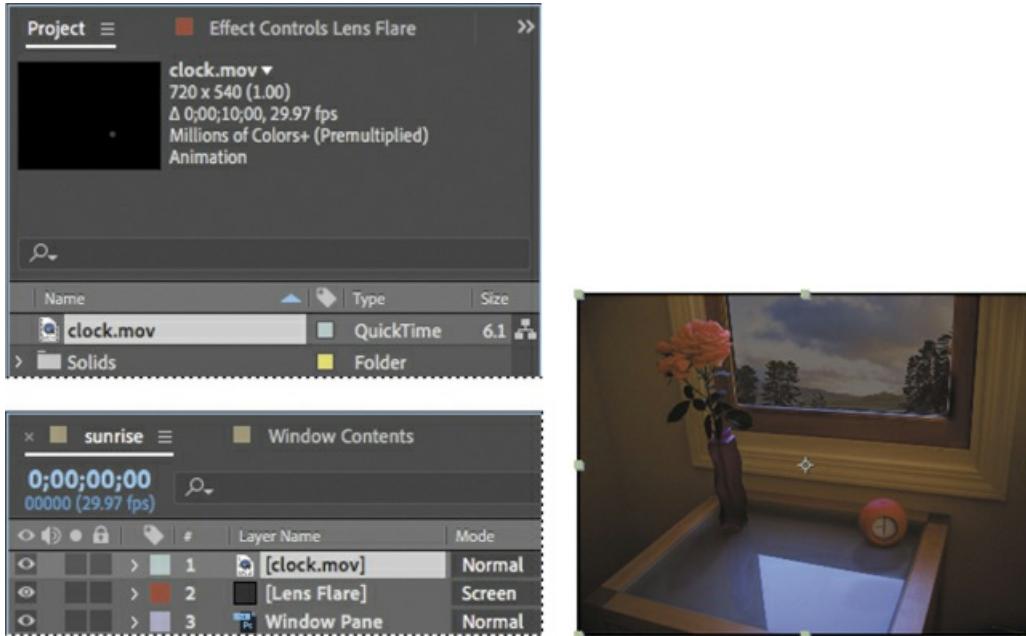
### Note

You'll learn more about 3D layers in [Lessons 12, “Using 3D Features,”](#) and [13, “Working with the 3D Camera Tracker.”](#)

1. Bring the Project panel forward. Close the sunrise Layers folder, and then double-click an empty area in the panel to open the Import File dialog box.
2. In the Lessons/Lesson06/Assets folder, select the clock.mov file, and click Import or Open.

The QuickTime movie `clock.mov` now appears at the top of the Project panel.

3. Click in the sunrise Timeline panel to make it active, and then go to the beginning of the time ruler. Drag the `clock.mov` footage item from the Project panel to the top of the layer stack in the Timeline panel.



4. Preview the animation by pressing the spacebar. Press the spacebar again to stop playback when you're done.
5. Choose File > Save to save the project.

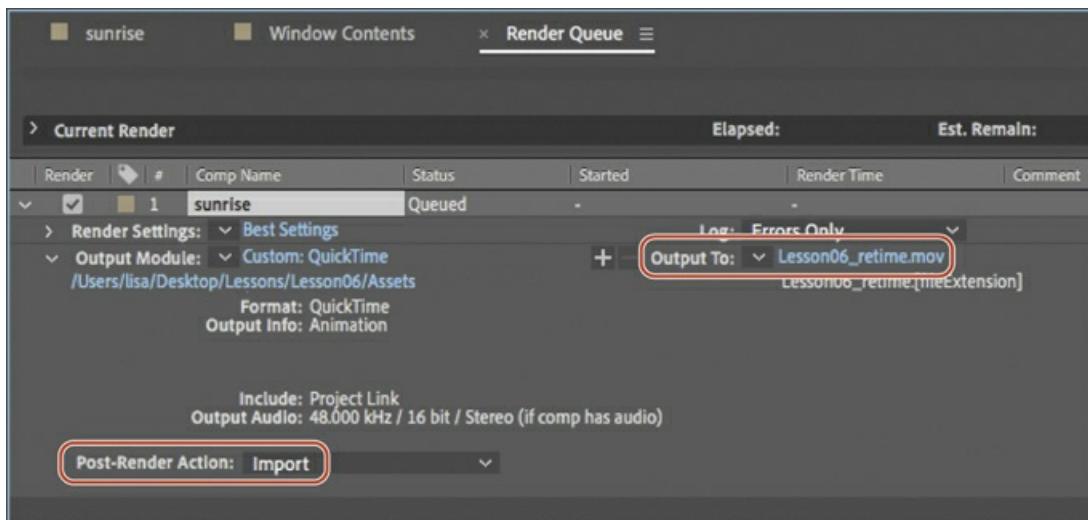
## Rendering the animation

To prepare for the next task—retiming the composition—you need to render the sunrise composition and export it as a movie.

1. Select the sunrise composition in the Project panel, and then choose Composition > Add To Render Queue.

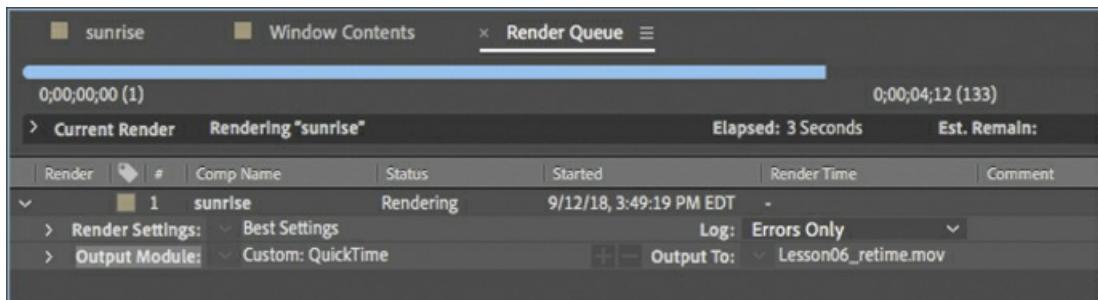
The Render Queue panel opens. Depending on the size of your screen, you may need to maximize the panel to see all the settings.

2. (Optional) Double-click the Render Queue panel tab to make the panel larger.
3. In the Render Queue panel, click the blue words next to the Output To pop-up menu.
4. Navigate to the Lessons/Lesson06/Assets folder, and name the file **Lesson06\_retime.avi** (Windows) or **Lesson06\_retime.mov** (macOS). Then click Save.
5. Expand the Output Module group, and then choose Import from the Post-Render Action menu. After Effects will import the movie file after it's rendered.



6. Hide the Output Module section.
7. Click the Render button in the Render Queue panel.

After Effects displays a progress bar as it renders and exports the composition, and plays an audio alert when it is finished. It also imports the resulting movie file into the project.



8. When After Effects has finished rendering and exporting the composition, double-click the Render Queue panel tab if you maximized the panel earlier. Then click the x in the Render Queue tab to close the Render Queue panel.

## Retiming the composition

So far, you have created a straightforward time-lapse simulation. That's fine, but After Effects offers more ways to play with time using the time-remapping feature. Time remapping lets you dynamically speed up, slow down, stop, or reverse footage. You can also use it to do things like create a freeze-frame result. The Graph Editor and the Layer panel are a big help when remapping time, as you'll see in the following exercise, when you retime the project so that the time-lapse speed changes over the course of the movie.

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### ► Tip

You can get even finer control with the Timewarp effect, which you'll use in [Lesson 14](#), “Advanced Editing Techniques.”

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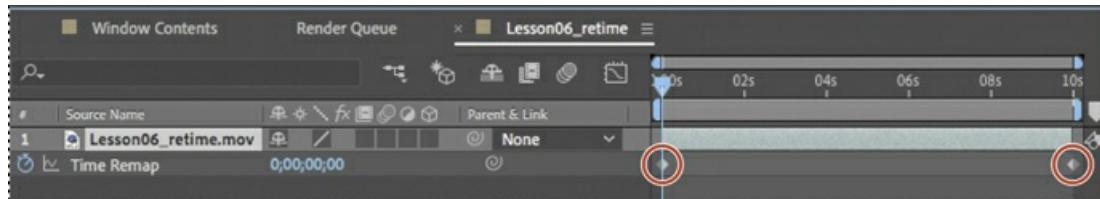
For this exercise, you'll use the movie that you just imported as the basis of a new composition, which will be easier to remap than the original.

1. Deselect everything in the Project panel, and then drag the Lesson06\_retime movie onto the Create A New Composition button (New) at the bottom of the Project panel.

After Effects creates a new composition named Lesson06\_retime, and displays it in the Timeline and Composition panels. Now you can remap all of the elements of the project at once.

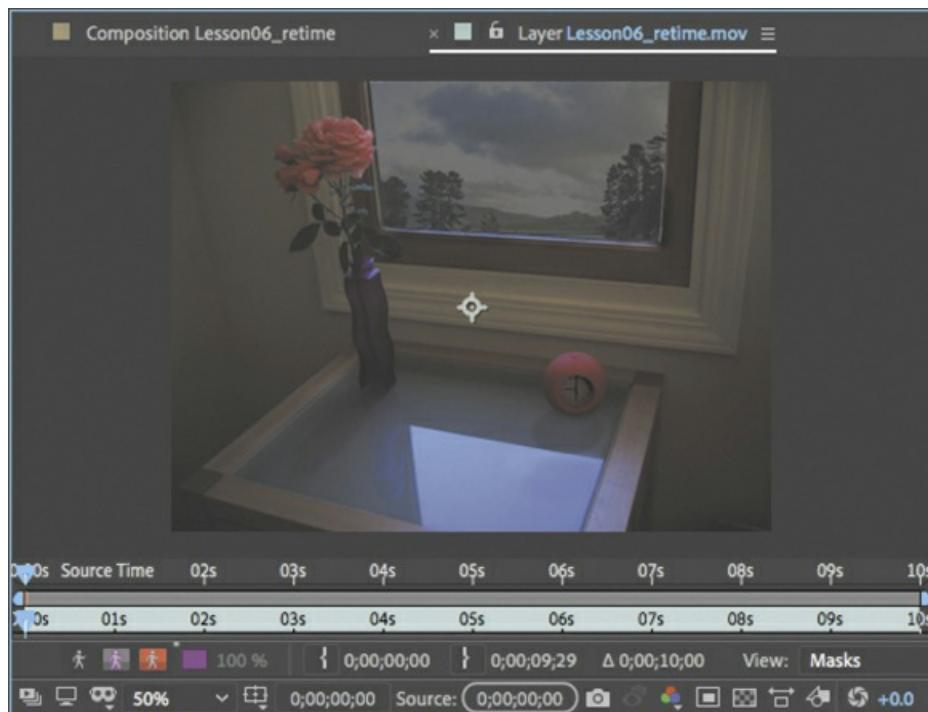
2. With the Lesson06\_retime layer selected in the Timeline panel, choose Layer > Time > Enable Time Remapping.

After Effects adds two keyframes, at the first and last frames of the layer, visible in the time ruler. A Time Remap property also appears under the layer name in the Timeline panel; this property lets you control which frame is displayed at a given point in time.



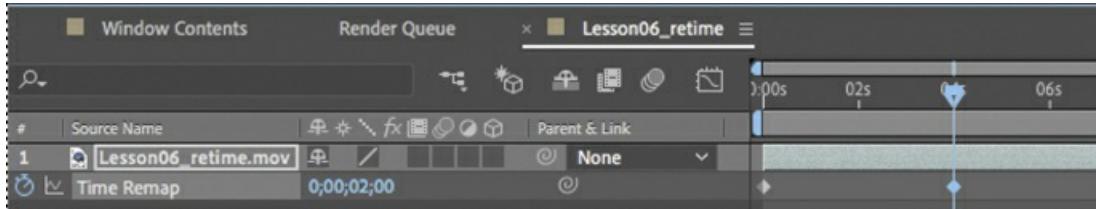
3. Double-click the Lesson06\_retime layer name in the Timeline panel to open it in the Layer panel.

The Layer panel provides a visual reference of the frames you change when you remap time. It displays two time rulers: The time ruler at the bottom of the panel displays the current time. The Source Time ruler, just above the time ruler, has a remap-time marker that indicates which frame is playing at the current time.



4. Press the spacebar to preview the layer, and notice that the source-time and current-time markers in the two Layer panel rulers are synchronized. That will change as you remap time.
5. Go to 4:00, and change the Time Remap value to **2:00**.

This remaps time so that frame 2:00 plays at 4:00. In other words, the composition now plays back at half-speed for the first four seconds of the composition.

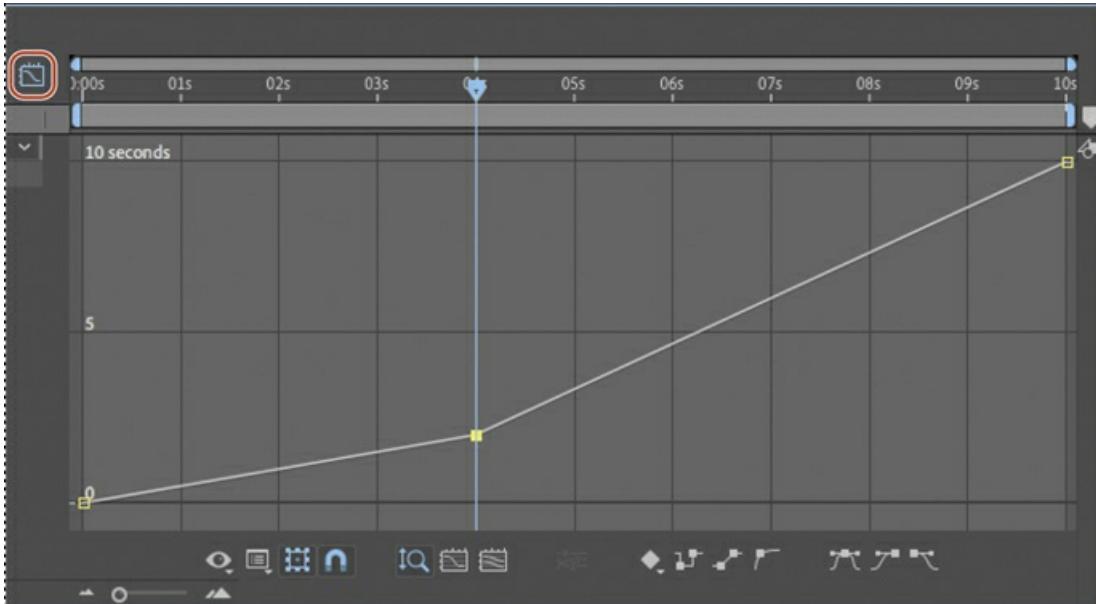


6. Press the spacebar to preview the animation. The composition now runs at half-speed until 4:00, and at a faster speed thereafter. Press the spacebar again when you have finished previewing the animation.

## Viewing time remapping in the Graph Editor

Using the Graph Editor, you can view and manipulate all aspects of effects and animations, including effect property values, keyframes, and interpolation. The Graph Editor displays changes in effects and animations as a two-dimensional graph, with playback time represented horizontally (from left to right). In layer bar mode, in contrast, the time ruler represents only the horizontal time element, without a graphical display of changing values.

1. Make sure the Time Remap property is selected for the Lesson06\_retime layer in the Timeline panel.
2. Click the Graph Editor button (🕒) to display the Graph Editor.



The Graph Editor displays a time-remap graph that shows a white line connecting the keyframes

at 0:00, 4:00, and 10:00. The angle of the line is shallow up to 4:00, and then becomes steeper. The steeper the line, the faster the playback time.

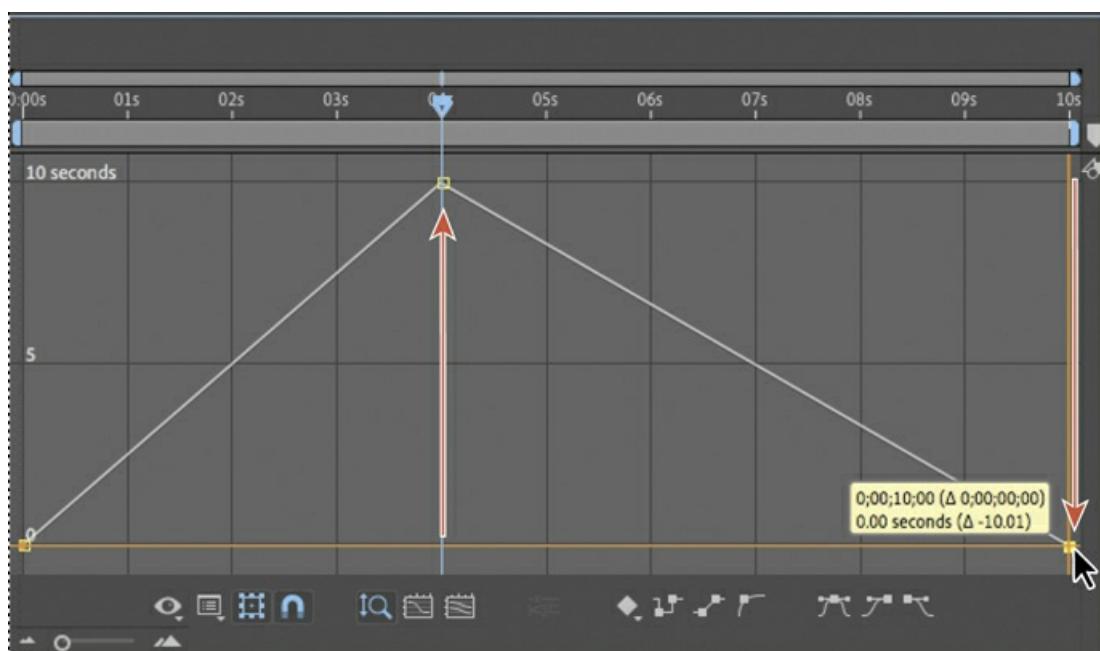
## Using the Graph Editor to remap time

When remapping time, you can use the values in the time-remap graph to determine and control which frame of the movie plays at which point in time. Each Time Remap keyframe has a time value associated with it that corresponds to a specific frame in the layer; this value is represented vertically on the time-remap graph. When you enable time remapping for a layer, After Effects adds a Time Remap keyframe at the start and end points of the layer. These initial Time Remap keyframes have vertical time values equal to their horizontal position.

By setting additional Time Remap keyframes, you can create complex motion effects. Every time you add a Time Remap keyframe, you create another point at which you can change the playback speed or direction. As you move the keyframe up or down in the time-remap graph, you adjust which frame of the video is set to play at the current time.

You'll have some fun with the timing of this project.

1. In the time-remap graph, drag the middle keyframe vertically from 2 up to 10 seconds.
2. Drag the last keyframe down to 0 seconds.



### ► Tip

Watch the Info panel as you drag to see more information as you adjust the keyframe.

3. Go to 0:00, and then press the spacebar to preview the results. Watch the time ruler and

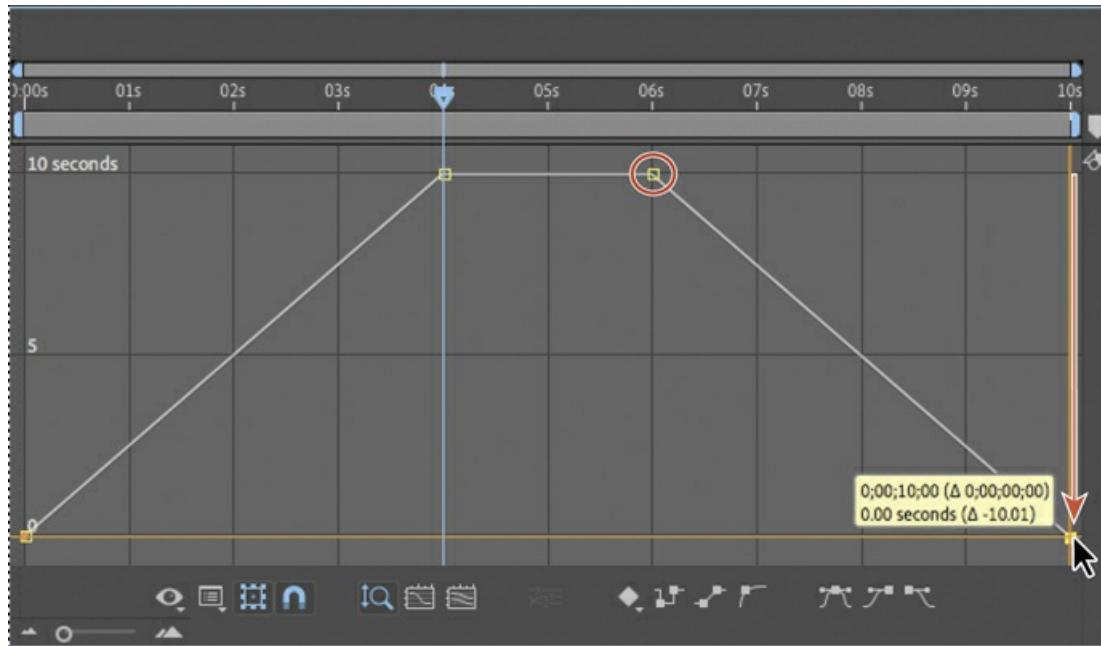
Source Time ruler in the Layer panel to see which frames are playing at any given point in time.

The animation progresses rapidly over the first four seconds of the composition, and then plays in reverse for the rest of the composition.

4. Press the spacebar to stop the preview.

Having fun yet? Keep going.

5. Ctrl-click (Windows) or Command-click (macOS) the last keyframe to delete it. The composition is still in fast-forward mode for the first 4 seconds, but now it holds on a single frame (the last frame) for the rest of the composition.
6. Press the Home key or move the current-time indicator to the beginning of the time ruler, and then press the spacebar to preview the animation. Press the spacebar again when you're done.
7. Ctrl-click (Windows) or Command-click (macOS) the dotted line at 6:00 to add a keyframe at 6:00 with the same value as the keyframe at 4:00.
8. Ctrl-click (Windows) or Command-click (macOS) at 10:00 to add another keyframe, and then drag it down to 0 seconds.



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#### ● Note

Pressing Ctrl or Command temporarily activates the Add Vertex or Delete Vertex tool.

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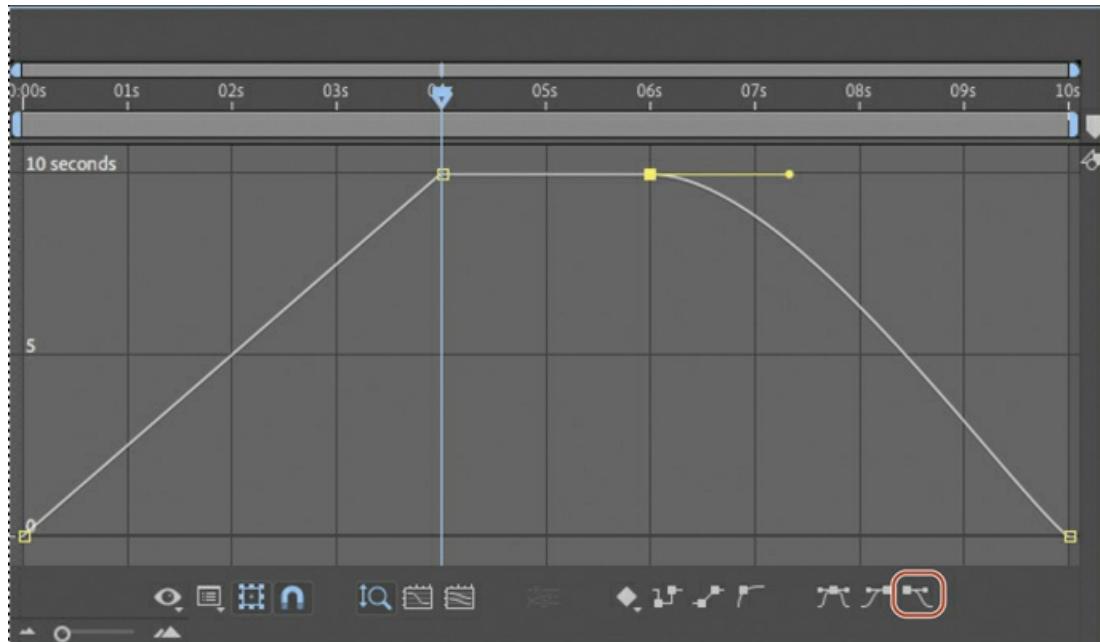
The animation progresses rapidly, holds for two seconds on the last frame, and then runs in reverse.

9. Go to the beginning of the composition, and then press the spacebar to preview the change. Press the spacebar again when you're done.

## Adding an Easy Ease Out

You'll soften the shift in time that occurs at 6 seconds with an Easy Ease Out.

1. Click to select the keyframe at 6:00, and then click the Easy Ease Out button () at the bottom of the Graph Editor. This slows the shift into reverse—the footage runs slowly in reverse at first, and then gradually speeds up.



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### ► Tip

You can refine the amount of ease on this transition further by dragging the Bezier handle that appears out of the right side of the keyframe at 6:00. If you drag it to the right, the transition is softer; if you drag it down or to the left, the transition is more pronounced.

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2. Choose File > Save to save your work so far.

## Scaling the animation in time

Finally, use the Graph Editor to scale the entire animation in time.

1. Click the Time Remap property name in the Timeline panel to select all of the Time Remap keyframes.
2. Make sure the Show Transform Box button () at the bottom of the Graph Editor is

selected; a free-transform selection box should be visible around all of the keyframes.

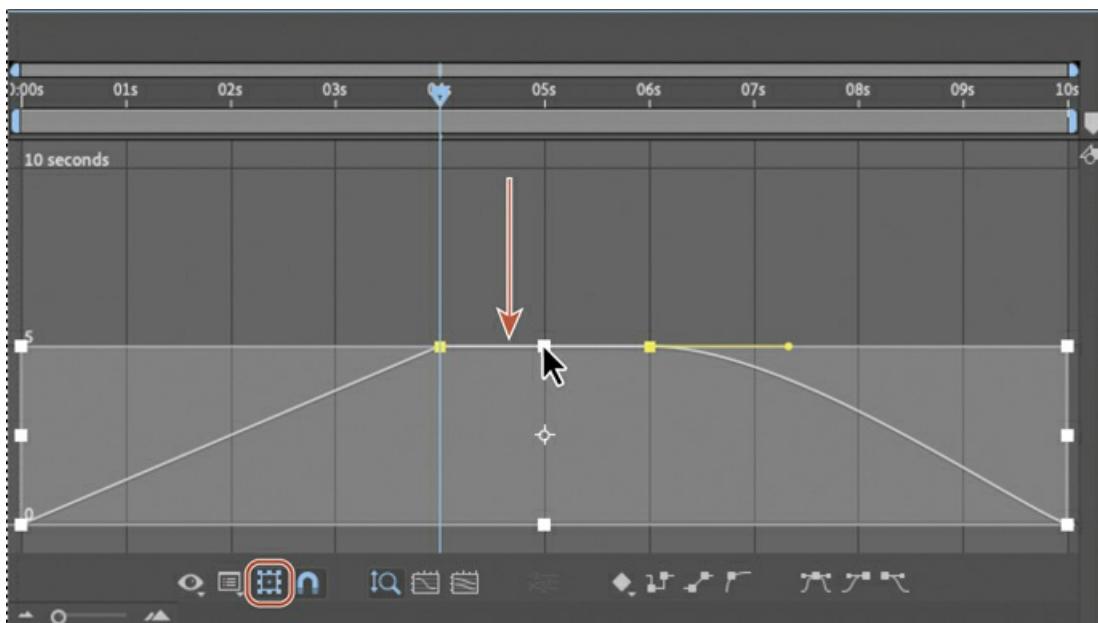
3. Drag one of the upper transform handles from 10 seconds to 5 seconds.

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### Tip

If you press Ctrl (Windows) or Command (macOS) while you drag, the entire free-transform box scales around the center point, which you can also drag to offset. If you press Alt (Windows) or Option (macOS) and drag one corner of the free-transform box, the animation is skewed in that corner as you drag. You can also drag one of the right transform handles to the left to scale the entire animation so that it happens more quickly.

---



The entire graph shifts, reducing the top keyframe values and slowing playback.

4. Press the Home key or move the current-time indicator to the beginning of the time ruler, and then press the spacebar to preview the change. Press the spacebar again when you're done.
5. Choose File > Save.

Congratulations. You've completed a complex animation, including shifts in time. You can render and export the time-remap project if you'd like. Follow the instructions in “[Rendering the animation](#)” on page 167 in this lesson, or see [Lesson 15, “Rendering and Outputting,”](#) for detailed instructions on rendering and exporting a composition.

### Review questions

- 1 Why would you import a layered Photoshop file as a composition?
- 2 What is the pick whip, and how do you use it?

**3** What is a track matte, and how do you use it?

**4** How do you remap time in After Effects?

### Review answers

- 1** When you import a layered Photoshop file into After Effects as a composition, After Effects preserves the layer order, transparency data, and layer styles from the source Photoshop document. It also preserves other features, such as adjustment layers and type.
- 2** The pick whip creates expressions that link the values of one property or effect to another layer. The pick whip is also a way to create parenting relationships. To use the pick whip, simply drag the pick whip icon from one property to another.
- 3** When you want one layer to show through a hole in another layer, you can use a track matte. To create a track matte, you need two layers: one to act as a matte, and another to fill the hole in the matte. You can animate either the track matte layer or the fill layer. When you animate the track matte layer, you create a traveling matte.
- 4** There are several ways to remap time in After Effects. Time remapping lets you dynamically speed up, slow down, stop, or reverse footage. When remapping time, you can use the values in the time-remap graph in the Graph Editor to determine and control which frame of the movie plays at which point in time. When you enable time remapping for a layer, After Effects adds a Time Remap keyframe at the start and end points of the layer. By setting additional Time Remap keyframes, you can create complex motion effects. Every time you add a Time Remap keyframe, you create another point at which you can change the playback speed or direction.

# 7 Working with Masks

## Lesson overview

In this lesson, you'll learn how to do the following:

- Create a mask using the Pen tool.
- Change a mask's mode.
- Edit a mask shape by controlling vertices and direction handles.
- Feather a mask edge.
- Replace the contents of a mask shape.
- Adjust the position of a layer in 3D space to blend it with the rest of a shot.
- Create a reflection effect.
- Modify a mask using the Mask Feather tool.
- Create a vignette.



This lesson will take approximately an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



### PROJECT: SEQUENCE FROM A COMMERCIAL

There will be times when you won't need (or want) everything in a shot to be included in the final composite. Use masks to control what appears.

#### About masks

A mask in Adobe After Effects is a path, or outline, that is used to modify layer effects and properties. The most common use of masks is to modify a layer's alpha channel. A mask consists

of segments and vertices: *Segments* are the lines or curves that connect vertices. *Vertices* define where each segment of a path starts and ends.

A mask can be either an open or a closed path. An open path has a beginning point that is not the same as its end point; for example, a straight line is an open path. A closed path is continuous and has no beginning or end, such as a circle. Closed-path masks can create transparent areas for a layer. Open paths cannot create transparent areas for a layer, but are useful as parameters for an effect. For example, you can use an effect to generate a running light around a mask.

A mask belongs to a specific layer. Each layer can contain multiple masks.

You can draw masks in common geometric shapes—including polygons, ellipses, and stars—with the shape tools, or you can use the Pen tool to draw an arbitrary path.

## Getting started

In this lesson, you will create a mask for the screen of a television and replace the screen’s original content with a movie. Then you’ll adjust the positioning of the new footage so that it fits the perspective of the shot. Finally, you’ll polish the scene by adding a reflection, creating a vignette effect, and adjusting the color.

Begin by previewing the movie and setting up the project.

1. Make sure the following files are in the Lessons/Lesson07 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: Turtle.mov, Watching\_TV.mov
  - In the Sample\_Movies folder: Lesson07.avi, Lesson07.mov
2. Open and play the Lesson07.avi sample movie in Windows Movies & TV or the Lesson07.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

When you begin the lesson, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page [3](#).

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences. Click New Project in the Home window.

After Effects opens to display a new, untitled project.

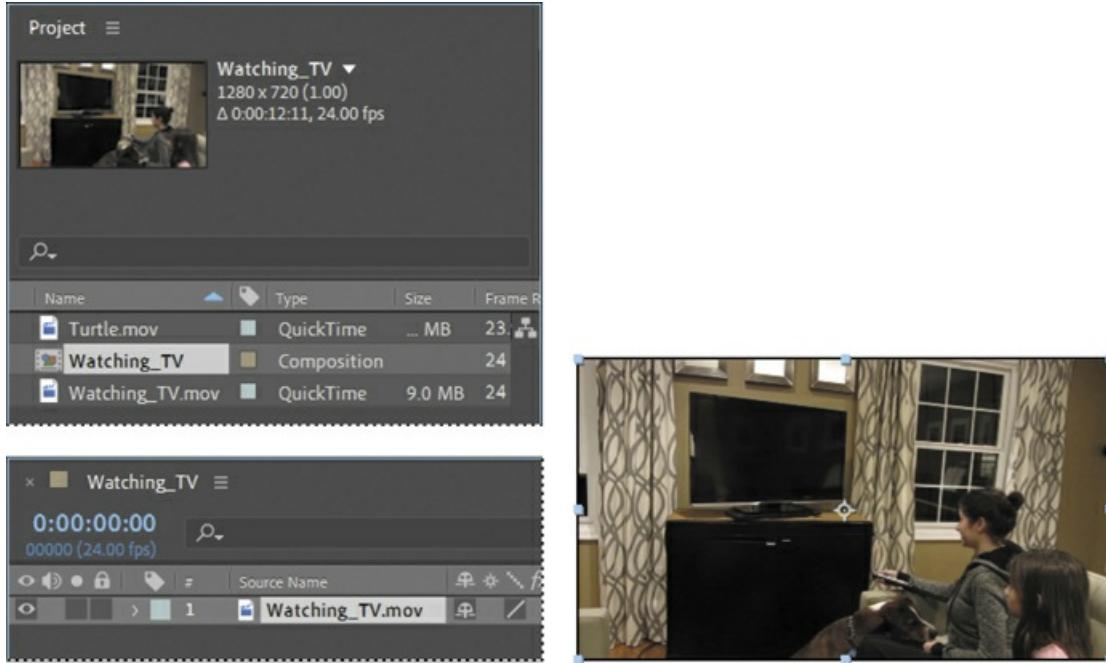
4. Choose File > Save As > Save As, and navigate to the Lessons/Lesson07/Finished\_Project folder.
5. Name the project **Lesson07\_Finished.aep**, and then click Save.

## Creating the composition

You’ll import two footage items for this exercise. Then, you’ll create the composition based on the aspect ratio and duration of one of the footage items.

1. Double-click an empty area of the Project panel to open the Import File dialog box.

2. Navigate to the Lessons/Lesson07/Assets folder, Shift-click to select the Turtle.mov and Watching\_TV.mov files, and then click Import or Open.
3. Select the Watching\_TV.mov footage item in the Project panel, and drag it onto the Create A New Composition button (New Composition icon) at the bottom of the panel.



After Effects creates a composition named Watching\_TV, and opens it in the Composition and Timeline panels.

4. Choose File > Save to save your work so far.

### Creating a mask with the Pen tool

The TV screen is currently blank. To fill it with the video of a sea turtle, you need to mask the screen.

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#### ► Tip

You can also create a mask using the Mocha effect. To learn more about using the Mocha effect, see After Effects Help.

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1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Zoom in to the Composition panel until the TV screen nearly fills the view. You may need to use the Hand tool (Hand icon) to reposition the view in the panel.
3. Make sure the Watching\_TV.mov layer is selected in the Timeline panel, and then select the Pen tool (Pen icon) in the Tools panel.



The Pen tool creates straight lines or curved segments. The TV appears to be rectangular, so you'll try using straight lines first.

4. Click the upper left corner of the TV screen to place the first vertex.
5. Click the upper right corner of the TV screen to place the second vertex. After Effects connects the two points with a segment.
6. Click to place a third vertex in the lower right corner of the TV screen, and then click to place a fourth vertex in the lower left corner of the screen.
7. Move the Pen tool over the first vertex (in the upper left corner). When a circle appears next to the pointer (as in the middle image below), click to close the mask path.



### Editing a mask

The mask looks pretty good, but instead of masking the information *inside* the monitor, the mask has removed everything *outside* the monitor. You need to invert the mask. You'll also use Bezier curves to create a more accurate mask.

### Inverting the mask

For this project, you need everything inside the mask to be transparent and everything outside the mask to be opaque. You'll invert the mask now.

1. Select the `Watching_TV.mov` layer in the Timeline panel, and press the M key to see the Mask Path property for the mask.

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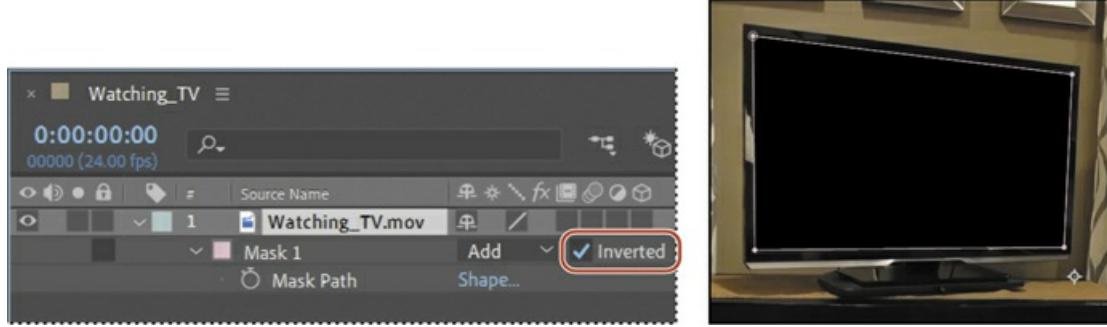
#### ► Tip

Pressing the M key twice in quick succession displays all mask properties for the selected layer.

---

There are two ways to invert this mask: by choosing Subtract from the Mask Mode pop-up menu, or by selecting the Inverted option.

2. Select the Inverted option for Mask 1.



The mask inverts.

3. Press F2 or click an empty area of the Timeline panel to deselect the Watching\_TV.mov layer.

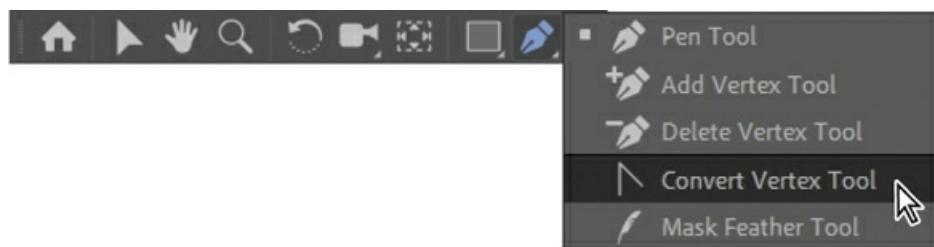
If you look closely at the TV, you may see portions of the screen still appearing around the edges of the mask.

Depending on the scene, gaps in the mask may call attention to changes being made to the layer, so they need to be fixed. To fix them, you'll change the straight lines to subtle curves.

## Creating curved masks

Curved or freeform masks use Bezier curves to define the shape of the mask. Bezier curves give you the greatest control over the shape of the mask. With them, you can create straight lines with sharp angles, perfectly smooth curves, or a combination of the two.

1. In the Timeline panel, select Mask 1, the mask for the Watching\_TV.mov layer. Selecting Mask 1 makes the mask active and also selects all the vertices.
2. In the Tools panel, select the Convert Vertex tool (), which is hidden behind the Pen tool.
3. In the Composition panel, click any of the vertices. The Convert Vertex tool changes the corner vertices to smooth points.



4. Switch to the Selection tool (►), click anywhere in the Composition panel to deselect the mask, and then click the first vertex that you created.

Two direction handles extend off the smooth point. The angle and length of these handles control the shape of the mask.

---

### ► Tip

If you make a mistake, press Ctrl+Z (Windows) or Command+Z (macOS) to undo your last action. You can also change the zoom level and use the Hand tool to reposition the image in the Composition panel as you work.

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5. Drag the right handle of the first vertex around the screen. Notice how this changes the shape of the mask. Notice also that the closer you drag the handle to another vertex, the less the shape of the path is influenced by the direction handle of the first vertex, and the more it is influenced by the direction handle of the second vertex.

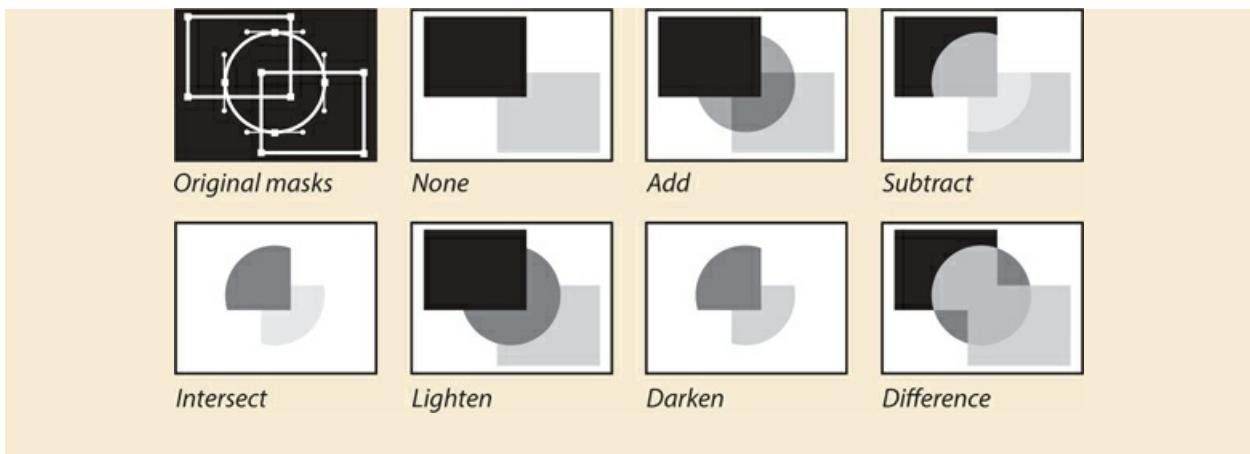


6. Once you are comfortable moving the handles, position the handle of the upper left vertex as in the preceding figure. As you have seen, you can create very fluid shapes.

## About mask modes

Blending modes for masks (mask modes) control how masks within a layer interact with one another. By default, all masks are set to Add, which combines the transparency values of any masks that overlap on the same layer. You can apply one mode to each mask, but you cannot change a mask's mode over time.

The first mask you create interacts with the layer's alpha channel. If that channel doesn't define the entire image as opaque, then the mask interacts with the layer frame. Each additional mask that you create interacts with masks located above it in the Timeline panel. The results of mask modes vary depending on the modes set for the masks higher up in the Timeline panel. You can use mask modes only between masks in the same layer. Using mask modes, you can create complex mask shapes with multiple transparent areas. For example, you can set a mask mode that combines masks and sets the opaque area to the regions where the masks intersect.



## Breaking direction handles

By default, the direction handles of any smooth point are connected to one another. As you drag one handle, the opposite handle moves as well. However, you can break this connection to get greater control over the shape of the mask, and you can create sharp points or long, smooth curves.

1. Select the Convert Vertex tool (**N**) in the Tools panel.
2. Drag the right direction handle of the upper left vertex. The left direction handle remains stationary.
3. Adjust the right direction handle until the top segment of the mask shape more closely follows the curve of the TV in that corner.
4. Drag the left direction handle of the same vertex until the left segment of the shape more closely follows the curve of the TV in that corner.



Drag the right direction handle of the upper left vertex, and then the left direction handle, to follow the curve of the TV screen.

### Tip

Again, you may need to adjust your view in the Composition panel as you work. You can drag the image with the Hand tool. To temporarily switch to the Hand tool, press and hold the spacebar.

5. For each of the remaining corner points, click with the Convert Vertex tool, and then repeat steps 2–4 until the mask’s shape more closely matches the curvature of the TV. If you need

to shift a corner point, use the Selection tool.

6. When you're done, deselect the `Watching_TV.mov` layer in the Timeline panel to check the edge of your mask. You should not see any of the TV screen.



7. Choose `File > Save` to save your work.

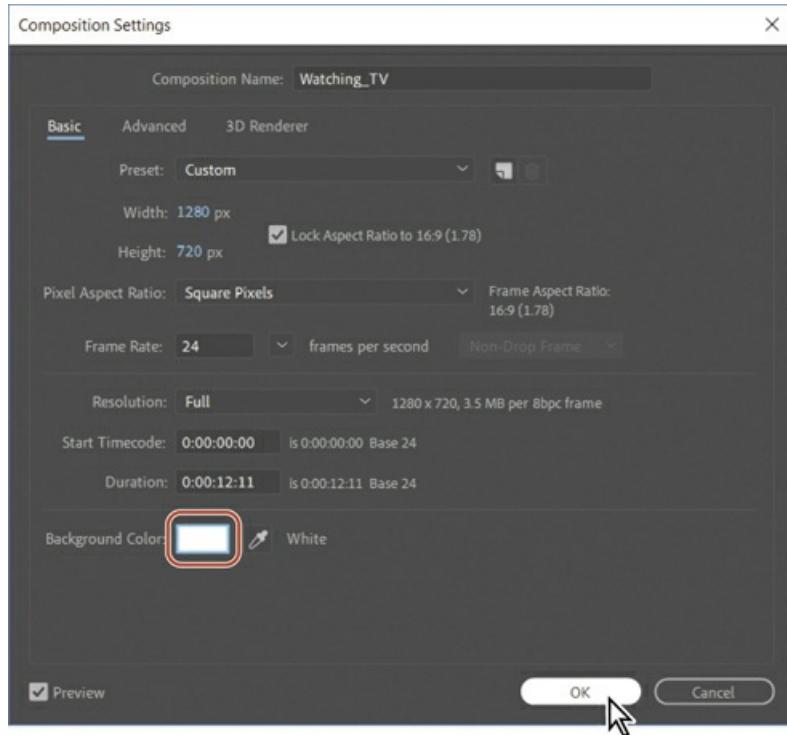
## Creating a Bezier mask

You used the Convert Vertex tool to change a corner vertex to a smooth point with Bezier handles, but you could have created a Bezier mask in the first place. To do so, click in the Composition panel with the Pen tool where you want to place the first vertex. Then click where you want to place the next vertex, and drag in the direction you want to create a curve. When you are satisfied with the curve, release the mouse button. Continue to add points until you've created the shape you want. Close the mask by either clicking on the first vertex or double-clicking the last vertex. Then switch to the Selection tool to refine the mask.

### Feathering the edges of a mask

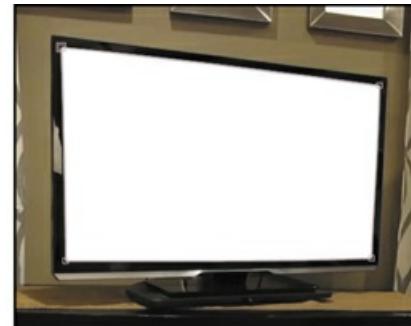
The mask looks good, but you need to soften the edges a bit.

1. Choose `Composition > Composition Settings`.
2. Click the Background Color box, and choose white for the background color (`R=255, G=255, B=255`). Then click `OK` to close the Color Picker, and `OK` again to close the Composition Settings dialog box.



The white background allows you to see that the edge of the TV screen looks a little too sharp and unrealistic. To address this, you'll feather, or soften, the edges.

3. Select the `Watching_TV.mov` layer in the Timeline panel, and press the F key to display the Mask Feather property for the mask.
4. Increase the Mask Feather amount to **1.5, 1.5 pixels**.



5. Hide the properties for the `Watching_TV.mov` layer, and then choose File > Save to save your work.

### Replacing the content of the mask

You are now ready to replace the background with the video of a sea turtle and blend it with the overall shot.

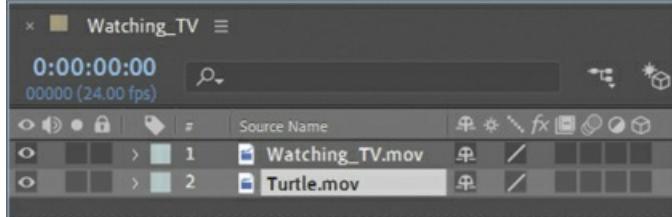
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#### ► Tip

In effects that reference layers, you can use masks for greater control over the effect's influence. You can also use expressions to animate mask points.

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1. In the Project panel, select the *Turtle.mov* file, and drag it to the Timeline panel, placing it below the *Watching\_TV.mov* layer.



2. Choose Fit Up To 100% from the Magnification Ratio pop-up menu at the bottom of the Composition panel so that you can see the whole composition.
3. Select the Selection tool (►), and then drag the *Turtle.mov* layer in the Composition panel until the anchor point is centered in the TV screen.



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#### ● Note

If you're using a Mac with Retina display, you'll see Fit Up To 200%.”

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## Zooming and panning by touch

If you're using a touch-enabled device, such as a Microsoft Surface, Wacom Cintiq Touch, or multi-touch trackpad, you can use your fingers to zoom and pan. Touch gestures let you zoom and pan in the Composition, Layer, Footage, and Timeline panels.

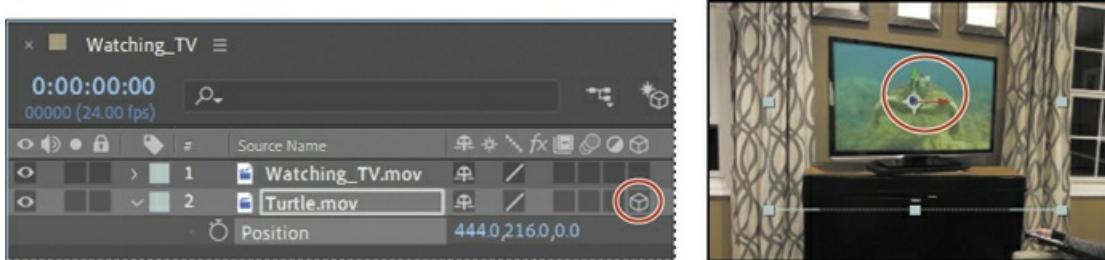
**To zoom:** Pinch two fingers closer together to zoom in, or move them further apart to zoom out.

**To pan:** Move two fingers in unison to pan up, down, left, or right in the panel's current view.

## Repositioning and resizing the clip

The sea turtle clip is too big for the TV screen, so you'll resize it as a 3D layer, which will give you more control over its shape and size.

1. With the Turtle.mov layer selected in the Timeline panel, click the 3D switch () for the layer.
2. Press the P key to show the Position property for the Turtle.mov layer.



The Position property for a 3D layer has three values: From left to right, they represent the x, y, and z axes of the image. The z axis controls the depth of the layer. You can see these axes represented in the Composition panel.

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### Note

You'll learn more about 3D layers in [Lessons 12, “Using 3D Features,”](#) and [13, “Working with the 3D Camera Tracker.”](#)

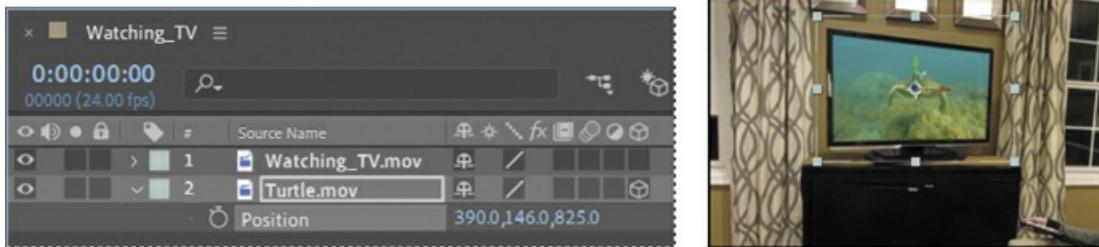
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3. Make sure the Selection tool is selected, and then position the pointer in the Composition panel over the blue cube where the red and green arrows meet so that a small z appears.
4. Drag down and to the right to increase the depth of field, so that the Turtle.mov layer appears smaller.
5. Position the pointer in the Composition panel over the red arrow so that a small x appears. The red arrow controls the x (horizontal) axis of the layer. Drag left or right as necessary to center the clip horizontally in the monitor screen.
6. Position the pointer in the Composition panel over the green arrow so that a small y appears. Then drag up or down as necessary to position the clip vertically in the monitor screen.
7. Continue to drag the x, y, and z axes until the entire clip fits into the TV screen, as shown in the following image.

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### Tip

You can also enter the Position values directly in the Timeline panel instead of dragging in the Composition panel.



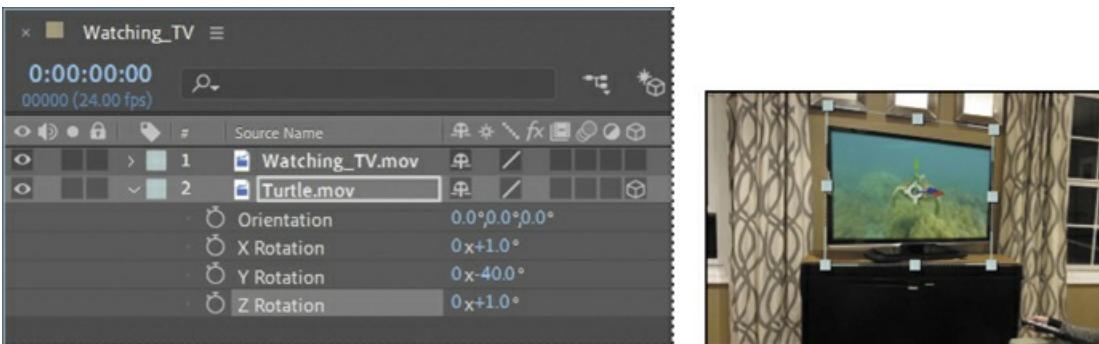
## Rotating the clip

The video clip fits better, but you need to rotate it slightly to improve the perspective.

1. Select the **Turtle.mov** layer in the Timeline panel, and press the R key to reveal its Rotation properties.

Again, since this is a 3D layer, you can control rotation on the x, y, and z axes.

2. Change the X Rotation value to **1** degree and the Y Rotation value to **-40** degrees. This swivels the layer to match the perspective of the TV screen.
3. Change the Z Rotation value to **1** degree to align the layer with the TV screen.



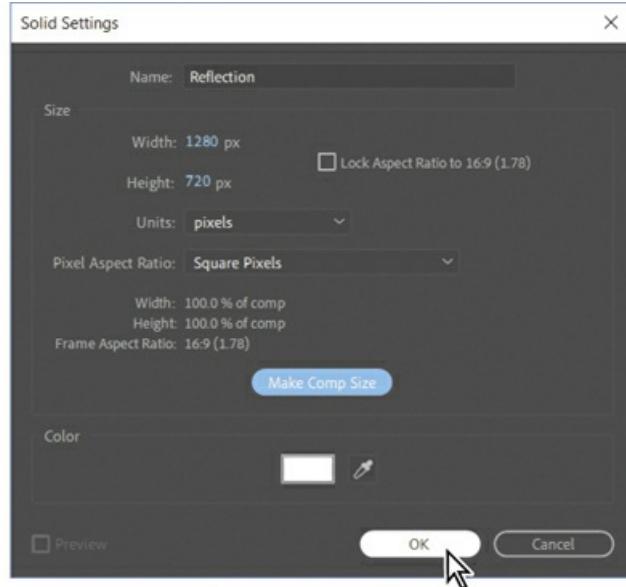
Your composition should now resemble the preceding image.

4. Hide the properties for the **Turtle.mov** layer, and then choose **File > Save** to save your work.

## Adding a reflection

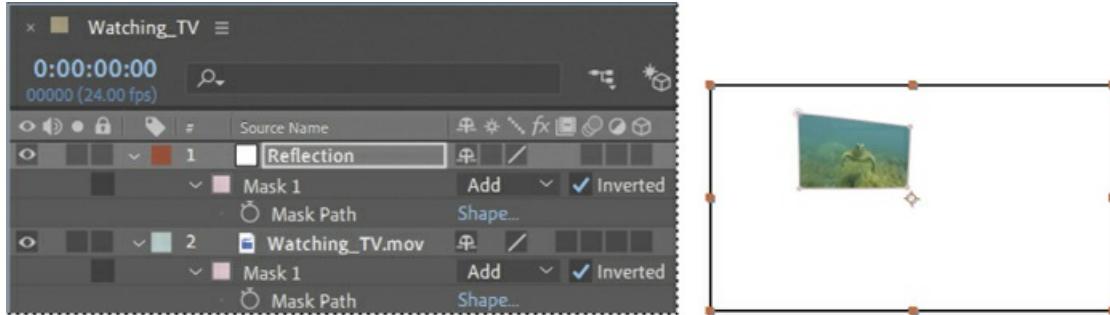
The masked image looks convincing, but you can make it look even more realistic by adding a reflection to the TV screen.

1. Click an empty area in the Timeline panel to deselect all layers, and then choose **Layer > New > Solid**.
2. In the Solid Settings dialog box, name the layer **Reflection**, click the **Make Comp Size** button, change the Color to white, and then click OK.



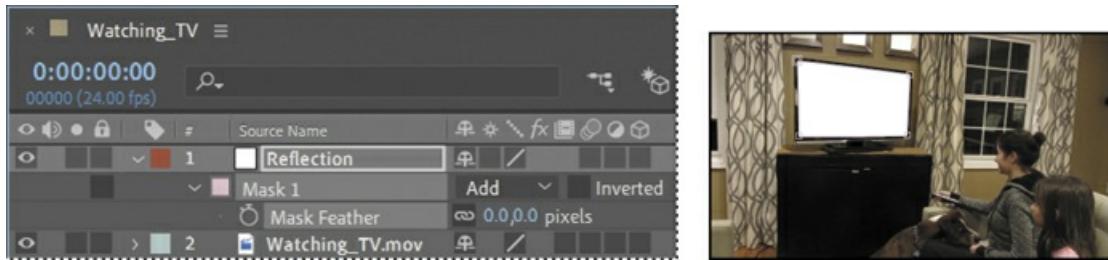
Instead of trying to exactly re-create the shape of the *Watching\_TV.mov* layer's mask, it is easier to copy it to the *Reflection* layer.

3. Select the *Watching\_TV.mov* layer in the Timeline panel, and press the M key to display the Mask Path property for the mask.
4. Select Mask 1, and then choose Edit > Copy or press Ctrl+C (Windows) or Command+C (macOS).
5. Select the *Reflection* layer in the Timeline panel, and then choose Edit > Paste or press Ctrl+V (Windows) or Command+V (macOS).



This time, you want to keep the area inside the mask opaque and make the area outside the mask transparent.

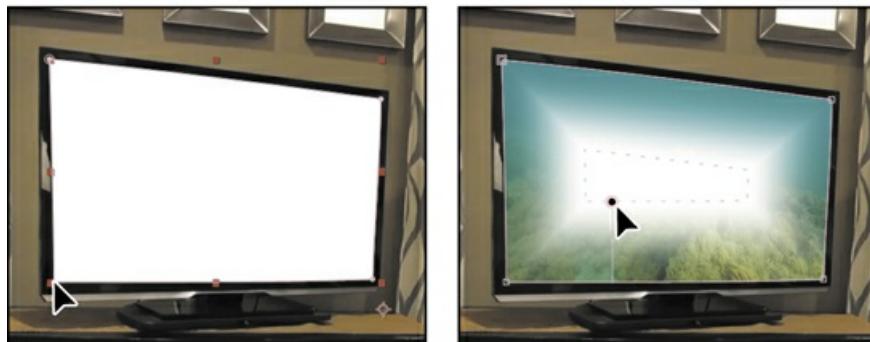
6. Select the *Watching\_TV.mov* layer, and then press U to hide the mask properties.
7. Select the *Reflection* layer in the Timeline panel, and press the F key to reveal the Mask 1 Mask Feather property for the layer.
8. Change the Mask Feather value to 0 (zero).
9. Deselect the Inverted option. The *Reflection* layer now obscures the *Turtle.mov* layer.



10. Zoom in to see the screen, and then select the Mask Feather tool (), hidden beneath the Convert Vertex tool () in the Tools panel.

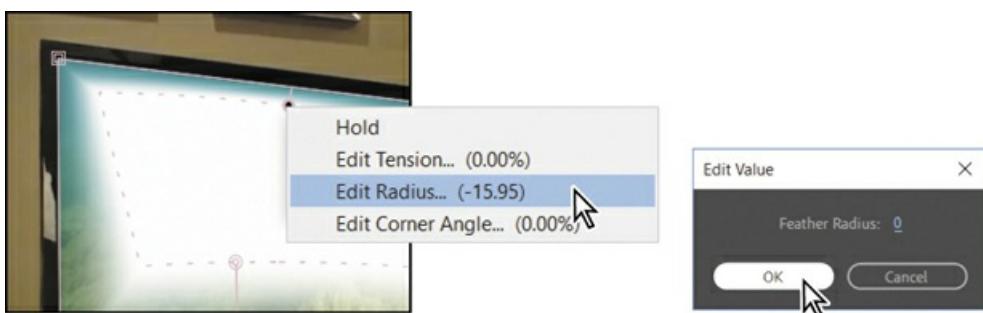
The Mask Feather property adjusts the width of the feather the same amount all the way around the mask. However, the Mask Feather tool lets you vary the feathering width at points you define on the closed mask.

11. Click the Reflection layer in the Timeline panel to select it. Then click the lower left vertex to create a feather point.
12. Click the feather point again, and without releasing the mouse button, drag that feather point inward so that only the center of the screen is reflected, and so that the feather point is positioned as shown in the image below.



Currently the feather extends evenly across the mask. You'll add more feather points for greater flexibility.

13. Click in the center of the top of the mask to create another feather point. Then drag the feather point down slightly, into the mask.
14. Right-click or Control-click the feather point you just created, and choose Edit Radius. Change the Feather Radius to **0**, and click OK.



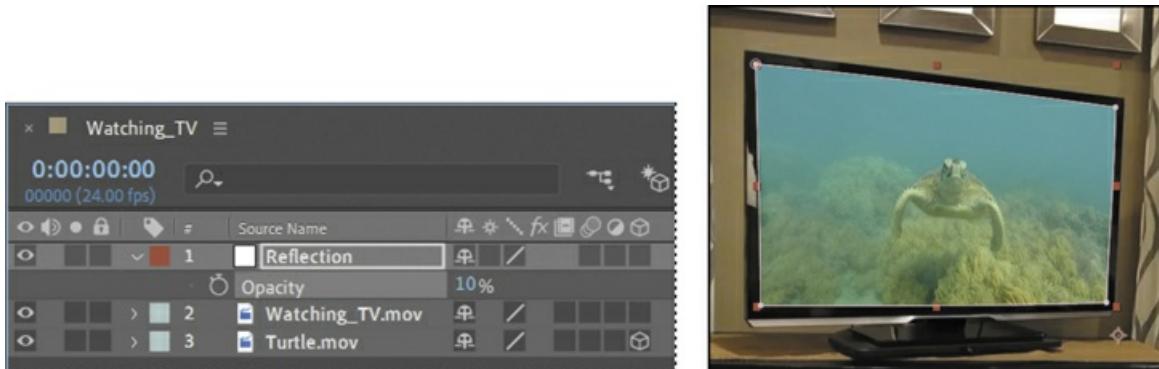
This is a good start, but the sides slope in too sharply. You'll add more feather points to change the angle.

15. Add another feather point by clicking the left edge of the mask, about one-third of the way from the top.
16. Add a similar feather point on the right side.



The shape of the reflection is good, but it's obscuring the image. You'll change the opacity to reduce its effect.

17. Select the Reflection layer in the Timeline panel, and then press the T key to reveal the Opacity property. Change its value to **10%**.

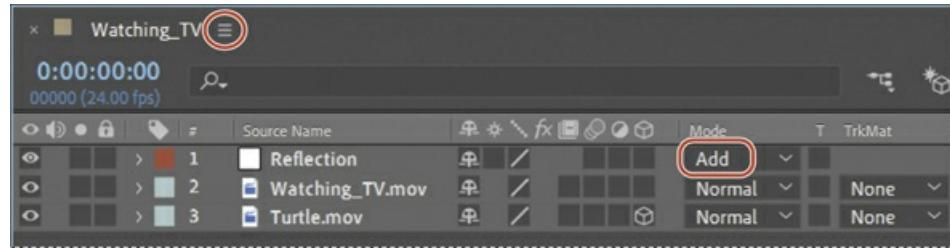


18. Press T to hide the Opacity property, and then press F2 or click an empty area in the Timeline panel to deselect all layers.

## Applying a blending mode

To create unique interactions between layers, you may want to experiment with blending modes. Blending modes control how each layer blends with, or reacts to, layers beneath it. Blending modes for layers in After Effects are identical to blending modes in Adobe Photoshop.

1. From the Timeline panel menu, choose Columns > Modes to display the Mode pop-up menu.
2. Choose Add from the Reflection layer's Mode pop-up menu.



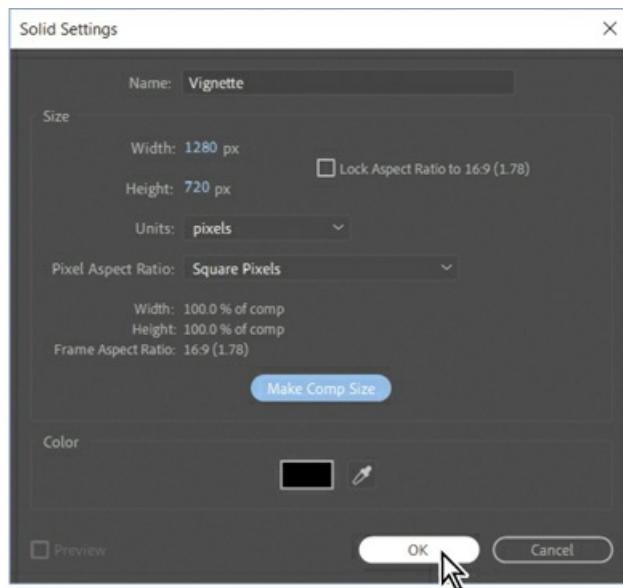
This creates a hard glare on the TV screen image and boosts the colors underneath.

3. Choose File > Save to save your work.

## Creating a vignette

A popular effect in motion graphic design is to apply a vignette to the composition. This is often done to simulate light variations of a glass lens. It creates an interesting look that focuses the attention on the subject and sets the shot apart.

1. Zoom out to see the whole image.
2. Click an empty area in the Timeline panel to deselect all layers, and then choose Layer > New > Solid.
3. In the Solid Settings dialog box, name this layer **Vignette**, click the Make Comp Size button, change the Color to black (R=0, G=0, B=0), and then click OK.

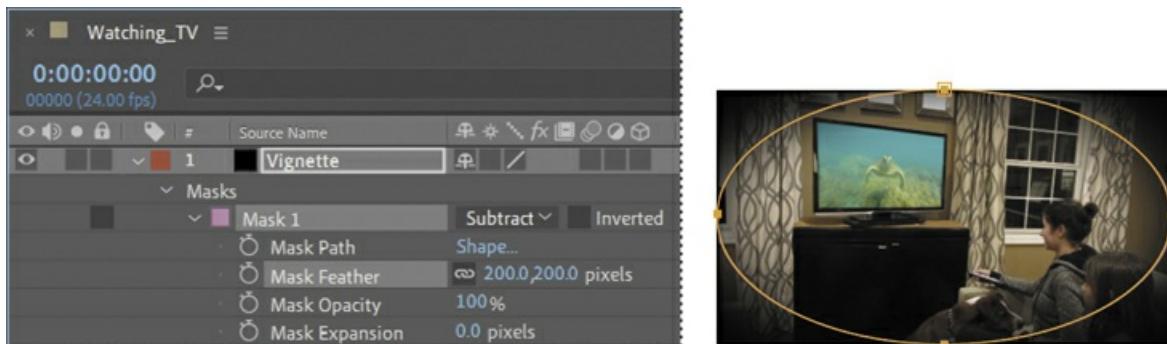


In addition to the Pen tool, After Effects provides tools that let you easily create square and elliptical masks.

4. In the Tools panel, select the Ellipse tool (○), hidden behind the Rectangle tool (□).
5. In the Composition panel, position the cross-hairs pointer in the upper left corner of the image. Drag to the opposite corner to create an elliptical shape that fills the image. Adjust the shape and position using the Selection tool, if necessary.
6. Expand the Mask 1 property in the Vignette layer to display all of the mask properties for the layer.

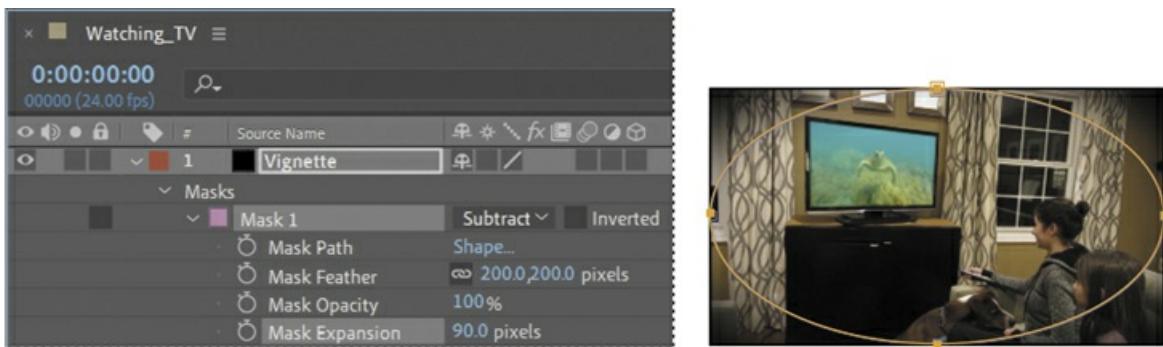
7. Choose Subtract from the Mask 1 Mode pop-up menu.
8. Increase the Mask Feather amount to **200, 200** pixels.

Your composition should now resemble the following figure.



Even with this large feather amount, the vignette is a bit intense and constricting. You can give the composition more breathing room by adjusting the Mask Expansion property. The Mask Expansion property represents, in pixels, how far from the original mask edge you are expanding or contracting the adjusted edge.

9. Increase Mask Expansion to **90** pixels.



10. Hide the properties for the Vignette layer, and then choose File > Save.

## Using the Rectangle and Ellipse tools

The Rectangle tool, as the name suggests, creates a rectangle or square. The Ellipse tool creates an ellipse or circle. You create mask shapes with these tools by dragging them in the Composition or Layer panel.

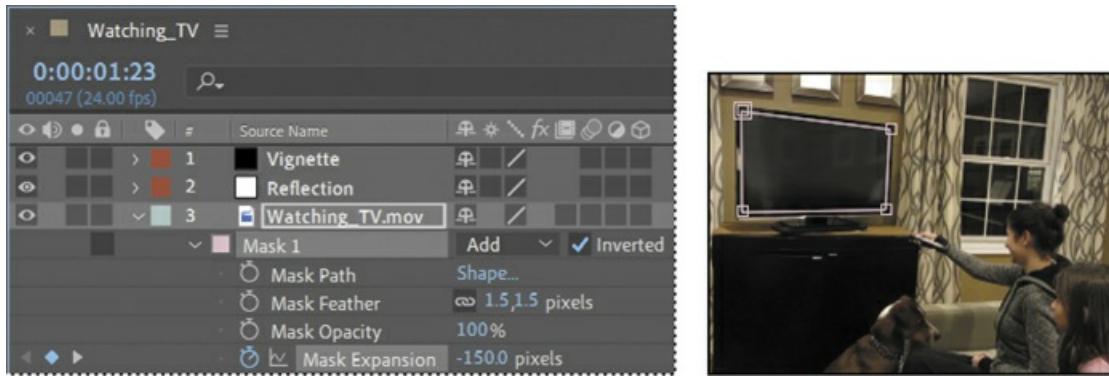
If you want to draw a perfect square or circle, press the Shift key as you drag with the Rectangle tool or the Ellipse tool. To create your mask from the center, press Ctrl (Windows) or Command (macOS) after you start to drag. Press Ctrl+Shift or Command+Shift after you start to drag to create a perfect square or circle mask from a center anchor point.

Be careful! If you use these tools without a layer selected, you'll draw a shape, not a mask.

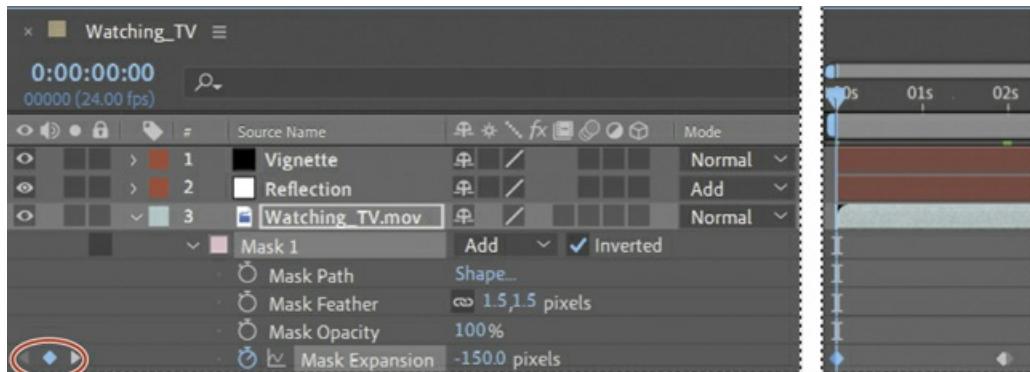
## Adjusting the timing

The sea turtle video shouldn't appear until the girl turns on the TV. You'll adjust the Turtle.mov layer's start point and animate the mask accordingly.

1. Go to 2:00, and then drag the entire Turtle.mov layer to the right so that the layer begins at 2:00.
2. Select the Watching\_TV.mov layer, and press MM to see the mask properties.
3. Click the stopwatch icon next to Mask Expansion to create a keyframe at 2:00.
4. Go to 1:23, and change the Mask Expansion value to **-150** pixels to reveal the blank TV screen.



5. Go to the beginning of the time ruler, and click the Add Or Remove Keyframe At Current Time icon to add a keyframe for the mask expansion property.



6. Hide the properties for all layers, and press the spacebar to preview your movie.



## Tips for creating masks

If you have worked with Adobe Illustrator or Photoshop, or similar applications, you're probably familiar with masks and Bezier curves. If not, here are a few additional tips to help you create them effectively:

- Use as few vertices as possible.
- You can close a mask by clicking the starting vertex. To open a closed mask, click a mask segment, choose Layer > Mask And Shape Path, and deselect Closed.
- To add points to an open path, press Ctrl (Windows) or Command (macOS), and click the last point on the path with the Pen tool. When the point is selected, you can continue adding points.

## Trimming the work area

The Turtle clip is shorter than the Watching\_TV clip. Currently, the girls are watching a blank screen at the end of the movie. You'll move the work area end point to the end of the Turtle.mov layer so only that portion of the movie will render.

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### ► Tip

Alternatively, you can change the duration of the movie to 11:17. To do so, choose Composition > Composition Settings, and then type **11.17** in the Duration box.

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1. Go to 11:17, the last frame of the Turtle.mov layer.
2. Press N to move the work area end point to the current time.
3. Choose File > Save to save your work.

In this lesson, you have worked with the mask tools to hide, reveal, and adjust portions of a composition to create a stylized inset shot. Next to keyframes, masks are probably the most-used feature of After Effects.

## Review questions

- 1 What is a mask?
- 2 Name two ways to adjust the shape of a mask.
- 3 What is a direction handle used for?
- 4 What is the difference between an open mask and a closed mask?
- 5 How is the Mask Feather tool useful?

## Review answers

- 1 A mask in After Effects is a path, or outline, that is used to modify layer effects and properties. The most common use of masks is to modify a layer's alpha channel. A mask consists of segments and vertices.
- 2 You can adjust the shape of a mask by dragging individual vertices or by dragging a segment.

- 3** A direction handle is used to control the shape and angle of a Bezier curve.
- 4** An open mask can be used to control effects or the placement of text; it does not define a region of transparency. A closed mask defines a region that will affect the alpha channel of a layer.
- 5** The Mask Feather tool lets you vary the width of feathering at different points on a mask. With the Mask Feather tool, click to add a Feather point, and then drag it.

# 8 Distorting Objects with the Puppet Tools

## Lesson overview

In this lesson, you'll learn how to do the following:

- Place Position pins using the Puppet Position Pin tool.
- Deform an image using Advanced pins.
- Define areas of overlap using the Overlap pins.
- Manipulate rotation and scale using Bend pins.
- Stiffen parts of an image using Starch pins.
- Animate the position of puppet pins.
- Record animation using the Puppet Sketch tool.
- Animate facial expressions with Character Animator.



This lesson will take approximately an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: ANIMATED ILLUSTRATION

Pull, squash, stretch, and otherwise deform objects on the screen using the Puppet tools. Whether you're creating realistic animations, fantastic scenarios, or modern art, the Puppet tools will expand your creative freedom.

### Getting started

Using the Puppet tools in After Effects, you can add natural motion to raster images and vector graphics. Five tools create pins to define the point of deformation, areas of overlap, and areas that should remain more rigid. An additional tool, the Puppet Sketch tool, lets you record animation in real time. In this lesson, you'll use the Puppet tools to animate a crab's pincers in an advertisement.

Start by previewing the final movie and then setting up the project.

1. Make sure the following files are in the Lessons/Lesson08 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: crab.psd, text.psd, Water\_background.mov
  - In the Sample\_Movies folder: Lesson08.avi, Lesson08.mov
2. Open and play the Lesson08.avi sample movie in Windows Movies & TV or the Lesson08.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

When you begin this lesson, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page [3](#).

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS). When prompted, click OK to delete your preferences. Click New Project in the Home window.

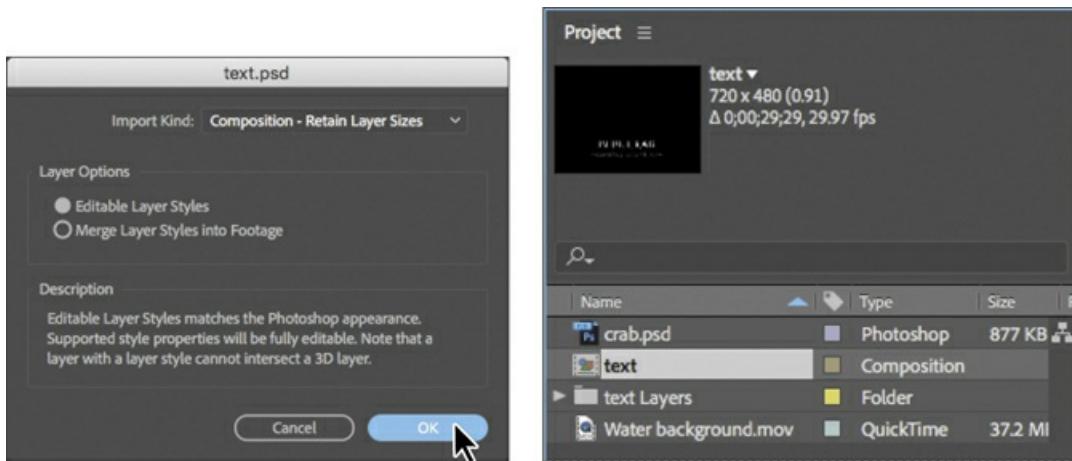
After Effects opens to display a blank, untitled project.

4. Choose File > Save As > Save As.
5. In the Save As dialog box, navigate to the Lessons/Lesson08/Finished\_Project folder.
6. Name the project **Lesson08\_Finished.aep**, and then click Save.

## Importing footage

You'll import two Adobe Photoshop files and a background movie.

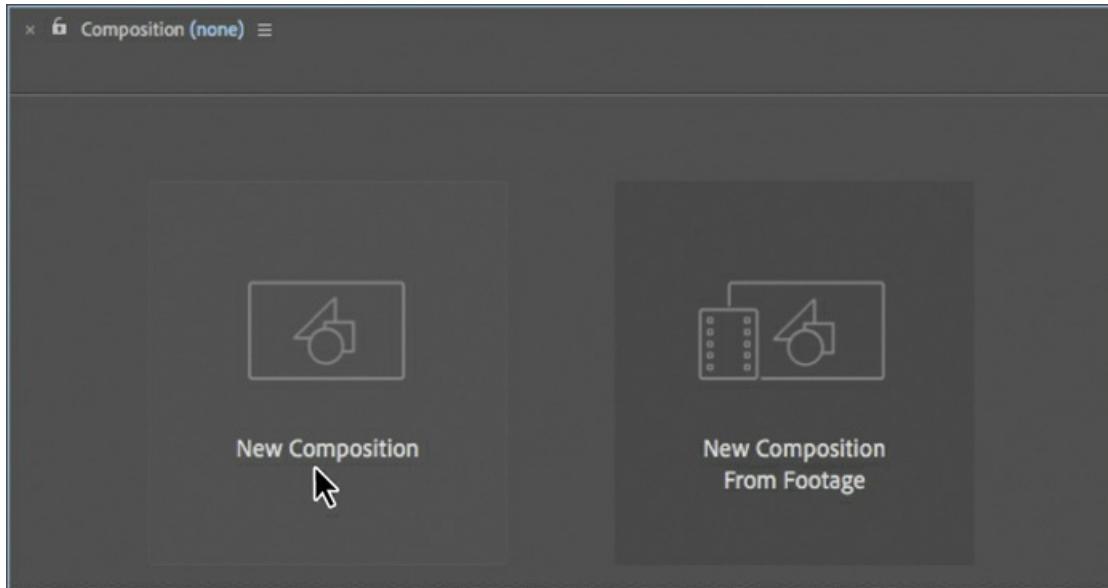
1. Choose File > Import > File.
2. Navigate to the Lessons/Lesson08/Assets folder. Press Ctrl or Command to select the crab.psd and Water\_background.mov files. Then click Import or Open. The assets appear in the Project panel.
3. Double-click an empty area in the Project panel to open the Import File dialog box again. Select the text.psd file in the Lessons/Lesson08/Assets folder.
4. Choose Composition – Retain Layer Sizes from the Import As menu. (In macOS, you may need to click Options to see the Import As menu.) Then click Import or Open.
5. In the Text.psd dialog box, select Editable Layer Styles, and click OK. The imported file is added as a composition to the Project panel; its layers are added in a separate folder.



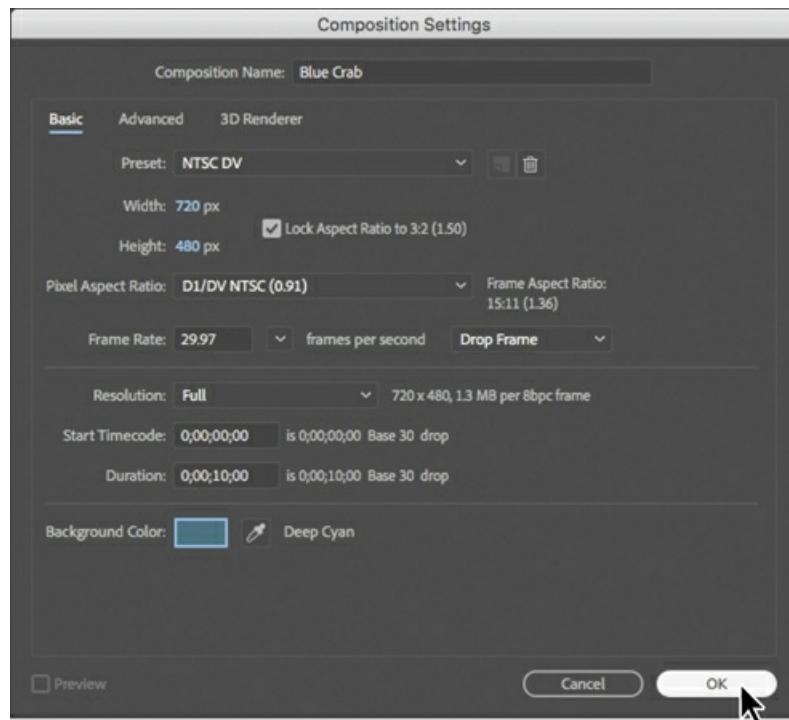
## Creating the composition

As with any project, you need to create a new composition.

1. Click New Composition in the Composition panel.



2. Name the composition **Blue Crab**.
3. Choose NTSC DV from the Preset pop-up menu. The preset automatically sets the width, height, pixel aspect ratio, and frame rate for the composition.
4. In the Duration field, type **1000** to specify 10 seconds.
5. Change the Background Color to a deep cyan color. (We used R=5, G=62, B=65.) Then click OK to close the Composition Settings dialog box.

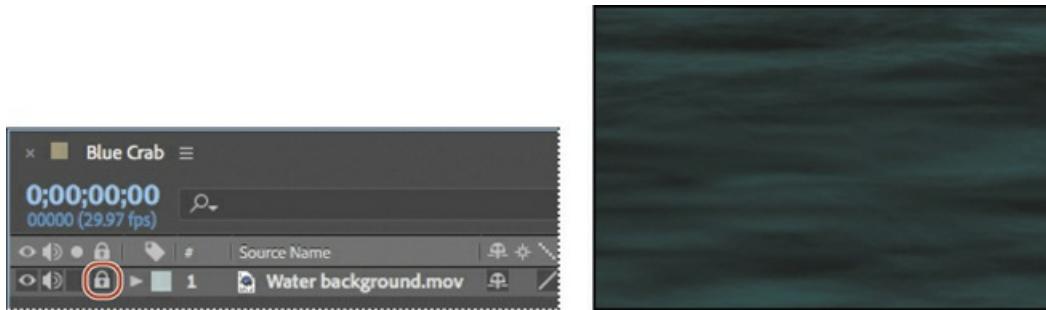


After Effects opens the new composition in the Timeline and Composition panels.

## Adding the background

It's easier to animate the image in context, so first you'll add the background to the composition.

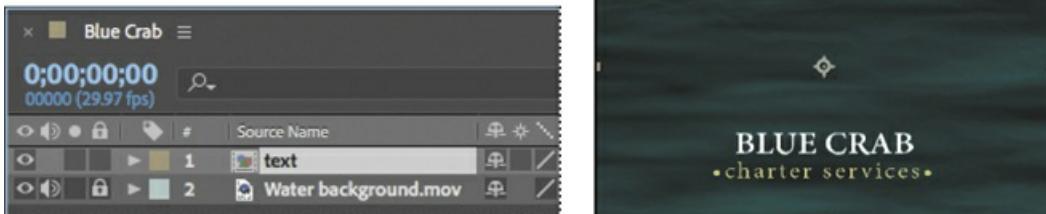
1. Press the Home key or move the current-time indicator to the beginning of the composition.
2. Drag the Water\_background.mov file to the Timeline panel.
3. Click the Lock icon (🔒) for the layer to prevent accidental changes to it for now.



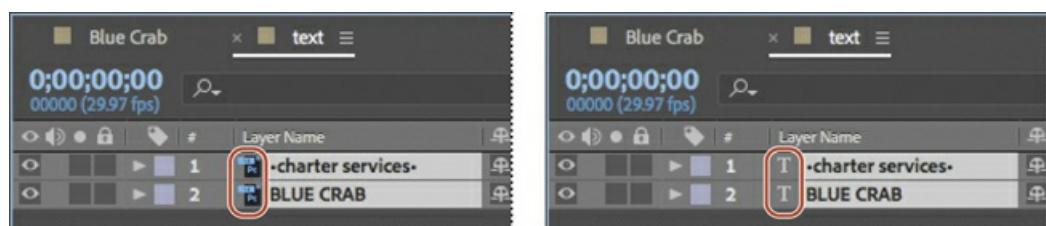
## Animating imported text

The final movie includes two lines of animated text. Because you imported the text.psd file as a composition with layers intact, you can work on it in its own Timeline panel, editing and animating its layers independently. You'll add an animation preset to each layer.

1. Drag the text composition from the Project panel into the Timeline panel, placing it at the top of the layer stack.



2. Double-click the text composition to open it in its own Timeline panel.
3. Shift-click to select both layers in the text Timeline panel, and choose Layer > Create > Convert to Editable Text.



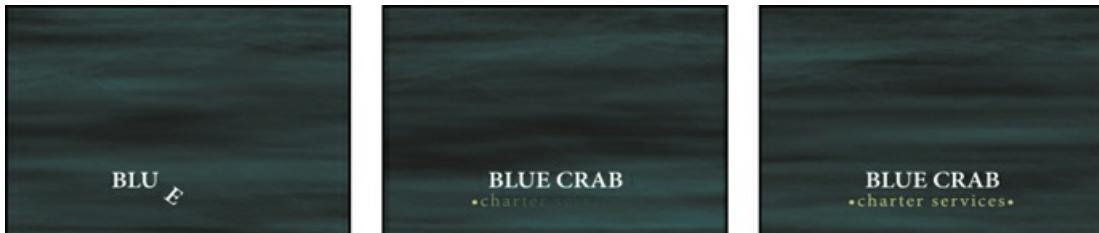
Now the text layers can be edited, so you can apply animation presets.

4. Go to 3:00. Then deselect both layers, and select only the BLUE CRAB layer.
5. In the Effects and Presets panel, search for the Fly In With A Twist animation preset. Then drag it onto the BLUE CRAB layer.



By default, the animation preset lasts just over two and a half seconds, so the text will begin to fly in at 3:00 and finish at 5:16. After Effects adds the keyframes for the effect.

6. Go to 5:21, and select the charter services layer.
7. In the Effects and Presets panel, search for the Slow Fade On animation preset. Then drag it onto the charter services layer.
8. Return to the Blue Crab Timeline panel, and move the current-time indicator to the beginning of the time ruler. Press the spacebar to preview the animation. Press the spacebar again to stop playback.

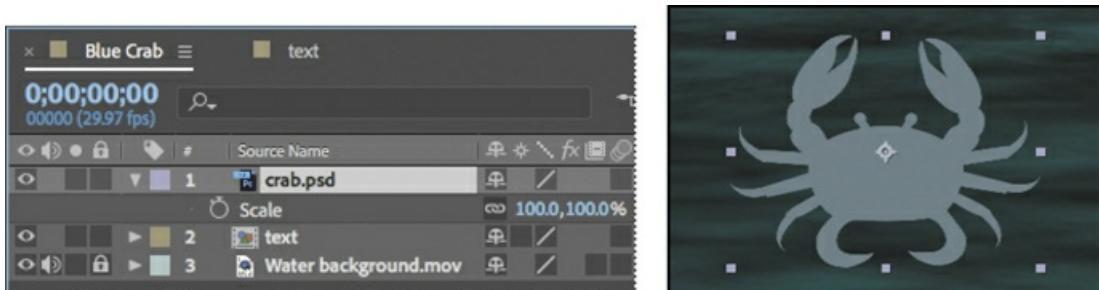


9. Choose File > Save to save your work so far.

## Scaling an object

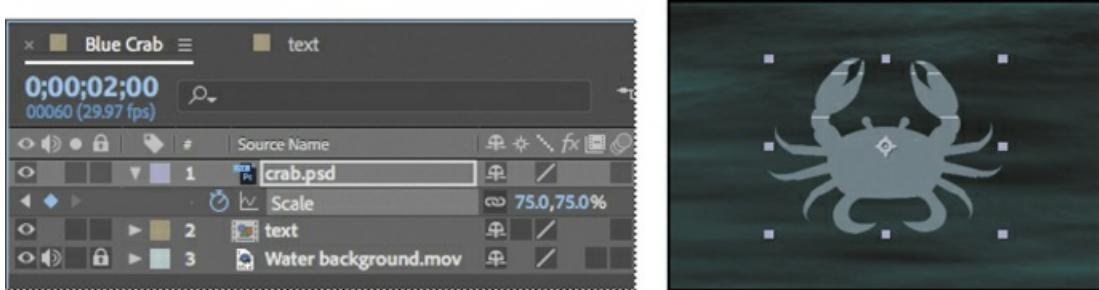
Next, you'll add the crab. You'll animate it so that it fills the screen at the beginning of the movie, and then quickly shrinks and moves into position above the area where the text will appear.

1. Drag the crab.psd file from the Project panel to the top layer in the Timeline panel.
2. Press the Home key to move the current-time indicator to the beginning of the time ruler.
3. Select the crab.psd layer in the Timeline panel, and press S to display its Scale property.



4. Change the Scale value to **400%**.
5. Click the stopwatch icon (⌚) next to Scale to create an initial keyframe.

6. Move to 2:00, and change the Scale to 75%.



The crab scales appropriately, but its position isn't quite right.

7. Press the Home key to return to the beginning of the time ruler.
8. Press P to display the layer's Position property, and change the Position to **360, 82**. The crab moves up to fill the composition.
9. Click the stopwatch icon next to Position to create an initial keyframe.
10. Go to 1:15, and change the Position to **360, 228**.
11. Go to 2:00, and change the Position to **360,182**.
12. Drag the current-time indicator across the first two seconds of the time ruler to see the crab animation.



13. Hide the properties for the crab.psd layer, and choose File > Save.

## About the Puppet tools

The Puppet tools turn raster and vector images into virtual marionettes. When you move a string on a marionette, the body part attached to that string moves; pull the string attached to the hand, and the hand goes up. The Puppet tools use pins to indicate where strings would be attached.

The Puppet effect deforms parts of an image based on the positions of pins that you place and animate. These pins determine which parts of the image should move or rotate, which parts should remain rigid, and which parts should be in front when areas overlap.

There are five kinds of pins, each placed by a different tool:

- The Puppet Position Pin tool (↗) places and moves Position pins, which change the position of that point in an image.
- The Puppet Starch Pin tool ( ↗) places Starch pins, which stiffen parts of the image so that they are distorted less.
- The Puppet Bend Pin tool ( ↘) places Bend pins, which let you change the rotation or scale of part of an image without changing its position.

- The Puppet Advanced Pin tool ( ) places Advanced pins, which give you complete control over rotation, scale, and position.
- The Puppet Overlap Pin tool ( ) places Overlap pins, which indicate the parts of an image that should be in the front when areas overlap.

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### ● Note

The mesh is calculated at the frame where the Deform pins are applied. If you add more pins anywhere in the timeline, they are placed based on the original position of the mesh.

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As soon as you place a pin, the area within an outline is automatically divided into a mesh of triangles. Each part of the mesh is associated with the pixels of the image, so as the mesh moves, so do the pixels. When you animate a Position pin, the mesh deforms more in the area closest to the pin, while keeping the overall shape as rigid as possible. For example, if you animate a pin in a character's hand, the hand and arm will be deformed, but most of the character will remain in place.

### Adding Position pins

Position pins are the basic component of the Puppet effect. Where you place these pins and how you position them determine how the objects move on the screen. You'll place Position pins and display the mesh that After Effects creates to determine the area of influence for each pin.

When you select the Puppet Position Pin tool, the Tools panel displays the Puppet tool options. Each pin has its own properties in the Timeline panel, and After Effects automatically creates an initial keyframe for each pin.

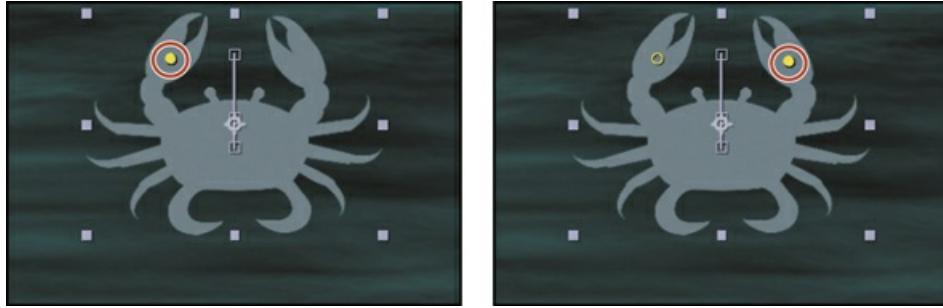
1. Select the Puppet Position Pin tool ( ) in the Tools panel.



2. Go to 1:27, just before the crab scales down to its final size.
3. In the Composition panel, place a Position pin in the middle of the crab's left pincer.

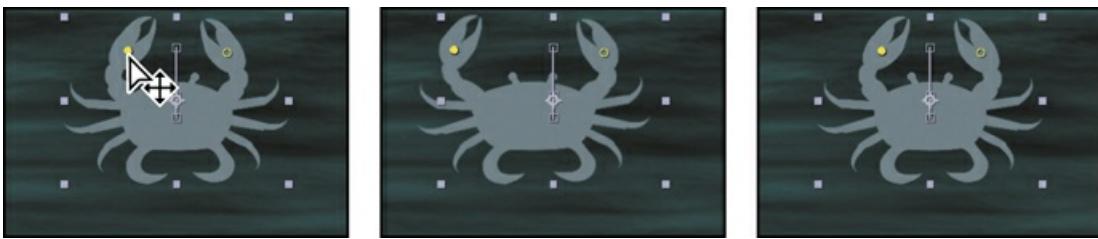
A yellow dot representing the Position pin appears in the Composition panel. If at this point you were to use the Selection tool ( ) to move the Position pin, the entire crab would move with it. You need more pins to keep the other parts of the mesh in place.

4. Using the Puppet Position Pin tool, place another Position pin in the middle of the right pincer.

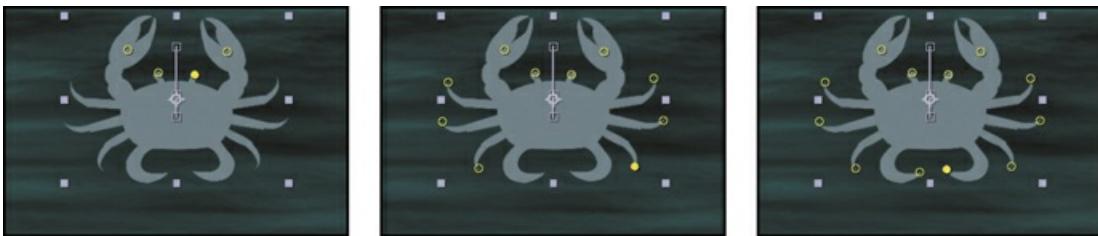


Now you can move a pincer with the Selection tool. The more pins you place, the smaller the area of influence for each pin, and the less each area will stretch.

5. Select the Selection tool (►), and drag one of the Position pins to see its effect. Then return it to its original position by pressing Ctrl+Z (Windows) or Command+Z (macOS).



6. Select the Puppet Position Pin tool again, and then place additional Position pins at the top of each antenna, at the end of each side leg, and at the tip of each of the crab's swimming legs.

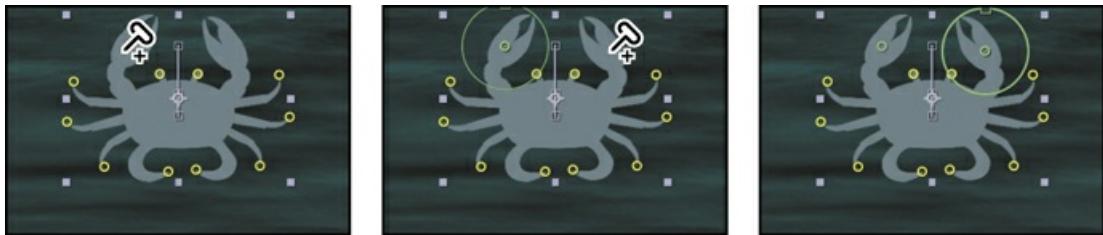


7. In the Timeline panel, expand the Mesh 1 > Deform properties. Each Position pin is listed.

### Adding Advanced and Bend pins

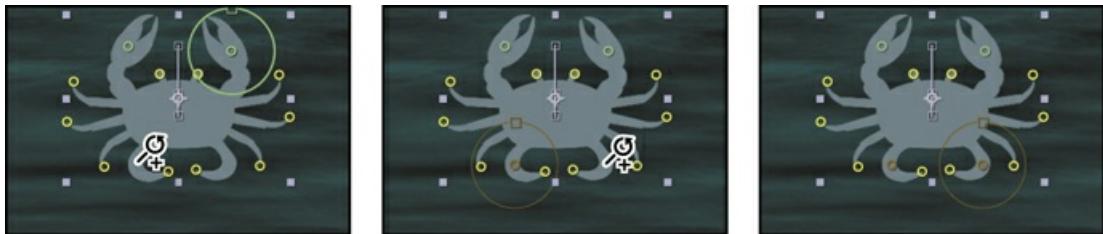
You can move Advanced pins in the same way that you move Position pins. But you can also use them to rotate and scale the area of the image. You'll replace the Position pins in the pincers with Advanced pins. Bend pins don't affect position, but they do let you rotate or scale an area while keeping it in place. You'll add Bend pins to the middle of the crab's swimmer legs. Then, you'll display the mesh that After Effects creates to determine the area of influence for each pin.

1. Select the Selection tool in the Tools panel. Then, select and delete each of the Position pins in the pincers.
2. Select the Puppet Advanced Pin tool (☞), hidden beneath the Puppet Position Pin tool in the Tools panel.
3. Place an Advanced pin in the middle of the left pincer, and then place another one in the middle of the right pincer.



Advanced pins appear as dots surrounded by rings. To scale an area, drag the box in the ring outward or inward. To rotate an area, drag the ring itself clockwise or counter-clockwise. You'll use the Advanced pins to animate the pincers.

4. Select the Puppet Bend Pin tool (), hidden beneath the Puppet Advanced Pin tool in the Tools panel.
5. Place a Bend pin in the middle of the crab's left swimmer leg, and then place another one in the middle of the right swimmer leg.

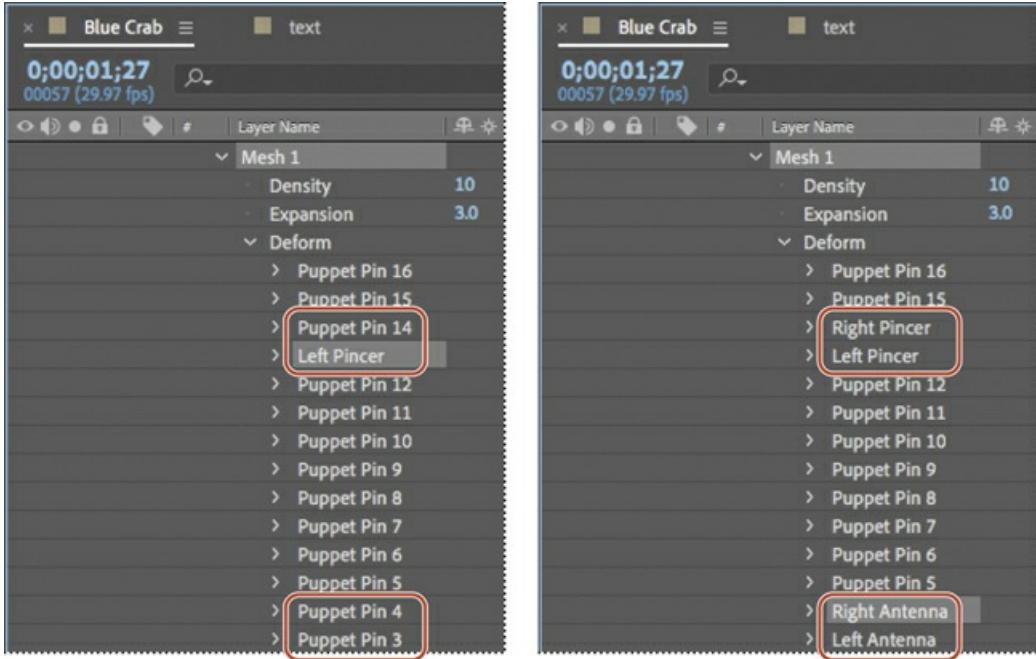


Depending on the type of animation you're performing, you may want to name the pins. In this case, you'll name just the pincer and antenna pins.

6. Select Puppet Pin 13, press Enter or Return, and rename the pin **Left Pincer**. Press Enter or Return again to accept the new name.

Pin Type	Advanced
Position	130.4, 73.1
Scale	100.0%
Rotation	0x+0.0°

7. Hide the pins' properties. Then, rename the corresponding pins **Right Pincer**, **Left Antenna**, and **Right Antenna**. (They're probably Puppet Pins 14, 3, and 4, respectively.) The default pin names are numbered in the order they were created. You do not need to name the pins on the legs unless you want to.



8. Select Show in the options section of the Tools panel to display the distortion mesh.

The crab is nearly the same color as the triangles in the mesh, so you'll need to change the mesh color. The mesh takes its color from the layer's color label.

9. In the Timeline panel, click the color label next to the Crab.psd layer, and then choose a contrasting color, such as red or purple.
10. Select Mesh 1 in the Crab.psd layer to display the mesh again.
11. Change the Density value in the options section of the Tools panel to **12**.

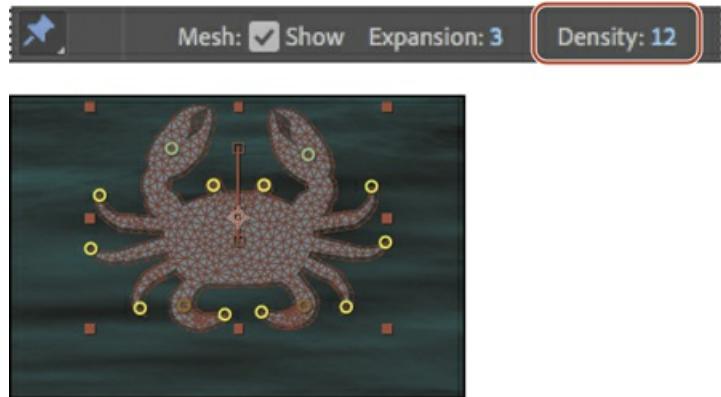
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#### ► Tip

You can extend the mesh beyond the outline of the layer in order to ensure a stroke is included in the deformation. To expand the mesh, increase the Expansion property in the options section of the Tools panel.

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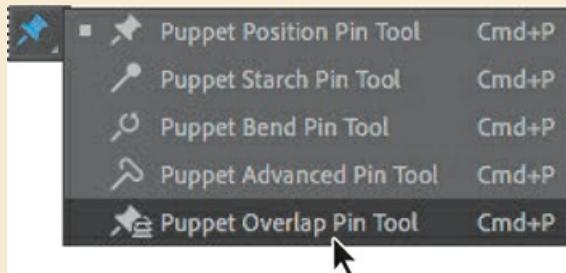
The Density setting determines how many triangles are included in the mesh. Increasing the number of triangles results in a smoother animation, but also increases rendering time.



- 12.** Choose File > Save to save your work so far.

## Defining areas of overlap

If your animation requires part of the object or character to pass in front of another, use the Puppet Overlap Pin tool to define the areas that should appear in front when areas overlap. Select the Puppet Overlap Pin tool, which is hidden behind the Puppet Position Pin tool in the Tools panel, click Show to display the mesh, and then click intersections in the mesh to place Overlap pins in the areas that should always remain in front.



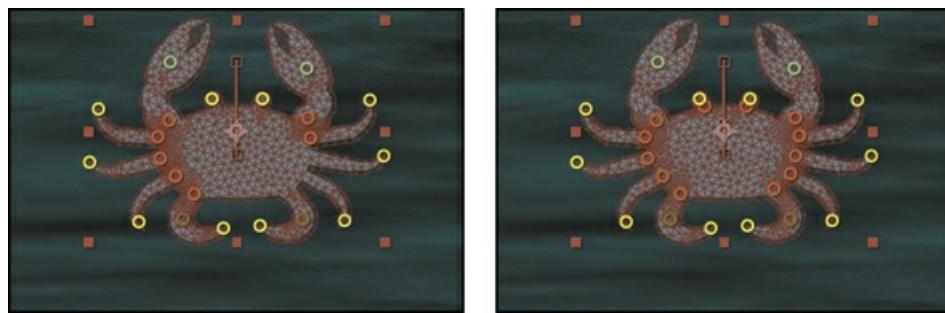
You can adjust the effect of the Overlap pins in the options area of the Tools panel. The In Front value determines the apparent proximity to the viewer; setting the value to 100% prevents those parts of the body that are overlapped from showing through. The Extent value determines how far the overlap influence extends for the pin; the affected area appears lighter in the Composition panel.

## Stiffening an area

The pincers, legs, and antennae of the crab will move in the animation, but the carapace should stay firm. You'll use the Puppet Starch Pin tool to add Starch pins to ensure the carapace isn't affected by the pins' movements.

1. Select the Puppet Starch Pin tool (☞), which is hidden behind the Puppet Bend Pin tool in the Tools panel.
2. If the mesh isn't showing, select Show in the options area of the Tools panel to display it.
3. Place Starch pins at the base of each pincer, leg, and antenna to stiffen the entire carapace,

as in the image below.

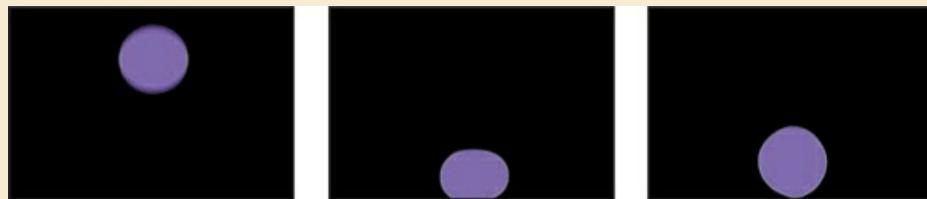


4. Hide the properties for the crab.psd layer in the Timeline panel.
5. Choose File > Save to save your work so far.

## Squash and stretch

Squash and stretch is a traditional animation technique that adds realism and weight to objects. It's an exaggeration of the effect that occurs in real life when a moving object comes into contact with a stationary object, such as the ground. When squashing and stretching are applied correctly, the volume of the character doesn't change. If you use the Puppet tools to animate cartoon characters or similar objects, consider how they interact with other objects.

The easiest way to understand the principle of squash and stretch is to view an animation of a bouncing ball. As the ball lands, it partially flattens, or squashes. As it bounces up, it stretches.



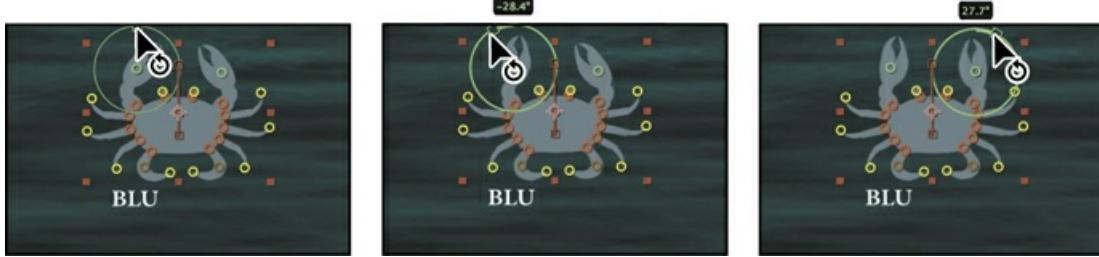
## Animating pin positions

The pins are in place. Now you can change them to animate the crab. The Starch pins keep specific areas (in this case, the carapace) from moving too much.

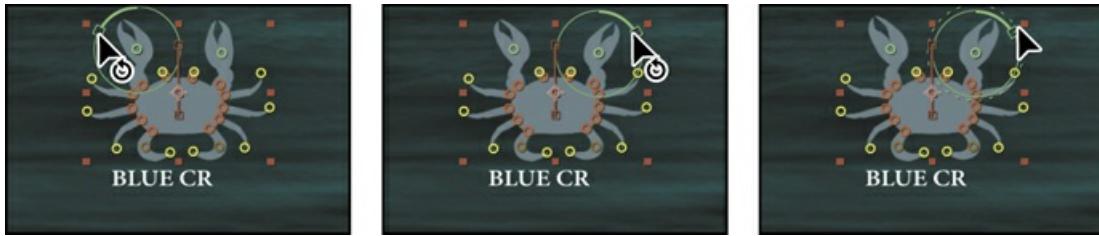
When you placed the pins, After Effects created initial keyframes for each pin at 1:27. You'll animate the pins so that the crab waves its pincers, legs, and antennae, and then returns to its original position.

1. Select the crab.psd layer in the Timeline panel, press U to display all the keyframes for the layer, and select the Puppet effect to make the puppet pins visible.
2. Select the Selection tool in the Tools panel. Then go to 4:00, and select the Advanced pin on the left pincer. Drag the ring around it to the left to rotate the pincer outward, and then drag the center pin so that the pincer is almost vertical. Repeat the steps (but dragging the

ring to the right) for the right pincer.



3. Go to 5:00, and move the Left Pincer and Right Pincer pins so that the pincers are further apart. Then drag the small rectangle on each ring outward to bloat the pincers slightly.



4. At 6:19, turn the pincers back inward. Then, at 8:19, position them so that they're roughly vertical again. At 9:29, reduce the pincers' scale back to their original size, and move the pincers so that they're fully turned inward.
5. Move the current-time indicator across the time ruler to see the pincers wave.

Next, you'll move the antennae closer together. The first keyframe already exists, so you need to create only one more.

6. Go to 7:14, and pull the pins on the antennae closer to each other.

Now you can animate all the legs. You want them to start moving even before the pincers do, and they should wave around a bit.

7. Go to 1:19, and move the pin on each leg so that each leg is slightly longer and curved outward. Use the Bend pin on each of the swimmer legs to scale each leg slightly larger.
8. Make changes to each leg at 2:01, 4:00, 6:17, and 8:10 so that the legs move slightly upward or downward, in and out as the video progresses. Move each pin about the same amount each time, in whatever direction you choose. At 8:10, use the Bend pins to return the swimmer legs to their original size.
9. Press F2 or click an empty area of the Timeline panel to deselect all layers. Then, press the Home key or move the current-time indicator to the beginning of the time ruler.
10. Press the spacebar to preview your animation. Press the spacebar again to stop playback. If you want to change the animation, adjust pins at each keyframe.



11. Choose File > Save to save your animation, and then hide all properties for the crab.psd layer.

### Using the Puppet tools to animate video

You've used the Puppet tools to animate an image on a layer, but you can also use them to warp or create other special effects on video layers. You'll use Advanced pins to make the water swirl.

1. In the Timeline panel, click the Lock icon to unlock the Water background.mov layer so you can edit it.
2. Go to 4:00, where you can see the water clearly.
3. Select the Water background.mov layer.
4. Select the Puppet Advanced Pin tool in the Tools panel, and then create two Advanced pins in the water on either side of the crab and one each above and below it.
5. Deselect Show in the Tools panel so you can see the water clearly.
6. Rotate each pin to create waves in the water. You'll probably need to scale and reposition the pins as well to ensure that the water reaches the edges of the scene. If you aren't happy with the effect, you can delete the pins and start over.



7. Press the Home key or move the current-time indicator to the beginning of the time ruler. Then press the spacebar to preview the animation. Press the spacebar again to stop playback.

### Recording animation

Changing the position of each pin at each keyframe worked, but you probably found the process to be slow and tedious. Instead of manually animating keyframes, you can use the Puppet Sketch

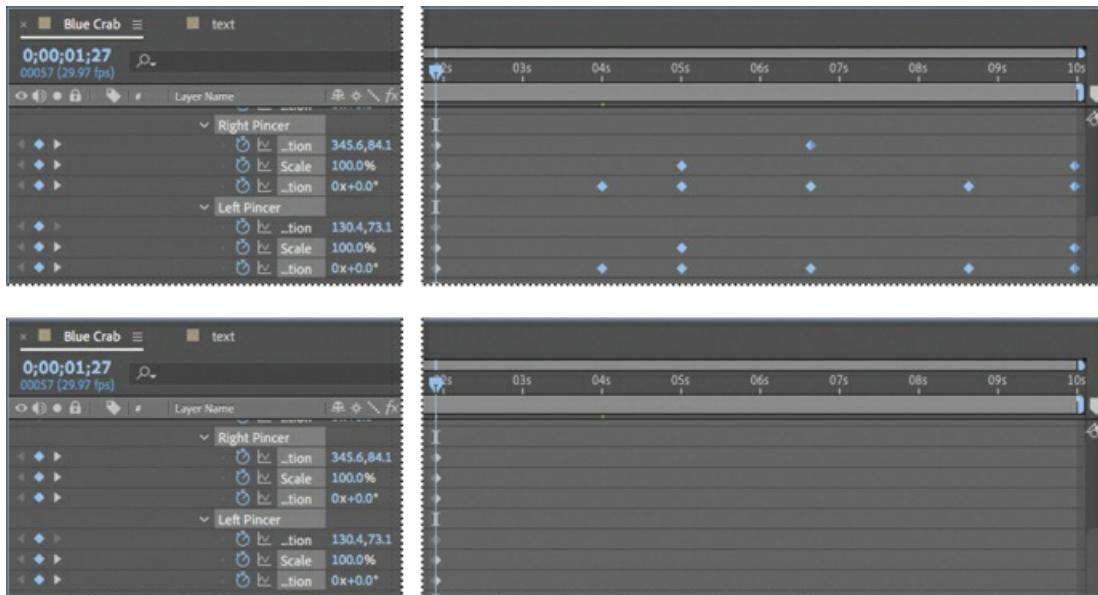
tool to drag the pins into position in real time. After Effects starts recording the motion as soon as you begin dragging a pin, and it stops recording when you release the mouse button. The composition moves forward through time as you move the pin. When you stop recording, the current-time indicator returns to the point at which you began recording, so that you can record the path for another pin during the same time period.

Experiment with this method of animation as you re-create the pincers' movement using the Puppet Sketch tool.

1. Choose File > Save As > Save As, and name the project **Motionsketch.aep**. Save it in the Lesson08/Finished\_Project folder.
2. Move the current-time indicator to 1:27.
3. In the Timeline panel, select the crab.psd layer, and press U to display all the keyframes for the layer.
4. Scroll down to the Left Pincer and Right Pincer pins. Drag to select all keyframes for those pins after 2:08, and then delete the keyframes.

### ► Tip

By default, the motion is played back at the speed at which it was recorded. To change the ratio of recording speed to playback speed, click Record Options in the Tools panel, and change the Speed value before recording.



The animation for the other pins remains, but you've removed the keyframes that animate the pincers. Depending on where you placed Starch pins, the pincers may move slightly in response to other pins' movements.

5. Select the Puppet Position Pin tool ( ) in the Tools panel.
6. In the Timeline panel, select Puppet to see the pins in the Composition panel, if they're not

already visible.

7. Select the Left Pincer pin in the Composition panel, and press Ctrl (Windows) or Command (macOS) to activate the Puppet Sketch tool. (A clock icon appears next to the pointer.)
8. Continue to hold down Ctrl or Command as you drag the Left Pincer pin into different positions for the length of the video. Release the mouse button when you've finished. The current-time indicator returns to 1:27.
9. Press Ctrl or Command, and drag the Right Pincer pin into different positions. Use the outline of the crab and the other pincer's movements to guide you. Release the mouse button to stop recording.



#### 10. Preview the final animation.

You've used the Puppet tools to create a realistic, engaging animation. Remember that you can use the Puppet tools to deform and manipulate many kinds of objects.

## Extra credit

### Act it out with Adobe Character Animator

If you identify strongly with your characters, you might want to use Adobe Character Animator instead of creating cumbersome keyframes. It's especially useful if you're creating a long scene or you need to match the character's mouth to speech. It's also a lot of fun.

Character Animator is included in an Adobe Creative Cloud membership. With it, you can import a character you've created in Photoshop or Illustrator, and then act out facial gestures and head movements in front of your webcam; your character mirrors your gestures on the screen. If you speak, the character's mouth moves to match your words.

You can move other body parts, such as legs and arms, using keyboard shortcuts or your mouse or tablet. And you can set up dangling behavior so that, for example, if a rabbit's head moves to the left, its ears dangle with it.

Character Animator includes some entertaining interactive tutorials to help you get started. To learn more, go to <https://www.adobe.com/products/character-animator.html>.



### Tips for a smooth animation experience

- Create different layers for different moving parts: draw the mouth on one layer, the right eye on another, and so on.
- Name layers so Character Animator will recognize them. Certain words, such as “pupil,” help map the character to the image in the camera.
- Practice facial and other gestures before recording. Once you’ve set your Rest Pose, try different mouth shapes, eyebrow raises, head waggles, and other movements to see how subtle or exaggerated movements translate for your character.
- Speak into the microphone as you record. Many mouth shapes are triggered by audio cues, such as “uh-oh,” and the character’s mouth movements will be synced to your words automatically.
- Especially at first, consider using an existing character file as a template. It’ll be easier to get the layer names right.
- Try animating objects that don’t have faces and bodies. For example, you can use Character Animator to animate clouds floating, a flag waving, or flowers opening. Be creative and have fun!

### Review questions

- 1 What’s the difference between the Puppet Position Pin tool and the Puppet Advanced Pin tool?
- 2 When would you use the Puppet Starch Pin tool?
- 3 Describe two methods of animating pin positions.

### Review answers

- 1 The Puppet Position Pin tool creates Position pins, which define the position of a portion of the image as the image is deformed. The Puppet Advanced Pin tool creates Advanced pins, which define the scale and rotation, as well as the position, of a portion of the image.
- 2 Use the Puppet Starch Pin tool to add Starch pins to an area that you want to remain more rigid while other areas of the object are distorted.
- 3 You can manually animate pin positions by changing the position for each pin in the Timeline

panel. To animate pin positions more quickly, use the Puppet Sketch tool: With the Puppet Position Pin tool selected, press Ctrl or Command, and drag a pin to record its movement.

# 9 Using the Roto Brush Tool

## Lesson overview

In this lesson, you'll learn how to do the following:

- Extract a foreground object from the background using the Roto Brush tool.
- Correct the segmentation boundary across a span of frames.
- Touch up a matte with the Refine Edge tool.
- Freeze a matte across a clip.
- Animate properties for creative effects.
- Track a face in footage.



This lesson will take approximately an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: TV COMMERCIAL

With the Roto Brush tool, you can quickly separate a foreground object from a background across many frames. You can achieve professional results in a fraction of the time you'd spend performing the same task with traditional rotoscoping.

### About rotoscoping

When you draw or paint on the frames of a movie, you're *rotoscoping*. For example, a common use of rotoscoping is to trace an object, using the path as a mask to separate it from the background so you can work with it separately. Traditionally in After Effects, you drew masks, animated the mask paths, and then used the masks to define a matte. (A *matte* is a mask used to hide part of an image so that another image can be superimposed.) While effective, this is a time-intensive, tedious process, especially if the object moves a great deal or the background is complex.

If a background or foreground object is a consistent, distinct color, you could use color keying to separate the object from the background. If the subject was shot against a green or blue background (green screen or blue screen), keying is usually much easier than rotoscoping. However, keying is less efficient when you're working with complex backgrounds.

The Roto Brush tool in After Effects is much faster than conventional rotoscoping. You use the Roto Brush tool to define the foreground and background elements. Then After Effects creates a matte, and tracks the movement of the matte over time. The Roto Brush tool does much of the work for you, leaving only a little cleanup work to be done.

### Getting started

In this lesson, you'll use the Roto Brush tool to isolate a young boy from a wet winter background so you can color-treat the background without affecting the boy. To finish up the project, you'll add an animated title.

First, you'll preview the final movie and set up your project.

1. Make sure the following files are in the Lessons/Lesson09 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: boy.mov, Facetracking.mov
  - In the Sample\_Movies folder: Lesson09.avi, Lesson09.mov
2. Open and play the Lesson09.avi sample movie in Windows Movies & TV or the Lesson09.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

When you begin this lesson, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page [3](#).

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS). When prompted, click OK to delete your preferences.
4. Click New Project in the Home window.

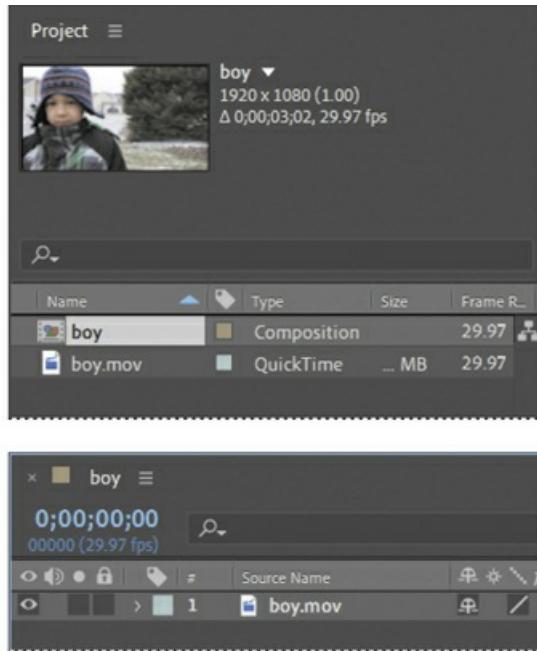
After Effects opens to display an empty, untitled project.

5. Choose File > Save As > Save As.
6. In the Save As dialog box, navigate to the Lessons/Lesson09/Finished\_Project folder.
7. Name the project **Lesson09\_Finished.aep**, and then click Save.

## Creating the composition

You'll import a footage file and create a composition from it.

1. Click New Composition From Footage in the Composition panel.
2. Navigate to the Lessons/Lesson09/Assets folder, select the boy.mov file, and then click Import or Open.



After Effects creates a composition named boy, based on the settings in the boy.mov file. The composition is three seconds long, with a frame size of 1920 x 1080. The movie file was shot at a rate of 29.97 frames per second.

3. Choose File > Save to save the project so far.

### **Creating a segmentation boundary**

You use the Roto Brush tool to specify which parts of the clip are in the foreground and which are in the background. You add strokes to distinguish the two, and then After Effects creates a segmentation boundary between the foreground and background.

### **Creating a base frame**

To use the Roto Brush tool to isolate a foreground object, you start by adding strokes to a base frame to identify foreground and background areas. You can start on any frame in the clip, but in this exercise, you'll use the first frame as the base frame. Then you'll add the strokes that identify the boy as the foreground object.

1. Move the current-time indicator across the time ruler to preview the footage.
2. Press the Home key to move the current-time indicator to the beginning of the time ruler.
3. Select the Roto Brush tool ( in the Tools panel).

You use the Roto Brush tool in the Layer panel, which you'll open now.

4. Double-click the boy.mov layer in the Timeline panel to open the clip in the Layer panel.
5. Choose Fit from the Magnification Ratio pop-up menu at the bottom of the Layer panel if you don't see the entire image.



By default, the Roto Brush tool creates green foreground strokes. You'll start by adding strokes to the foreground—the boy. Generally, it's most efficient to start with broad strokes and then use smaller brushes to refine the border.

6. Choose Window > Brushes to open the Brushes panel. Set up a hard round 100-pixel brush. (You may need to resize the Brushes panel to see the options.)

When you're drawing strokes to define the foreground object, follow the skeletal structure of the subject. Unlike traditional rotoscoping, you don't need to define a precise boundary around the object. Start with broad strokes, and work down to small regions as After Effects determines where the boundary is supposed to be.

7. Draw a green stroke from the boy's head down toward the bottom of the clip.

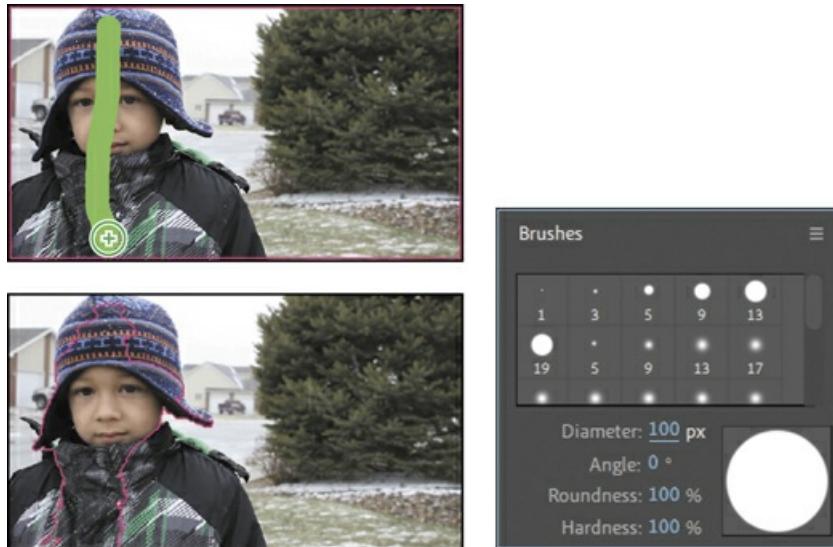
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**Tip**

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You can quickly zoom in and out of the Layer panel using the scroll wheel on your mouse.

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A magenta outline identifies the boundaries After Effects created for the foreground object. After Effects recognized only about half of the boy, because you initially sampled only a small area of the subject. You'll help After Effects find the boundary by adding some more foreground strokes.

8. Still using a large brush, draw a green stroke from left to right across the boy's coat, including the black strip on the right.
9. Use a smaller brush to add any neglected areas to the foreground.




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#### ► Tip

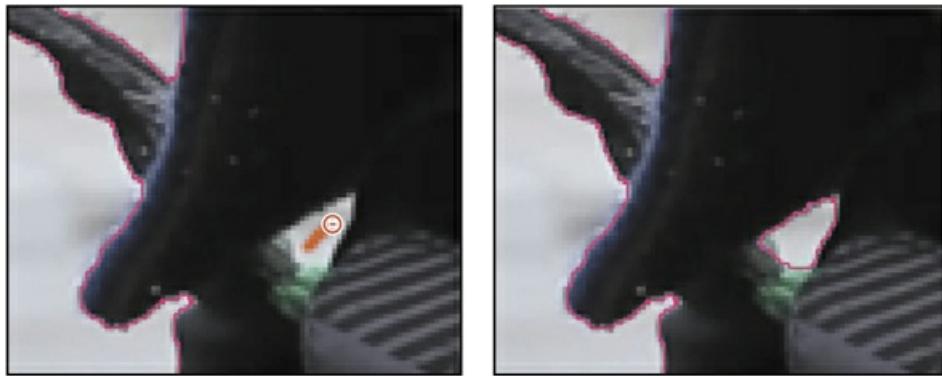
To increase or decrease the brush size quickly, press Ctrl (Windows) or Command (macOS) as you drag. Drag right to increase the brush size, or left to decrease it.

---

It can be tricky to get some areas without accidentally adding background as well. It's okay if you haven't captured every detail in the foreground. You'll use background strokes to remove any extraneous areas of the matte.

10. Press Alt (Windows) or Option (macOS) to switch to the red background stroke brush.
11. Add red strokes to background areas you want to exclude from the matte. Switch back and forth between the foreground and background brushes to fine-tune the matte. Don't forget to

deselect the area under the boy's hat where the background shows through. In fact, one click may be all it takes to exclude that area from the matte.



## Editing Adobe Premiere Pro clips with After Effects

You can work with a clip in both Adobe Premiere Pro and After Effects, moving easily between the two applications as you edit your project.

To edit an Adobe Premiere Pro clip in After Effects, do the following:

1. Right-click or Control-click the clip in Adobe Premiere Pro, and choose Replace With After Effects Composition.

After Effects starts, and opens the Adobe Premiere Pro clip.

2. Save the project when you're prompted by After Effects. Then, work in the composition just as you'd work in any other After Effects project.
3. When you're finished, save the project, and return to Adobe Premiere Pro.

Your changes are automatically reflected in the timeline.

Don't worry about being exact about your brush strokes. Just make sure the matte is within 1 to 2 pixels of the edge of the foreground object. You'll have an opportunity to refine the matte later. However, After Effects uses the information on the base frame to adjust the matte for the rest of the span, so you want the matte to be accurate.



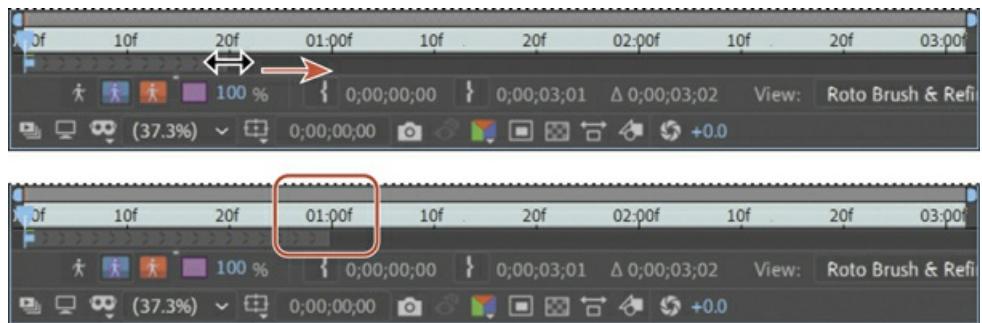
12. Click the Toggle Alpha button (■) at the bottom of the Layer panel. The selected area is white against a black background, so you can see the matte clearly.
13. Click the Toggle Alpha Overlay button (■) at the bottom of the Layer panel. The foreground area appears in color, and the background has a red overlay.
14. Click the Toggle Alpha Boundary button (■) at the bottom of the Layer panel to see the outline around the boy again.

As you use the Roto Brush tool, the Alpha Boundary is the best way to see how accurate your boundary is, because you can see everything in the frame. However, the Alpha and Alpha Overlay options let you see your matte without the distraction of the background.

### Refining the boundary across the initial span

You used the Roto Brush tool to create a base frame, which includes a segmentation boundary that divides the foreground from the background. After Effects applied the segmentation boundary across a span of frames. The Roto Brush span appears below the time ruler at the bottom of the Layer panel. As you move forward and backward through the footage, the segmentation boundary moves with the foreground object (in this case, the boy).

1. Extend the span range by dragging the end of the span to 1:00 in the Layer panel.



You'll step through the frames in the span and make adjustments to the segmentation boundary as necessary.

2. Press the 2 key on your main keyboard (not the numeric keypad) to move forward one frame.

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#### ► Tip

To move forward one frame, press the 2 key on your keyboard; to move back one frame, press the 1 key.

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Working from the base frame, After Effects tracks the edge of the object and attempts to follow its movement. Depending on how complex your foreground and background elements are, the boundary may or may not conform exactly to the area you hoped it would. As you progress through this clip, you may notice changes to the segmentation boundary along the boy's right sleeve (the left edge of the clip) as more of the coat is revealed in the frame. Likewise, you may need to refine the segmentation boundary around the flaps of the cap and the edges of the hood.

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#### ● Note

As it propagates the segmentation boundary for a frame, After Effects caches that frame. Cached frames have a green bar in the time ruler. If you jump ahead to a frame further along the span, After Effects may take longer to calculate the boundary.

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3. Using the Roto Brush tool, paint foreground and background strokes to refine the matte for this frame. If the matte is accurate, you don't need to paint any strokes.

If you make a stroke you don't like, you can always undo the stroke and try again. As you move through the span, each change you make affects the frames after it. The more you refine your selection, the better the overall results will be. You may find it useful to move forward a few frames to see how changes affect the boundary.

4. Press the 2 key again to move forward to the next frame.

5. Use the Roto Brush tool to add to the foreground or subtract from the background as necessary to refine the boundary.
6. Repeat steps 4 and 5 until you reach 1:00.



## Adding new base frames

After Effects creates an initial Roto Brush span of 40 frames (20 in each direction). As you move through the frames, the span range may increase automatically, or you can drag to extend the span. However, the further you move from the base frame, the longer After Effects takes to propagate, or calculate, the segmentation for each frame, especially if the shot is complex. If the scene changes significantly, it may be better to create multiple base frames for your footage than to have one really long span. The scene in this project remains fairly consistent, so you could extend the span and make additional adjustments as needed. However, you'll create additional base frames to gain experience using the tools, learn to connect spans, and see how the segmentation shifts as you move further from a base frame.

You've reached 1:00 in the refining process. Now you'll add a new base frame to the project.

1. Go to 1:20 in the Layer panel. This frame isn't included in the initial span, so the segmentation boundary includes the entire frame.
2. Use the Roto Brush tool to add foreground and background strokes, defining the segmentation boundary.



A new base frame (represented by a blue rectangle) is added to the time ruler, and the Roto Brush span extends several frames behind and ahead of the new base frame. Depending on how far the initial span propagated, there may be a gap between the two spans. If so, you'll connect the two.

3. If necessary, drag the left edge of the new span to the edge of the previous span.
4. Press 1 to move backward one frame (from the new base frame), and then refine the segmentation boundary.
5. Continue to move backward through the span, refining the segmentation boundary until you reach the frame at 1:00.
6. Move back to the base frame at 1:20, and then press 2 to move forward, correcting the segmentation boundary for each frame if necessary.
7. When you reach the end of the span, drag the right edge to the end of the clip, and continue to refine each frame in the footage as needed. Pay special attention to the left earflap of the cap when it crosses in front of the tree. The dark areas overlap, making it more difficult to get a consistent edge. Remember that you are trying to get the segmentation boundary as close to the edge of the foreground object as possible.
8. When you have completed refining the segmentation boundary for the entire clip, choose File > Save to save your work so far.



## Fine-tuning the matte

Roto Brush does a pretty good job, but there may be stray bits of background in the matte, or foreground areas that weren't included. You'll clean those up by refining the edge.

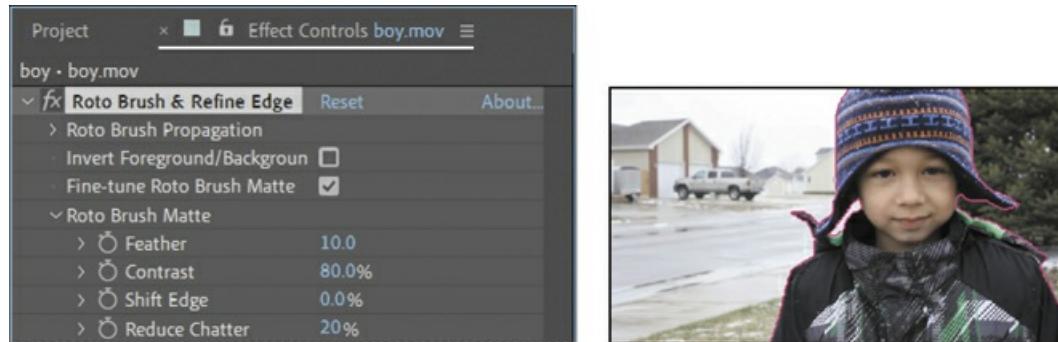
## Adjusting the Roto Brush & Refine Edge effect

When you use the Roto Brush tool, After Effects applies the Roto Brush & Refine Edge effect to the layer. You can modify the effect using settings in the Effect Controls panel. You'll use those settings to further refine the edge of the matte.

1. Press the spacebar to play the clip in the Layer panel; press the spacebar again to end the preview when you've seen the whole clip.

As you preview the clip, you may notice that the segmentation boundary area jumps around quite a bit. You'll use the Reduce Chatter setting to make it smoother.

2. In the Effect Controls panel, increase the Feather amount to **10**, and increase Reduce Chatter to **20%**.



The Reduce Chatter value determines how much influence the current frame has when performing a weighted average across adjacent frames. Depending on how tight your matte was, you may need to increase Reduce Chatter to 50%.

3. Preview the clip again. Notice how much smoother the edge of the matte has become.

## Refine Soft Matte and Refine Hard Matte effects

After Effects includes two related effects for refining mattes: Refine Soft Matte and Refine Hard Matte. The Refine Soft Matte effect does the same thing as Refine Edge Matte, except it applies the effect to the entire matte at a constant width. If you need to capture subtle

varying variations across an entire matte, use this effect.

The Refine Hard Matte effect performs the same edge refinements as the Roto Brush when Fine-Tune Roto Brush Matte is turned on in the Roto Brush & Refine Edge effect in the Effect Controls panel.

## Using the Refine Edge tool

The boy's coat and face have hard edges, but his cap is fuzzy, and the Roto Brush tool didn't pick up the nuanced edge. The Refine Edge tool lets you include fine details such as wisps of hair in designated areas of the segmentation boundary.

Though it might be tempting to use the Refine Edge tool immediately after creating the base frame, it's best to wait until you've refined the segmentation boundary across the entire clip. Because of the way After Effects propagates the segmentation boundary, using the Refine Edge tool too early results in a matte that is difficult to use.

1. Go to the first base frame, and then zoom in so that you can see the edges of the cap clearly. Enlarge the Layer panel if necessary, and use the Hand tool to move the layer so you can see the entire cap.
2. Select the Refine Edge tool () , hidden beneath the Roto Brush tool in the Tools panel, and then move to the beginning of the clip in the Layer panel.

The cap is relatively soft, so a small brush size will work well. For a fuzzier object, you might have better results with a much larger brush. The brush needs to overlap the stray edges that emerge from the object.

3. Change the brush size to **10** pixels.

When you use the Refine Edge tool, draw strokes across or along the edges of the matte.

4. In the Layer panel, move the Refine Edge tool over the edge of the cap, straddling the segmentation boundary and including the fuzzy variations. You can use multiple strokes to move the tool around the entire cap.



When you release the mouse, After Effects switches to the Refine Edge X-ray view so that you can see how the Refine Edge tool changes the matte, capturing the detail in the edges.

5. Move to the second base frame in the Layer panel (1:20), and then repeat steps 1–4 to complete the rotoscoping process.
6. Zoom out to see the entire scene, resize the Layer panel if you enlarged it, and then choose

File > Save to save your work.

---

### ● Note

Use the Refine Edge tool only after you have cleaned up the matte across the entire clip.

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## Freezing your Roto Brush tool results

You've put a fair amount of time and effort into creating the segmentation boundary across the entire clip. After Effects has cached the segmentation boundary so it can recall it without having to make the calculations again. To keep that data easily accessible, you'll *freeze* it. This reduces the processing demands on your system so you can work faster in After Effects.

Once the segmentation is frozen, you cannot edit it unless you unfreeze it. Refreezing the segmentation is time-consuming, so it's best to refine the segmentation boundary as much as possible before freezing.

1. Click the Freeze button in the lower right area of the Layer panel.

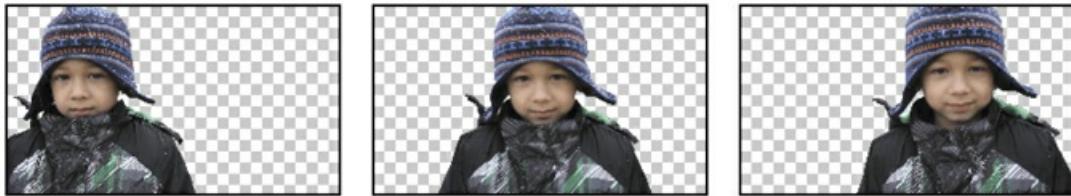


Depending on your system, this may take a while.

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After Effects displays a progress bar as it freezes the Roto Brush and Refine Edge tool data. Freezing may take a few minutes, depending on your system. As After Effects freezes the information for each frame, the cache line turns blue. When it has finished freezing, a blue warning bar appears above the time ruler in the Layer panel, reminding you that the segmentation is frozen.

2. Click the Toggle Alpha Boundary button (■) in the Layer panel to see the matte. Then click the Toggle Transparency Grid button (☒). Move the time marker across the time ruler to see the subject without the distractions of the background.



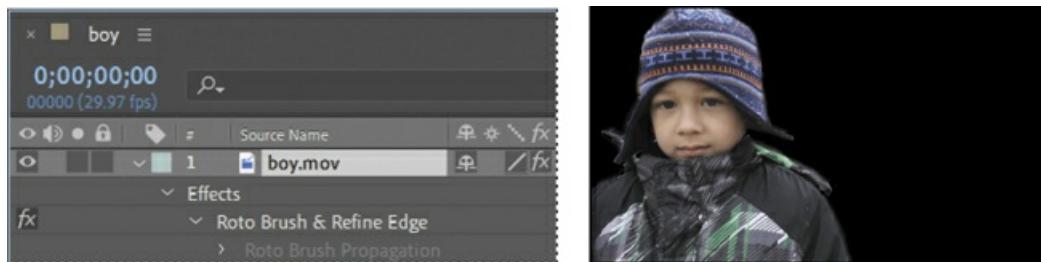
3. Click the Toggle Alpha Boundary button again to see the boundary.
4. Choose File > Save.

After Effects saves the frozen segmentation information with the project.

## Changing the background

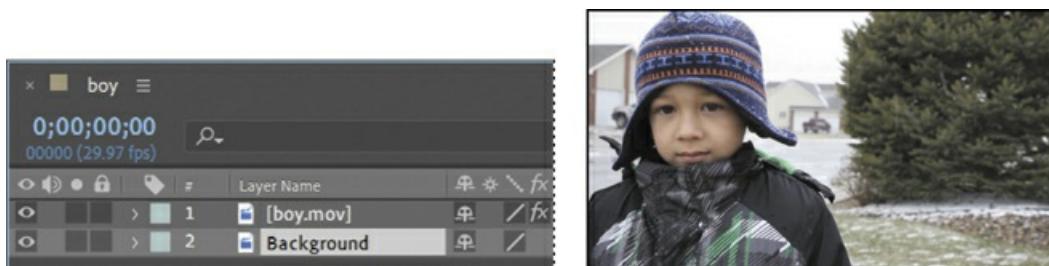
There are many reasons to isolate a foreground image from a background. Often, you want to replace the background entirely, moving the subject to a different setting. But rotoscoping is also useful if you simply want to change the foreground or background without modifying the other. In this lesson, you'll make the background blue to enhance the theme of winter and help the subject stand out.

1. Close the Layer panel to return to the Composition panel, and then move the current-time indicator to the beginning of the timeline. Choose Fit from the Magnification Ratio pop-up menu at the bottom of the Composition panel.



The Composition panel displays the composition, which includes only the boy.mov layer, consisting only of the foreground you isolated from the clip.

2. Hide the properties for the boy.mov layer, if they're visible.
3. Click the Project tab to display the Project panel. Then drag another copy of the boy.mov clip from the Project panel to the Timeline panel, and place it below the original boy.mov layer.
4. Click the new layer, press Enter or Return, and rename the layer **Background**. Then press Enter or Return again.

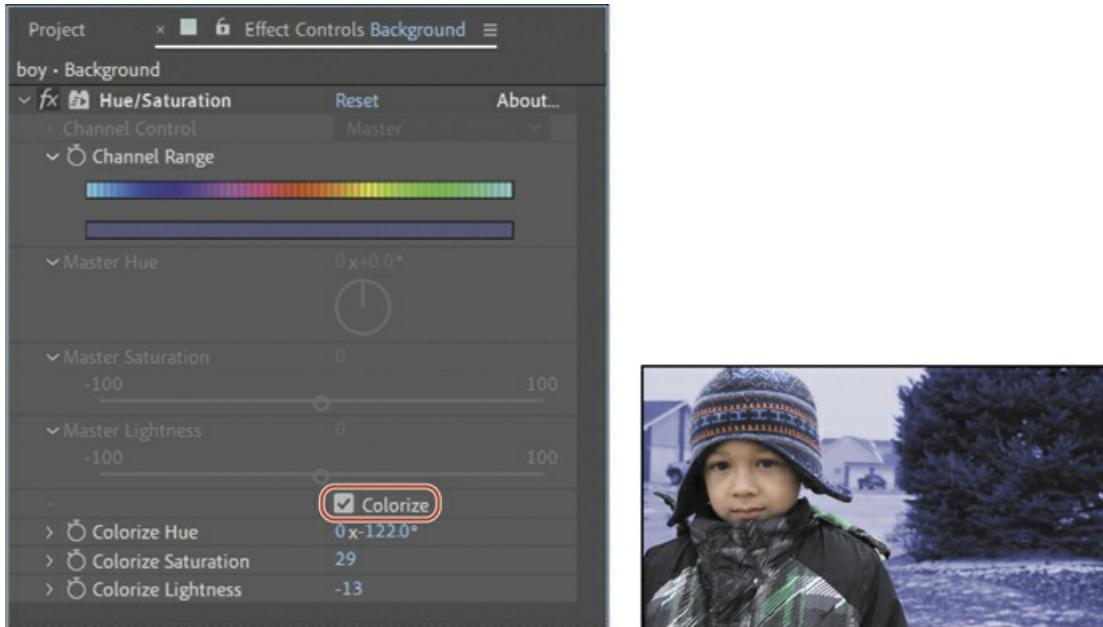


5. With the Background layer selected, choose Effect > Color Correction > Hue/Saturation in

the After Effects menu bar.

**6.** In the Effect Controls panel, do the following:

- Select Colorize.
- Change Colorize Hue to **-122** degrees.
- Change Colorize Saturation to **29**.
- Change Colorize Lightness to **-13**.



**7.** Choose File > Increment And Save.

If you save incrementally, you can return to earlier versions of your project to make adjustments later. This can be very useful if you're experimenting or want to try alternative effects. The Increment And Save feature preserves the previously saved version of the project and creates a new project with the same name, with an increasing number added to the filename.

### Adding animated text

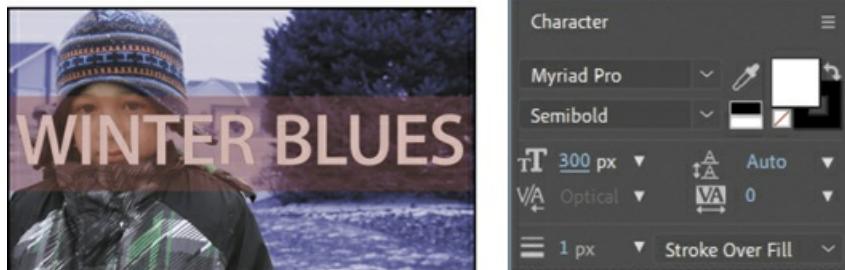
You're nearly done. All you need to do is to add the animated title between the boy and the background.

- 1.** Deselect all layers, and then move the current-time indicator to the beginning of the time ruler.
- 2.** Choose Layer > New > Text.

A new text layer appears in the Timeline panel at the top of the layer stack, and a cursor appears in the Composition panel.

- 3.** Type **WINTER BLUES** in the Composition panel.
- 4.** Select all the text in the Composition panel, and then do the following in the Character panel:
  - Choose Myriad Pro for the font.

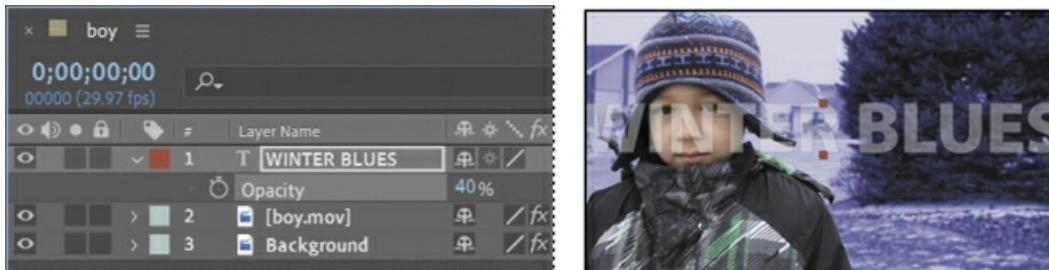
- Choose Semibold for the font style.
- Type **300** px for the font size.
- Choose Optical from the Kerning menu.
- Select white for the fill color.
- Select black for the stroke color.
- Make sure the stroke width is 1 px and Stroke Over Fill is selected.



### ● Note

If you don't have Myriad Semibold on your computer, use Adobe Fonts to install it. See [Lesson 3](#) to learn how to use Adobe Fonts.

5. Select the text layer in the Timeline panel to deselect the text. Then press T to reveal the layer's Opacity property. Change the Opacity to **40%**.



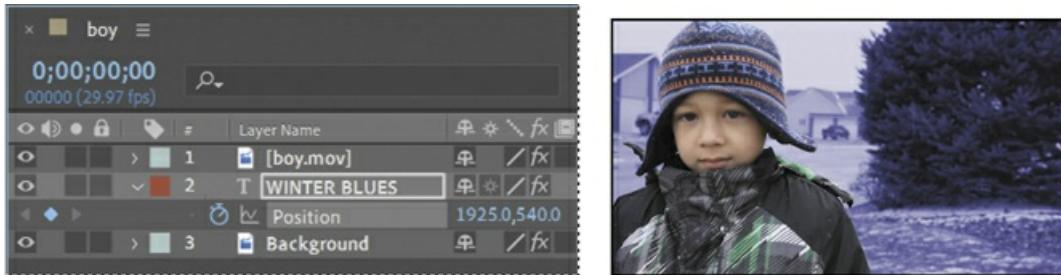
6. Click the Effects & Presets tab to open the panel, and then type **Glow** in the search box. Double-click the Glow preset under Stylize.

The text gains some texture. The default settings are fine.

7. Drag the WINTER BLUES layer in the Timeline panel down to position it between the boy.mov and Background layers. Then move the current-time indicator to the beginning of the time ruler, if it's not already there.

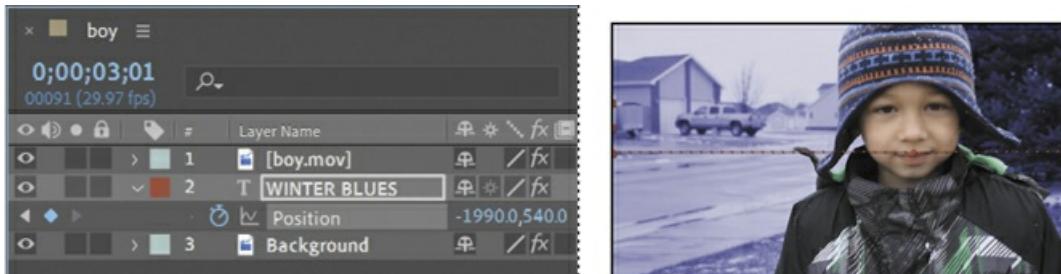
You'll animate the text so that it moves left behind the boy while he crosses to the right of the frame.

8. With the WINTER BLUES layer selected, press P to reveal its Position property. Change the Position to **1925, 540**. Click the stopwatch icon (⌚) for the Position property to set a keyframe.



The text moves offscreen, so it's not visible when the movie begins.

9. Move the current-time indicator to 3:01 (the end of the clip), and change the Position to **-1990, 540**.



The text moves to the left. After Effects creates a keyframe.

10. Deselect all layers in the Timeline panel, and move the current-time indicator to the beginning of the time ruler. Press the spacebar to preview the clip.



11. Choose File > Save to save your work.

## Outputting your project

You'll render your movie to complete the project.

1. Choose File > Export > Add To Render Queue.
2. In the Render Queue panel, click the blue words *Best Settings*.
3. In the Render Settings dialog box, choose Half from the Resolution pop-up menu, and make sure Use Comp's Frame Rate is selected in the Frame Rate area. Then click OK.
4. Click the blue text next to Output Module. Then, at the bottom of the Output Module

Settings dialog box, choose Audio Output Off, and click OK.

5. Click the blue text next to Output To. In the Output Movie To dialog box, navigate to the Lesson09/Finished\_Project folder, and click Save.
6. Click Render in the top right corner of the Render Queue panel.
7. Save and close the project.

Congratulations! You've separated a foreground object from the background, including tricky details, modified the background, and animated some text to complete the movie. You're ready to use the Roto Brush tool on your own projects.

## Extra credit

### Tracking faces

The face-tracking feature in After Effects makes it easier to track a face or specific facial features, such as lips or eyes. Previously, tracking a face required roto brushing or complex keying.

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#### ● Note

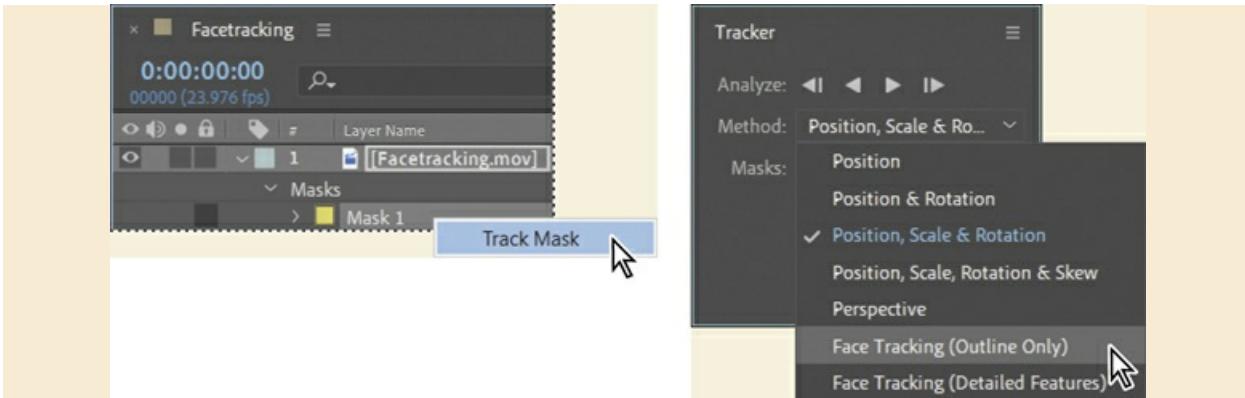
If you open the Lesson09\_extra\_credit.aep file, you may need to relink the Facetracking.mov asset.

---

1. Choose File > New > New Project.
2. Click the New Composition From Footage button in the Composition panel, and then navigate to the Lessons/Lesson09/Assets folder. Select the Facetracking.mov file, and click Import or Open.
3. Select the Facetracking.mov layer in the Timeline panel. Then, select the Ellipse tool, hidden by the Rectangle tool in the Tools panel.
4. Drag an elliptical mask roughly covering the face.



5. Right-click the Mask 1 layer, and choose Track Mask.
6. In the Tracker panel, choose Face Tracking (Outline Only) from the Method menu.



The Face Tracking (Outline Only) option tracks the entire face. The Face Tracking (Detailed Features) option tracks the outline plus the lips, eyes, and other distinctive facial features. You can export detailed facial data for use in Character Animator, or you can use it in After Effects to apply effects or to match it with another layer, such as an eye patch or a hat.

7. Click the Track Forward button in the Tracker panel.

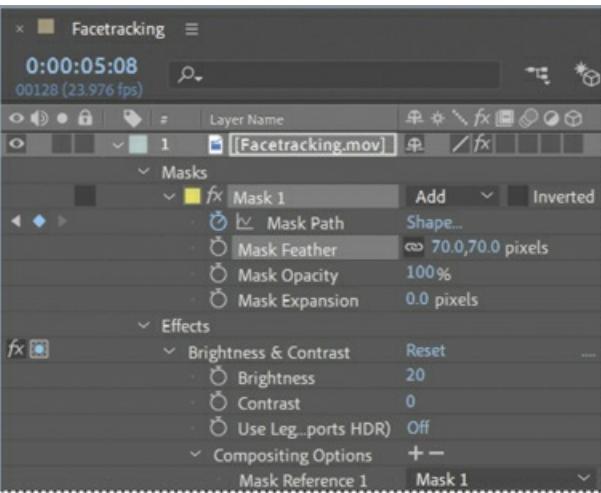


The Tracker tracks the face, changing the mask's shape and position as the face moves.

8. Press the Home key to return to the beginning of the timeline, and then move the current-time indicator across the time ruler to see how the mask moves with the face.
9. In the Effects & Presets panel, search for **Bright**. Then drag the Brightness & Contrast effect onto the Facetracking.mov layer in the Timeline panel.
10. Expand Effects > Brightness & Contrast > Compositing Options in the Timeline panel.
11. Click the + icon next to Compositing Options. Choose Mask 1 from the Mask Reference 1 menu, and increase Brightness to **50**.

The masked area of the face brightens, but nothing else does. This setting is too bright, and the edge of the mask is too abrupt. You'll make it more subtle.

12. Reduce the Brightness to **20**.
13. Expand the Mask 1 properties. Change the Mask Feather property to **70, 70** pixels.



#### 14. Save the project to the Lesson09/Finished\_Project folder. Then close the file.

You can use the face tracker to blur a face, brighten it, or add any other effect. You can also invert the mask to affect everything but the face.

### Review questions

- 1 When should you use the Roto Brush tool?
- 2 What is the segmentation boundary?
- 3 When should you use the Refine Edge tool?

### Review answers

- 1 Use the Roto Brush tool any time you would have used traditional rotoscoping. It's particularly useful for removing a foreground element from the background.
- 2 The segmentation boundary is the boundary between the foreground and background. The Roto Brush tool adjusts the segmentation boundary as you progress through the frames in the Roto Brush span.
- 3 Use the Refine Edge tool when you need to rotoscope objects with fuzzy or wispy edges. The Refine Edge tool creates partial transparency for areas of fine detail, such as hair. Use the Refine Edge tool only after you've adjusted the segmentation boundary across the entire clip.

# 10 Performing Color Correction

## Lesson overview

In this lesson, you'll learn how to do the following:

- Use a transition to move from one clip to another.
- Use the Levels effect to correct the color in a shot.
- Use the mask tracker to track part of a scene.
- Remove an area using the Keylight (1.2) effect.
- Use the Auto Levels effect to remove a color cast.
- Key out an area using the Color Range effect.
- Correct colors using the Lumetri Color effect.
- Use the CC Toner effect to create a mood.
- Copy an object in the scene with the Clone Stamp tool.



This lesson will take approximately an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: SEQUENCE FROM A MUSIC VIDEO

Most shots require some degree of color correction and color grading. With Adobe After Effects, you can easily remove color casts, brighten images, and change the mood of a clip.

### Getting started

As the term implies, color correction is a way of altering or adapting the color of a captured image. Strictly speaking, *color correction* is the act of adjusting the color in a shot to correct errors in white balance and exposure, and to ensure color consistency from one shot to another. However, you can use the same color-correction tools and techniques to perform *color grading*, which is the subjective manipulation of color to focus attention on a key element in a shot or to create a color palette for a specific visual look.

In this lesson, you will correct the color of a video clip that was shot without the proper white-balance setting. First, you'll combine two clips from a longer video of a young superhero taking off and flying through the sky. Then, you'll apply a variety of color-correction effects to clean up and enhance the image. You'll also use mask tracking and motion tracking to replace the sky with more dramatic clouds.

First, you'll preview the final movie and set up your project.

1. Make sure the following files are in the Lessons/Lesson10 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:

- In the Assets folder: storm\_clouds.jpg, superkid\_01.mov, superkid\_02.mov
  - In the Sample\_Movies folder: Lesson10.avi, Lesson10.mov
2. Open and play the Lesson10.avi sample movie in Windows Movies & TV or the Lesson10.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

When you begin this lesson, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page [3](#).

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS). When prompted, click OK to delete your preferences.
4. Click New Project in the Home window.

After Effects opens to display an empty, untitled project.

5. Choose File > Save As > Save As.
6. In the Save As dialog box, navigate to the Lessons/Lesson10/Finished\_Project folder. Name the project **Lesson10\_Finished.aep**, and then click Save.

## Creating the composition

You’ll create a new composition based on the two superkid movie files.

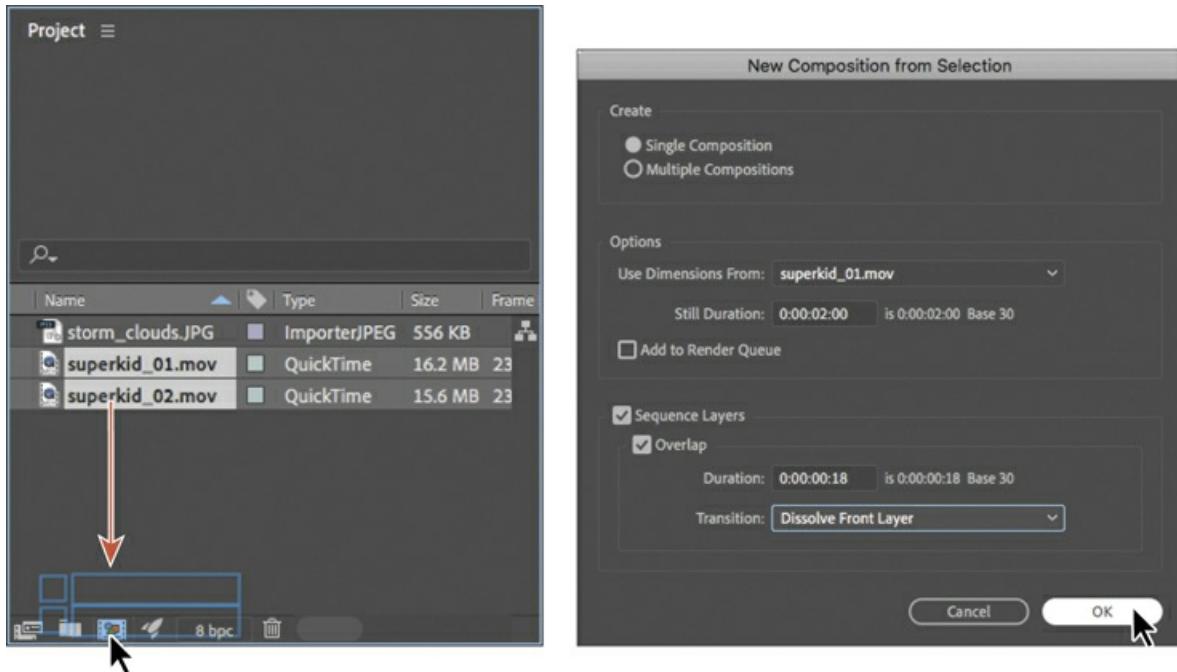
1. Choose File > Import > File.
2. Navigate to the Lessons/Lesson10/Assets folder, Shift-click to select the storm\_clouds.jpg, superkid\_01.mov, and superkid\_02.mov files, and then click Import or Open.
3. In the Project panel, deselect the assets you imported. Select the superkid\_01.mov file and Shift-click the superkid\_02.mov file, and drag the files onto the Create A New Composition button (  ) at the bottom of the Project panel.
4. In the New Composition From Selection dialog box, do the following:
  - Make sure Single Composition is selected.
  - In the Options area, choose superkid\_01.mov from the Use Dimensions From menu.
  - Select Sequence Layers.
  - Select Overlap.
  - For Duration, enter **0:18**.
  - Choose Dissolve Front Layer from the Transition menu.
  - Click OK.

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### Note

You can add transitions after you’ve created a composition by selecting the layers, choosing Animation > Keyframe Assistant > Sequence Layers, and then selecting the options.

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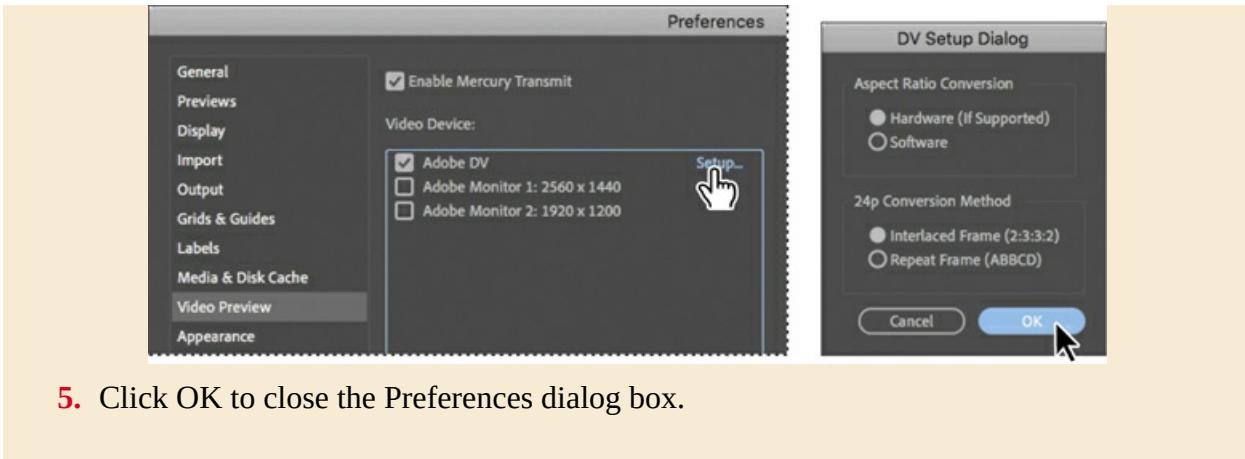


## Previewing your project on a video monitor

If possible, perform color correction on a video monitor instead of a computer monitor. The gamma values between a computer monitor and a broadcast monitor vary greatly. What may look good on a computer screen may be too bright and washed out on a broadcast monitor. Always be sure your video or computer monitor is properly calibrated before performing color correction. For instructions on calibrating a computer monitor, see *After Effects Help*.

Mercury Transmit is a software interface that Adobe digital video applications use to send video frames to external video displays. Video device manufacturers AJA, Blackmagic Design, Bluefish444, and Matrox provide plug-ins that route the video frames from Mercury Transmit to their hardware. The same Mercury Transmit plug-ins work in Adobe Premiere Pro, Prelude, and After Effects. Mercury Transmit can also use monitors connected to your computer's video card and FireWire-connected DV devices without an additional plug-in.

1. With a video monitor connected to your computer system, start After Effects.
2. Choose *Edit > Preferences > Video Preview* (Windows) or *After Effects CC > Preferences > Video Preview* (macOS). Then select *Enable Mercury Transmit*.
3. Choose a device from the list. Devices with names such as AJA Kona 3G or Blackmagic Playback represent video devices connected to your computer. Adobe Monitor devices are the computer monitors connected to your video card. Adobe DV requires a DV device connected to a FireWire port on your computer.
4. To change the options for your video device, click *Setup* next to its name. More options may be available in the device's control panel or management application.

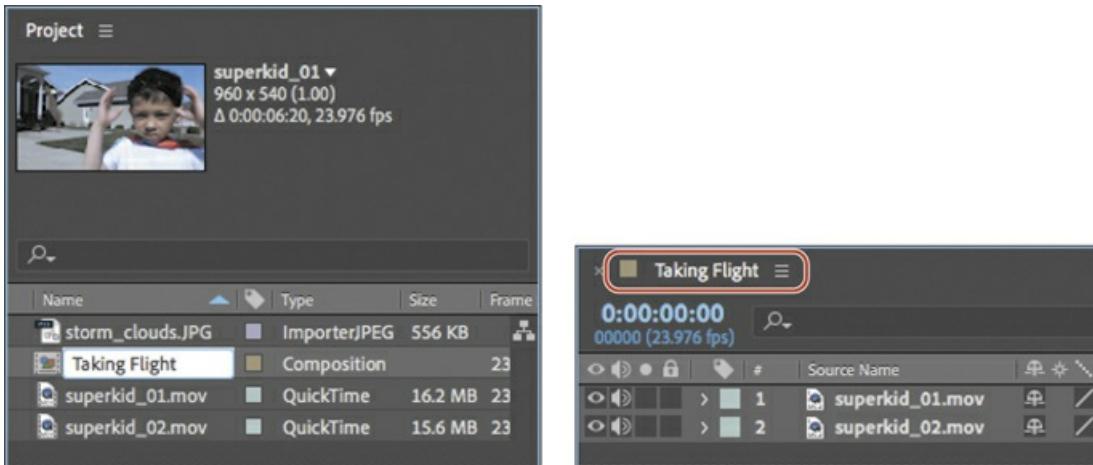


- Click OK to close the Preferences dialog box.

When Sequence Layers is selected, After Effects places the layers in sequence rather than placing them both to start at 0:00. You specified an overlap of 18 frames and a transition so that the first clip dissolves into the second.

After Effects creates a new composition named for the superkid\_01.mov file, and displays it in the Composition and Timeline panels.

- Select the superkid\_01 composition in the Project panel, press Enter or Return, and rename the composition **Taking Flight**. Press Enter or Return again to accept the change.

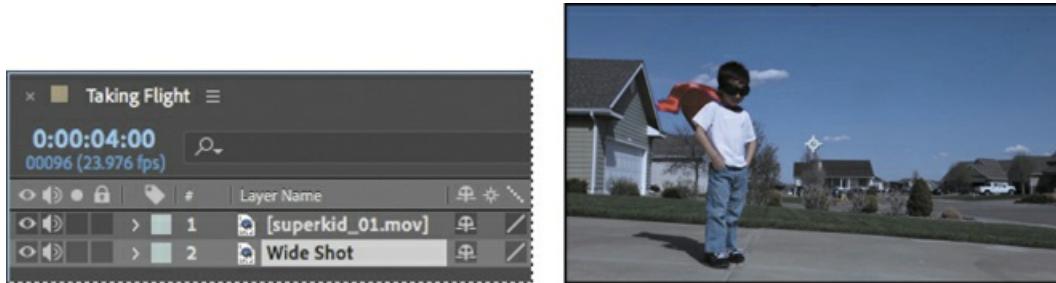


- Press the spacebar to preview the clips, including the transition, and then press the spacebar again to stop the preview.
- Choose File > Save to save your work so far.

## Adjusting color balance with levels

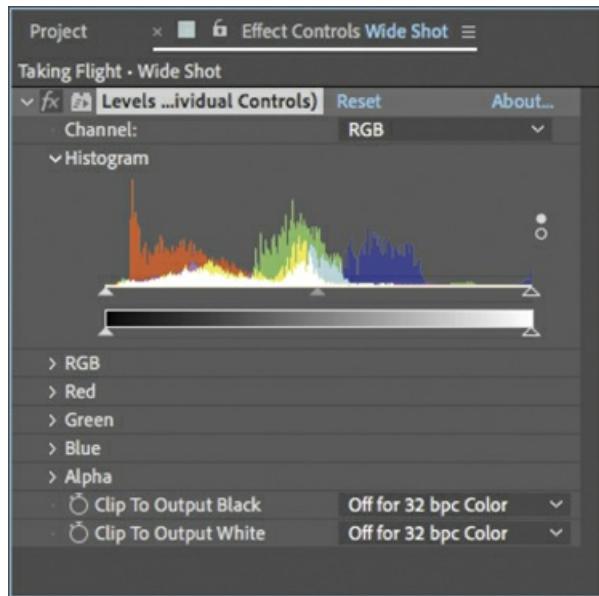
After Effects provides several tools for color correction. Some may do the job with a single click, but understanding how to adjust colors manually gives you the greatest freedom to achieve the look you want. You'll use the Levels effect to adjust the shadows, remove the blue cast, and make the image pop a little more. You'll work on the clips individually, starting with the second clip.

1. Go to 4:00 in the time ruler.
2. Click in an empty area of the Timeline panel to deselect the layers. Then, select the superkid\_02.mov layer.
3. Press Enter or Return, rename the layer **Wide Shot**, and then press Enter or Return to accept the new name.



4. With the Wide Shot layer selected, choose Effect > Color Correction > Levels (Individual Controls).

The Levels (Individual Controls) effect may be a little intimidating at first, but it can give you great control over your shot. It remaps the range of input color or alpha channel levels onto a new range of output levels, functioning much the same as the Levels adjustment in Adobe Photoshop.



The Channel menu specifies the channel to be modified, and the histogram shows the number of pixels with each luminance value in the image. When the selected channel is RGB, you can adjust the overall brightness and contrast of the image.

To remove a color cast, you must first know which areas of the image are supposed to be gray (or white or black). In this shot, the driveway is gray, the shirt is white, and the shoes and goggles are black.

5. Open the Info panel. Then, move the cursor over the white frame of the garage door. As you move the cursor, the RGB values change in the Info panel.



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### ● Note

You may need to resize the Info panel to see the values.

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In one area of the garage door frame, the RGB values are R=186, G=218, B=239. To determine what the values should be, divide 255 (the highest possible RGB value) by the highest value in the sample. That gives you 255 divided by 239 (the blue value), or 1.08. To equalize the colors so that blue is no longer prominent, multiply 1.08 by the original red and green values (186 and 218, respectively). The new values (rounded) are 200 for red and 233 for green.

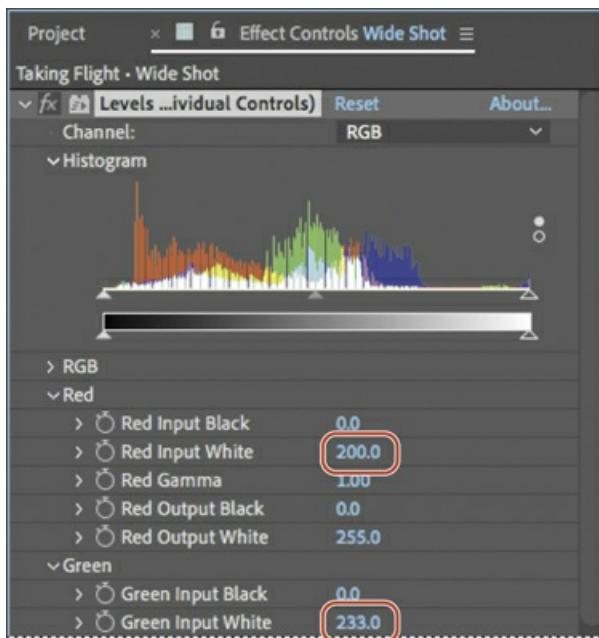
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### ► Tip

For an even more accurate number, sample multiple areas of the image that are gray or white, average those values, and then use those numbers to determine the adjustments.

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6. In the Effect Controls panel, expand the Red and Green properties.
7. For the Red Input White value, enter **200**; for the Green Input White value, enter **233**.



The blue cast is gone, and the image appears warmer.

For each channel, the Input settings increase the value, while the Output settings decrease the value. For example, lowering the Red Input White value adds red to the highlights in the shot, and increasing the Red Output White value adds red to the shadows or dark areas in the shot.

Performing the math lets you zero in on the appropriate settings quickly. If you prefer, you could experiment with the settings to find the best values for the footage you’re using.

#### 8. Hide the Levels (Individual Controls) properties in the Effect Controls panel.

### Adjusting color with the Lumetri Color effect

You used the Levels effect to adjust the color balance in the second clip. Now you’ll use the Lumetri Color effect to do the same for the first clip.

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#### Note

The Lumetri Color effect in After Effects is similar to the color panel in Premiere Pro. To learn more about the Lumetri Color effect, search for “Color workflows” in After Effects Help.

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The Lumetri Color effect provides professional-quality grading and color correction tools that you can use to adjust color, contrast, light, and curves. You can apply simple color corrections or use more advanced color correction tools. The Lumetri Color effect in After Effects works the same as the color panel in Premiere Pro.

The clip is in pretty good shape, but some fine-tuning will result in a better project.

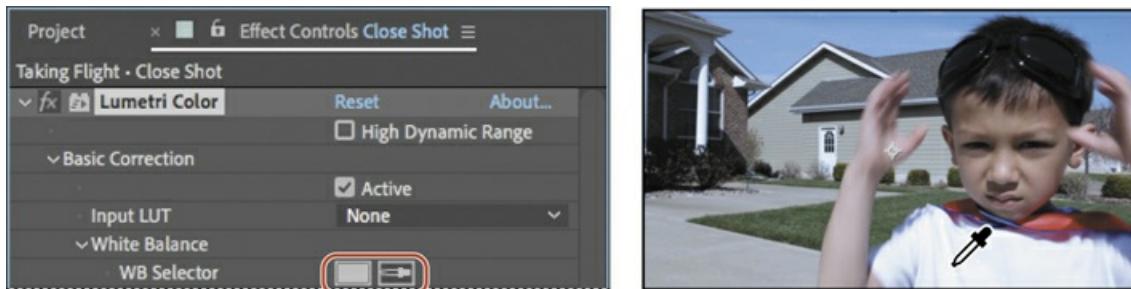
1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Select the superkid\_01.mov layer in the Timeline panel, press Enter or Return, rename the layer **Close Shot**, and press Enter or Return to accept the new name.



3. With the Close Shot layer selected, choose Effect > Color Correction > Lumetri Color.

The Lumetri Color effect options appear in the Effect Controls panel.

4. In the Effect Controls panel, expand the Basic Correction category.
5. Click the eyedropper next to WB Selector in the White Balance section. Then click a white area on the boy's shirt to adjust the white balance.



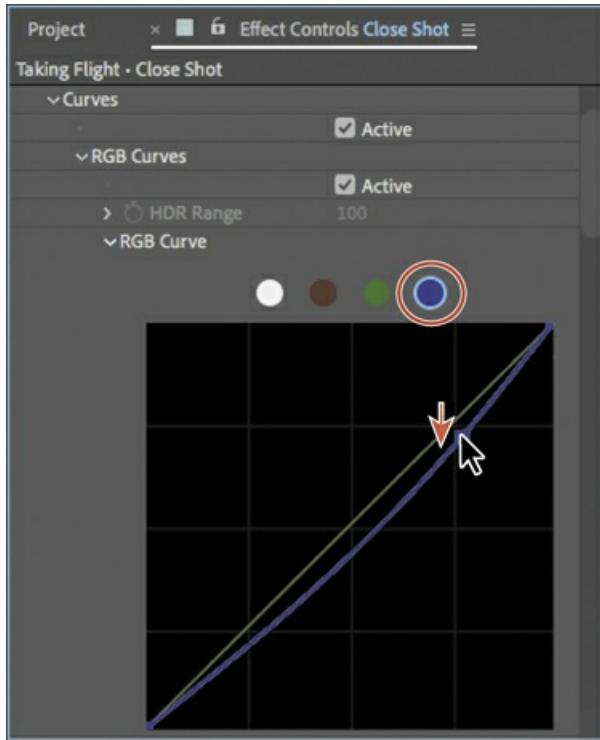
The White Balance setting determines what the Lumetri Color effect identifies as white, which affects the relationship of all other colors. When the white balance is appropriate for your image, colors are rendered accurately.

6. Collapse the Basic Correction category, and expand Curves.

The curves feature in the Lumetri Color effect lets you adjust color and brightness in your video image. You can adjust the curves for the entire image to change the black and white levels, or brighten or darken midtones. You can also adjust the curve for a specific color channel to balance color or make stylized changes.

To adjust a curve, click an anchor point and drag. Changes in the image appear immediately in the Composition panel.

7. Select the blue color channel, and then click an anchor point and drag the curve down slightly to remove the blue color cast in the image.



8. Hide the Lumetri Color options in the Effect Controls panel.
9. Choose File > Save to save your work.

## Replacing the background

These shots were taken on a clear day with few clouds. To add a little drama, you'll key out the sky and replace it with storm clouds. You'll start by using the rigid mask tracker to mask the sky, and then key out the sky color. Then you'll replace it with another image.

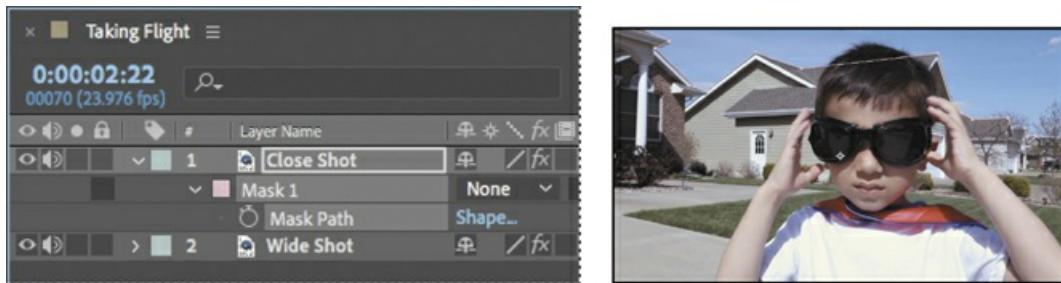
## Using the mask tracker

The mask tracker transforms a mask so that it follows the motion of an object or objects in a movie. It's similar to the face tracker you used in the Extra Credit project in [Lesson 9](#). You can use it to mask a moving object so that you can apply a special effect to it, for example. In this case, you'll use it to track the sky as it shifts in a handheld camera. There is a great deal of blue in this clip—in shadows, the cape, and other areas—so it would be difficult to key out the sky without first isolating it.

1. Go to 2:22—the last frame in the first clip before the transition begins.
2. Select the Close Shot layer in the Timeline panel. Then select the Pen tool ( ) from the Tools panel.
3. In the Composition panel, draw a mask that follows the roofline of the buildings. Complete the mask outside the image in the Composition panel, as shown below. It's okay if the mask cuts off the boy's head, because his head doesn't contain blue and won't be keyed out.



4. With the Close Shot layer selected in the Timeline panel, press the M key to display the Mask properties.
5. Choose None from the Mask Mode menu.

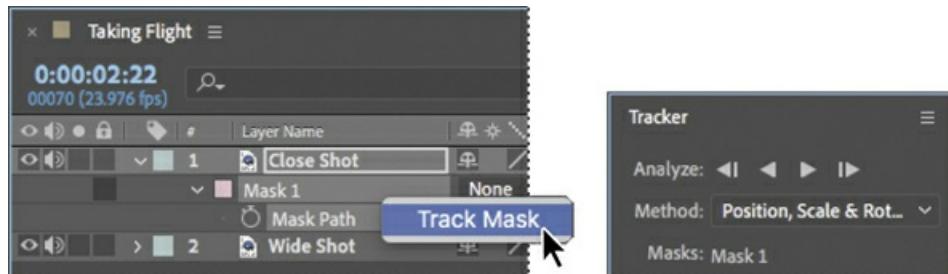


Mask modes (blending modes for masks) control how masks within a layer interact with one another. By default, all masks are set to Add, which combines the transparency values of any masks that overlap on the same layer. While Add is chosen, areas outside the mask disappear. Choosing None from the Mask Mode menu reveals the entire clip in the Composition panel, not just the masked area, so it's easier to edit.

6. Right-click or Control-click Mask 1, and choose Track Mask.

After Effects opens the Tracker panel. The mask tracker does not alter the shape of the mask to follow a shape; the mask remains the same shape but the tracker can change its position, rotation, or scale based on the motion in the clip. You'll use it to track the edges of the buildings without having to manually adjust and track the mask. Because the scene was shot without a tripod, you'll track the position, scale, and rotation of the mask.

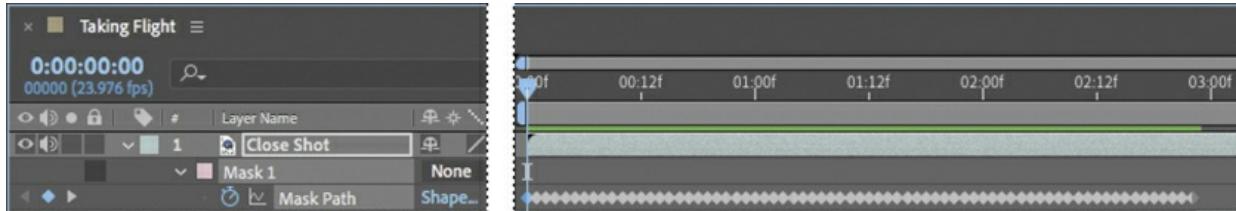
7. In the Tracker panel, choose Position, Scale & Rotation from the Method menu. Click the Track Selected Masks Backward button (◀) to begin tracking backward from 2:22.



8. When the tracking is complete, manually preview the clip to see the mask. If it slips out of place, adjust the mask on individual frames. You can shift the entire mask or reposition individual points, but don't delete any points, as that will change the mask for all the frames that follow.

### Note

If the mask requires adjustment on more than a few frames, delete it and draw the mask again.



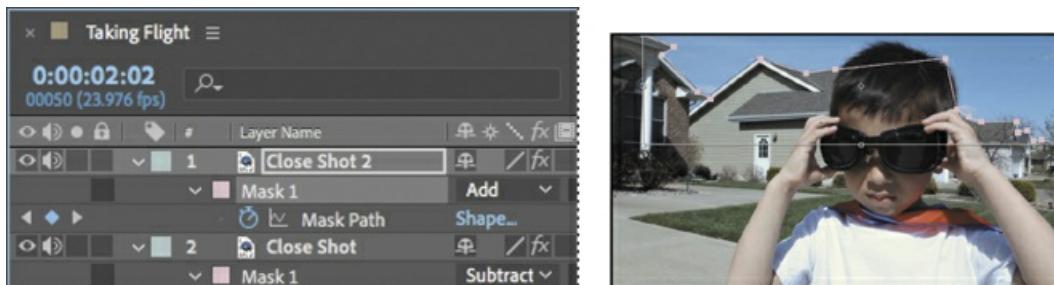
## Keying out the sky with Keylight (1.2)

Now that you've masked the sky, you'll key out the blue in the area that you masked. First, you'll duplicate the layer, and then apply mask modes to isolate the mask.

1. Go to 2:02. Then, select the Close Shot layer, and choose Edit > Duplicate.

After Effects adds an identical layer, named Close Shot 2, above the Close Shot layer.

2. Select the Close Shot layer, and choose Subtract from its Mask Mode menu.
3. Select the Close Shot 2 layer, press M to display its Mask properties, and choose Add from its Mask Mode menu.



When you apply the Subtract mask mode, the influence of the mask is subtracted from the masks above it in the stacking order. The Add mask mode adds the mask to the masks above it. In this case, you're ensuring that only the sky will be selected in the Close Shot 2 layer. If you zoom in to the Composition window while no layers are selected, you can see a faint line where the two layers intersect.

4. Select the Close Shot layer, and press the M key twice quickly to show all of the mask properties for the layer. Reduce the Mask Expansion value to **-1.0** pixel.

The Mask Expansion setting determines how far, in pixels, from the mask path the influence of the mask on the alpha channel extends. You've shrunk the mask on the Close Shot layer so that the two masks don't overlap.

5. Hide the properties for the Close Shot layer.

- Select the Close Shot 2 layer, and choose Effect > Keying > Keylight (1.2).

The Keylight 1.2 effect options appear in the Effect Controls panel.

- Select the eyedropper next to Screen Colour, and then sample an area of the sky near the boy's head.

Most of the sky is keyed out, but if your mask overlapped any of the shadowy areas of the buildings, they're probably affected too. You'll use Screen Balance to fix that.

- Change the Screen Balance to **0**.

The buildings lighten up.

Screen Balance determines how saturation is measured: With a balance of 1, saturation is measured against the smaller of the other two components in the color; with a balance of 0, it's measured against the larger of the two; with a balance of 0.5, it's measured from the average of the two. Generally speaking, blue screens work best with a balance around .95 and green screens with a balance around 0.5, but it varies depending on the colors in the image. For many clips, try setting the balance closer to 0, and then closer to 1, to see what works best.

- Click the Toggle Transparency Grid button ( ) in the Composition panel to see the keyed-out area clearly.
- Expand the Screen Matte category in the Effect Controls panel, and then change the Clip White value to **67**.

The screen matte is the matte that remains when you've keyed out other parts of the image. Sometimes parts of the matte are accidentally keyed out. The Clip White value turns the gray (transparent) pixels to white (opaque).

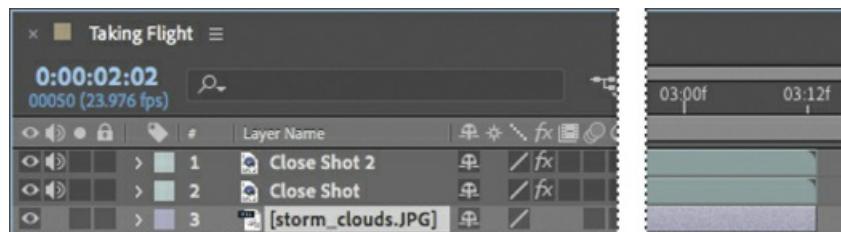
This process is very similar to adjusting Levels for a layer. Anything above the Clip White value is considered pure white. Likewise, the Clip Black value makes anything below the value completely black.

11. Make sure Final Result is chosen in the View menu at the top of the Keylight (1.2) area in the Effect Controls panel.
12. Hide the properties for the Close Shot 2 layer.

## Adding a new background

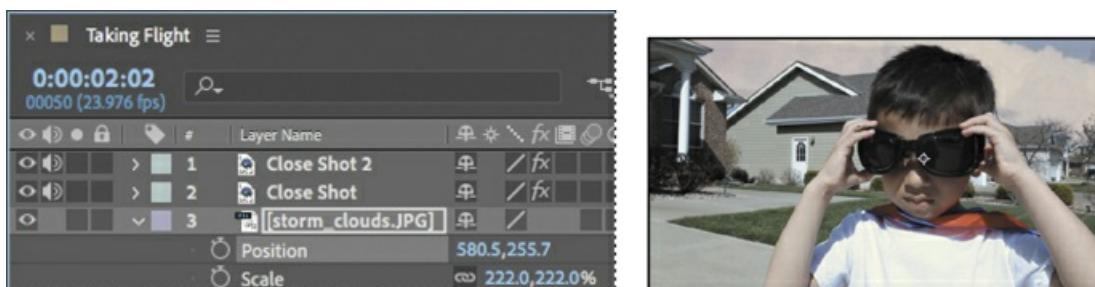
With the original sky keyed out, you're ready to add the clouds to the scene.

1. Click the Project tab to display the Project panel, and then drag the storm\_clouds.jpg file to the Timeline panel, placing it below the Close Shot layer.
2. Drag the end of the storm\_clouds layer to align with the end of the Close Shot layer.



Now the clouds are there, but they're not very dramatic. You'll make them larger and adjust their position.

3. Press the S key to display the Scale property for the layer, and change the amount to **222%**.
4. Press Shift+P to display the Position property for the layer, and change the value to **580.5, 255.7**.



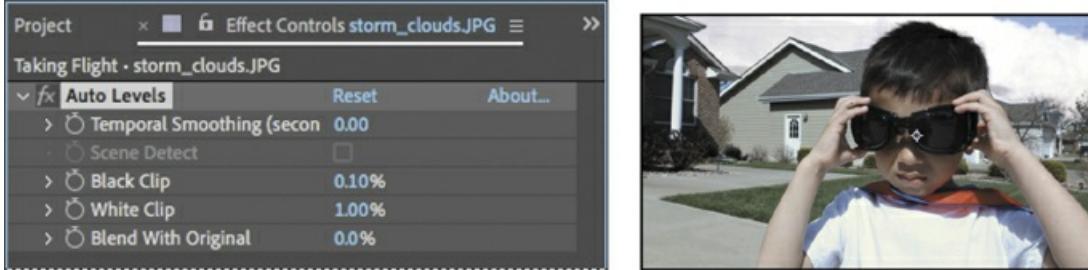
## Color-correcting using Auto Levels

Although the storm clouds are dramatic, the contrast of the image and the color cast don't really match the foreground elements. You'll use the Auto Levels effect to correct that.

The Auto Levels effect automatically sets highlights and shadows by defining the lightest and darkest pixels in each color channel as white and black, and then redistributing intermediate pixel

values proportionately. Because Auto Levels adjusts each color channel individually, it may remove or introduce a color cast. In this case, with the default settings applied, Auto Levels removes the orange cast and balances the shot.

1. With the `storm_clouds` layer selected in the Timeline panel, choose Effect > Color Correction > Auto Levels.
2. To brighten the clouds just a bit, change the White Clip value to **1.00%**.



The Black Clip and White Clip values determine how much of the shadows and highlights (respectively) are clipped to the new extreme shadow and highlight colors in the image. Setting the clipping values too high reduces detail in the shadows or highlights; 1% is as high as is typically recommended.

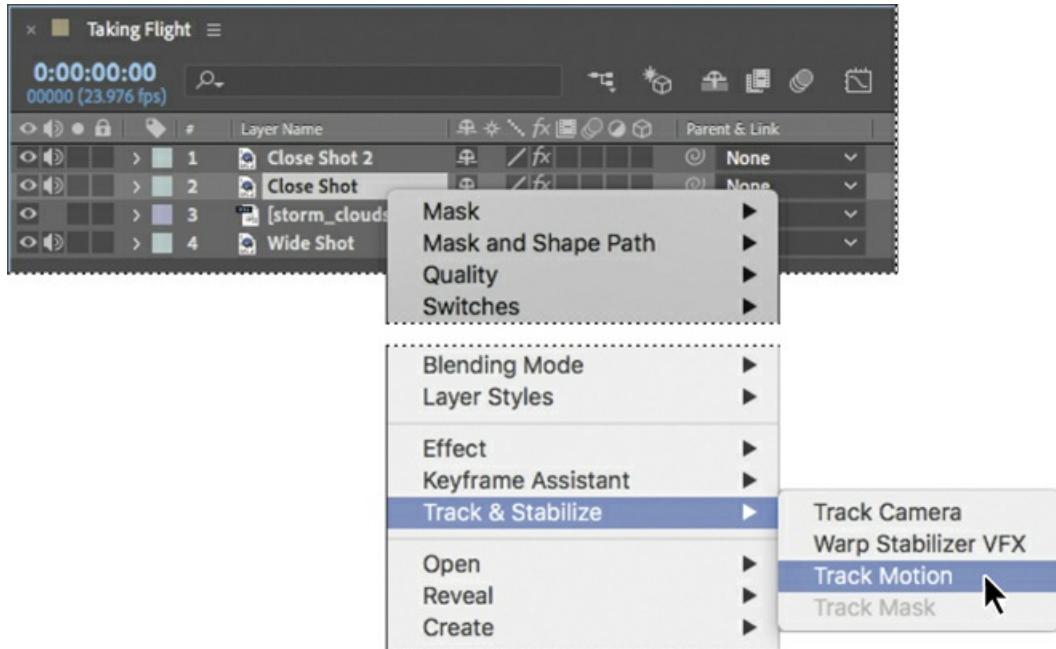
3. Choose File > Save to save your work.

## Motion tracking the clouds

The clouds are in place, and they're looking good. But if you scrub through the clip, you'll notice that the clouds are static while the foreground moves due to camera motion. The clouds should travel with the foreground. You'll use motion tracking to solve this problem.

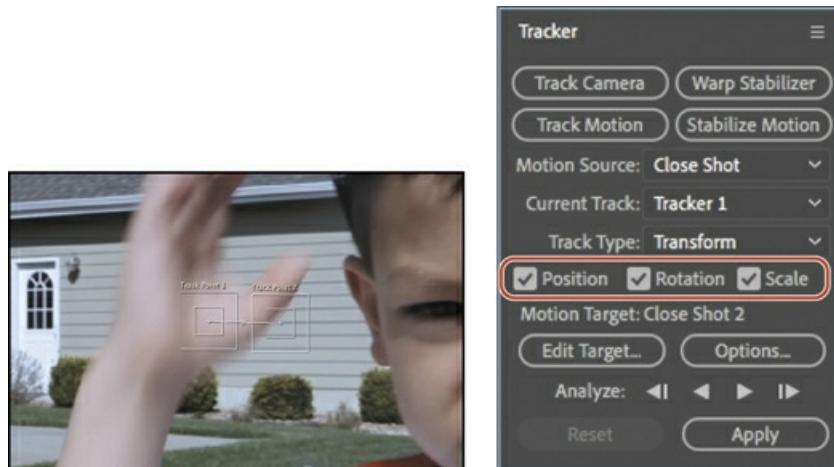
After Effects tracks motion by matching pixels from a selected area in a frame to pixels in each succeeding frame. Tracking points designate the areas to track.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Select the Close Shot layer in the Timeline panel, right-click or Control-click the layer, and choose Track & Stabilize > Track Motion.



After Effects displays the Close Shot layer in the Layer panel and makes the Tracker panel active.

3. In the Tracker panel, select the Position, Rotation, and Scale options.



After Effects displays two track points in the Layer panel. The outer box in each track point represents the search region (the area After Effects scans); the inner box is the feature region (what After Effects is searching for); the center “x” is the attach point.

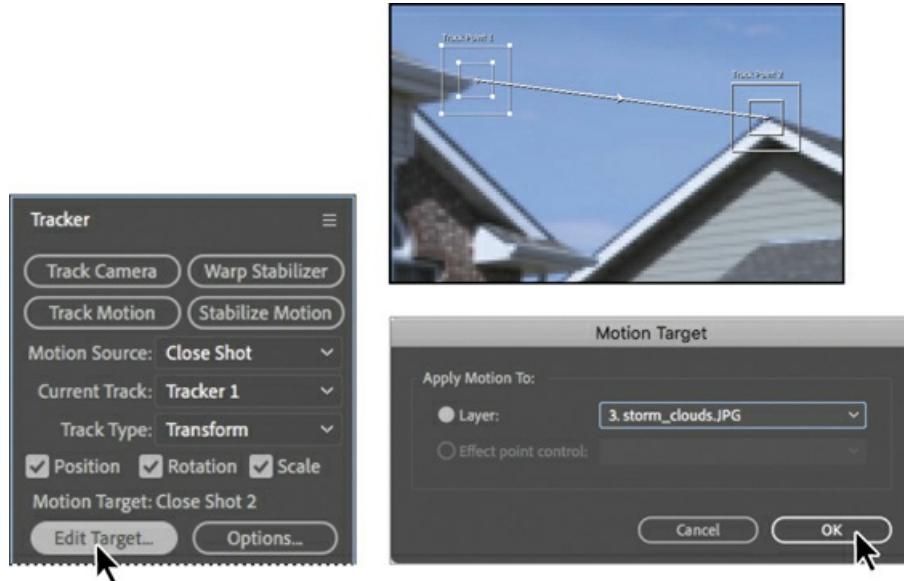
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### Note

You’ll learn more about tracking objects in [Lesson 14, “Advanced Editing Techniques.”](#) For help working with track points, see “[Moving and resizing the track points](#)” on page [350](#).

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4. Click an empty area in the inner box (the feature region) of the first track point, and drag the entire track point to the corner of the house on the left. You want to track an area with strong contrast.
5. Click an empty area in the feature region of the second track point, and drag the entire track point to the peak of the roof across from the first track point.
6. In the Tracker panel, click Edit Target. Then, in the Motion Target dialog box, choose 3. storm\_clouds.jpg from the Layer menu. Click OK.



After Effects applies the tracking data to the target layer. In this case, it will track the motion of the Close Shot layer, and apply that tracking data to the storm\_clouds.jpg layer so that they move in sync.

7. Click the Analyze Forward button (▶) in the Tracker panel. You may need to scroll down to see all the options in the panel.

After Effects analyzes the positions of the tracking regions frame by frame to track the camera movement in the clip.

8. When the analysis is complete, click Apply in the Tracker panel. Click OK to apply the data for both the x and y dimensions.
9. Switch back to the Composition panel, and scrub backward through the timeline. The clouds move with the foreground elements. Hide the Close Shot layer properties to keep the Timeline panel tidy.

Because you selected Scale in the Tracker panel, After Effects resized the layer as necessary to sync it with the Close Shot layer. The clouds are no longer in the same position. You'll adjust the anchor point for the layer.

10. Select the storm\_clouds.jpg layer in the Timeline panel, and press the A key to display its Anchor Point property. Change the Anchor Point position to **313, 601**.
11. Press A to hide the Anchor Point property, and choose File > Save to save your work so far.

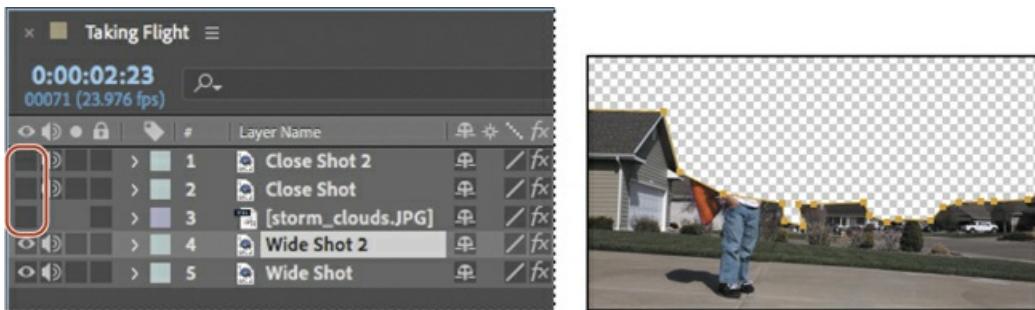
## Replacing the sky in the second clip

You'll use a similar process to replace the sky in the second clip, with a few differences. You'll use the Color Range effect to key out the sky instead of the Keylight (1.2) effect.

## Creating the masks

As you did with the first clip, you'll start by drawing a mask to isolate the sky so you won't key out all the blue in the image. You'll use the mask tracker to ensure the mask stays in the right position throughout the clip.

1. Go to 2:23 in the time ruler—the first frame in the second clip.
2. Click the Video switch (●) in the Timeline panel for the Close Shot, Close Shot 2, and storm\_clouds.jpg layers to hide them so that you can see the full Wide Shot clip clearly.
3. Select the Wide Shot layer in the Timeline panel.
4. Select the Pen tool (P) in the Tools panel, and then follow the edges of the buildings to draw a mask around the bottom of the image, omitting the sky. Make sure the boy's blue pants are entirely within the shape you draw, so they won't be keyed out with the sky.
5. Select the Wide Shot layer again, and then press Ctrl+D (Windows) or Command+D (macOS) to duplicate the layer.

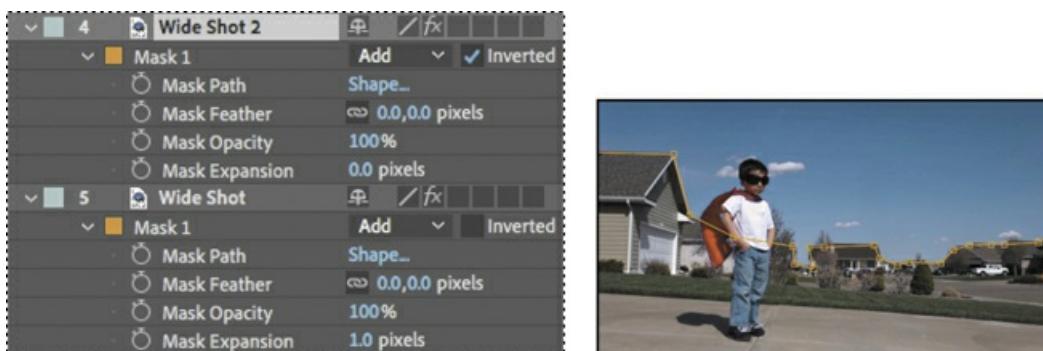


A new Wide Shot 2 layer appears above the original Wide Shot layer in the Timeline panel.

6. Select the original Wide Shot layer, and press the M key twice to reveal the mask properties for the layer. Change the Mask Expansion value to 1 pixel.

The influence of the mask expands by 1 pixel beyond its outline.

7. Select the Wide Shot 2 layer, press the M key twice to reveal the mask properties for the layer, and then select Inverted.



The area that is masked in the Wide Shot 2 layer is inverted: What is masked in the Wide Shot layer is not in the Wide Shot 2 layer, and vice versa. To see this clearly, temporarily hide the Wide Shot layer and then show it again.

8. Select Mask 1 in the Wide Shot 2 layer, right-click or Control-click Mask 1, and then choose Track Mask.
9. In the Tracker panel, choose Position from the Method menu, and then click the Track Selected Masks Forward button (►).

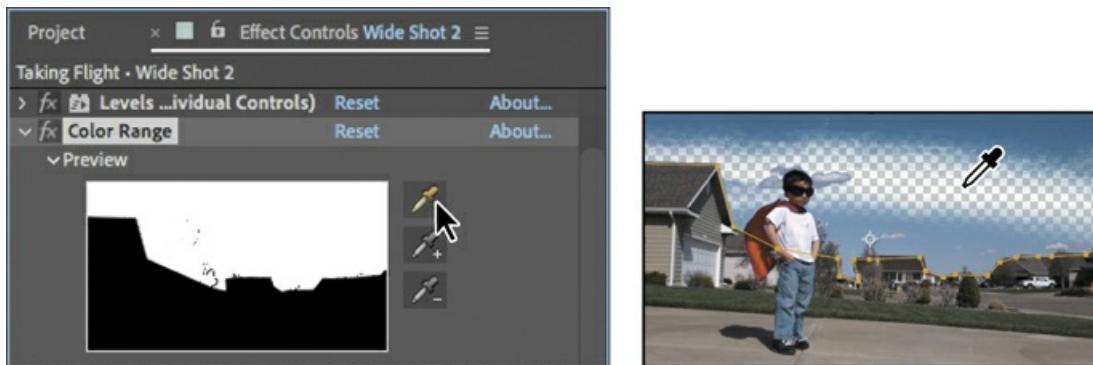
The mask tracker tracks the mask as the camera moves.

10. When the analysis is complete, go to 2:23 in the time ruler again. Under the Wide Shot layer, right-click or Control-click Mask 1, and choose Track Mask.
11. In the Tracker panel, choose Position from the Method menu, and then click the Track Selected Masks Forward button (►).
12. Hide the properties for all layers.

## Keying out an area with the Color Range effect

The Color Range effect keys out a specified range of colors. This key effect is especially useful where the color to be keyed is unevenly lit. The sky in the Wide Shot clip ranges in color from a deep blue to a lighter shade near the horizon—a perfect candidate for the Color Range effect.

1. Go to 2:23 in the time ruler.
2. Select the Wide Shot 2 layer in the Timeline panel, and choose Effect > Keying > Color Range.
3. Select the Key Color eyedropper, next to the Preview window in the Effect Controls panel. Then, in the Composition panel, click a midtone blue color in the sky to sample it.



The keyed-out area appears black in the Preview window in the Effect Controls panel.

4. Select the Add To Key Color eyedropper in the Effect Controls panel, and then click another area of the sky in the Composition panel.
5. Repeat step 4 until the entire sky has been keyed out.



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### ► Tip

Select the blue areas of the sky, but not the clouds. You don't want to key out parts of the boy's shirt.

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## Adding a new background

With the original sky keyed out, you're ready to add the clouds to the scene.

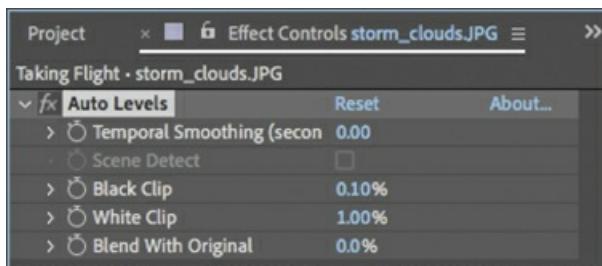
---

### ► Tip

If you're typing the values, press Tab to jump between the fields.

---

1. Click the Project tab to display the Project panel. Then drag the `storm_clouds.jpg` item from the Project panel to the Timeline panel, placing it below the Wide Shot layer.
2. With the `storm_clouds` layer selected in the Timeline panel, press the S key to display its Scale property, and then increase the Scale values to **150, 150%**.
3. With the `storm_clouds` layer still selected in the Timeline panel, press P to display its Position property. Then change the position values to **356, 205** or the position you prefer.
4. With the `storm_clouds` layer selected, choose Effect > Color Correction > Auto Levels. Change the White Clip value to **1.00%**.



## Motion tracking the shot

Again, because the clip was shot without a tripod, the camera shifts. The clouds should shift with it. You'll track the motion to sync the clouds with the foreground elements, just as you did for the other clip.

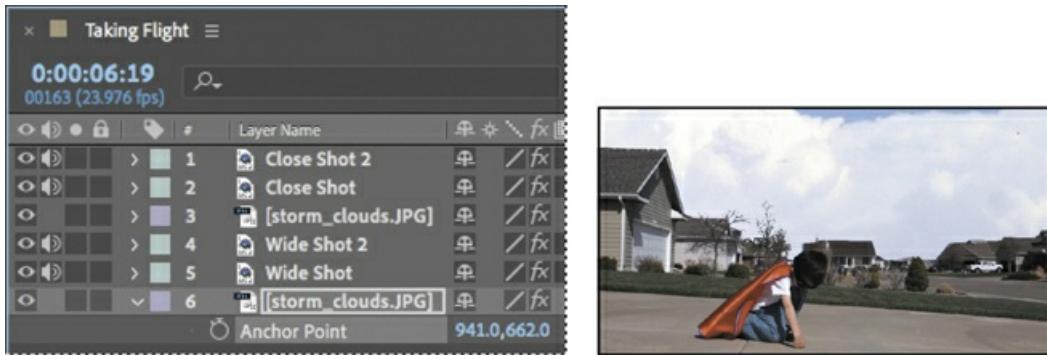
1. Make sure the current-time indicator is at 2:23. Then select the Wide Shot layer, right-click or Control-click it, and choose Track & Stabilize > Track Motion.
2. In the Tracker panel, select the Position, Rotation, and Scale options.
3. Click in the feature region (the inner box) of one of the track points, and drag it to the peak of the roof of the house on the far right. Then, drag the feature region of the other track point to the peak of the house straight across from it, as in the illustration.
4. In the Tracker panel, click Edit Target. In the Motion Target dialog box, choose 6. storm\_clouds.jpg from the Layer menu, and click OK. Make sure you select the second storm\_clouds.jpg file, and not the first one (layer 3); you want the one that is associated with the Wide Shot layer.



5. Click the Analyze Forward button in the Tracker panel.
6. When the analysis is complete, click Apply in the Tracker panel. Click OK to apply the data to both the x and y dimensions.
7. Click the Composition: Taking Flight tab in the Composition panel to make it active. Then scrub through the clip to watch the clouds in sync with the other elements.

The clouds follow the movement of the camera, but because the layer was scaled, they may not be in the right position.

8. Hide the properties for all layers.
9. Make sure no layers are selected. Then, select the storm\_clouds.jpg layer at the bottom of the layer stack, and press the A key to reveal the Anchor Point property. Adjust it so that it looks right. We used **941, 662**.



**10.** Make the Close Shot, Close Shot 2, and first storm\_clouds.jpg layers visible again.

**11.** Choose File > Save to save your work so far.

## Color grading

So far, the color changes you've made have been to correct inaccurate white balances or to match color between clips. You can also change color and tone to create a mood or otherwise enhance a movie. You'll make some final adjustments to give the entire movie a steely blue color, make the image soft and dreamy, and add a vignette.

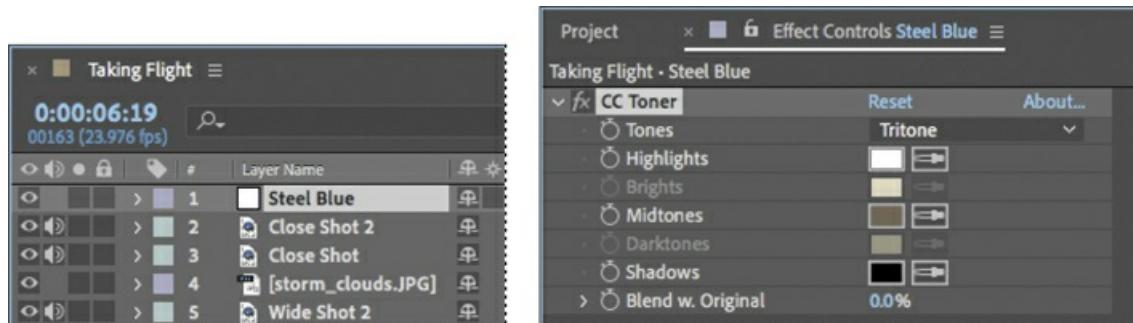
## Using CC Toner to map colors

CC Toner is a color-mapping effect based on the luminance of the source layer. You can map two (duotone), three (tritone), or five (pentone) colors. You'll use it to map a cold blue color to bright areas of the clip, a steely blue to the midtones, and a darker blue to darker areas of the clip.

**1.** Choose Layer > New > Adjustment Layer.

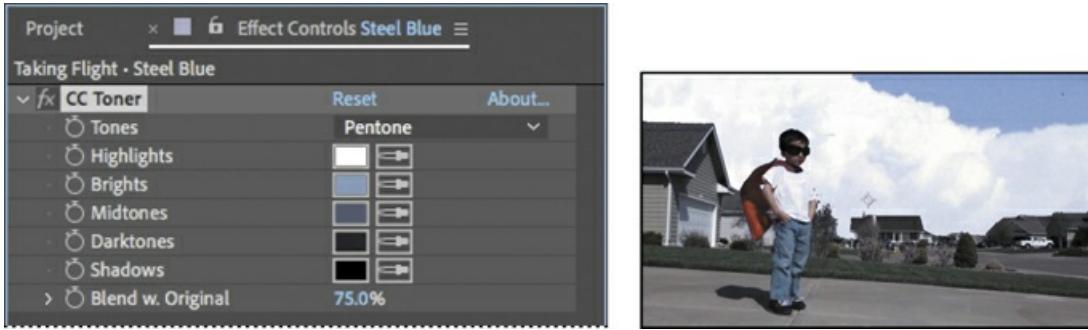
You can use an adjustment layer to apply an effect to all the layers beneath it at once. Because it's on a separate layer, you can also hide or edit the layer and automatically affect its influence on all the other layers.

- 2.** Move the Adjustment Layer 1 layer to the top of the Timeline panel, if it's not already there.
- 3.** Select the Adjustment Layer 1 layer, press Enter or Return, rename the layer **Steel Blue**, and press Enter or Return again.
- 4.** Select the Steel Blue layer, and choose Effect > Color Correction > CC Toner.



- 5.** In the Effect Controls panel, choose Pentone from the Tones menu. Then do the following:

- Click the Brights color swatch, and choose a cold blue color. (We used R=120, G=160, B=190.)
- Click the Midtones color swatch, and choose a darker, steely blue . (We used R=70, G=90, B=120.)
- Click the Darktones color swatch, and choose a much darker blue. (We used R=10, G=30, B=60.)
- Change the Blend With Original value to **75 %**.



## Adding a blur

You'll add a blur to the entire project. First you'll precompose the layers, and then you'll create a partially visible blurred layer.

1. Select all of the layers in the Timeline panel, and choose Layer > Pre-Compose.

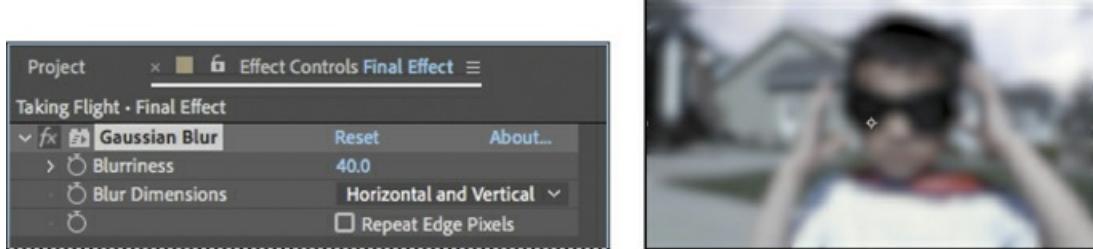
Precomposing layers moves them to a new composition, making it easier to affect all the layers in a composition at once.

2. In the Pre-Compose dialog box, name the composition **Final Effect**, and select Move All Attributes Into The New Composition. Then click OK.



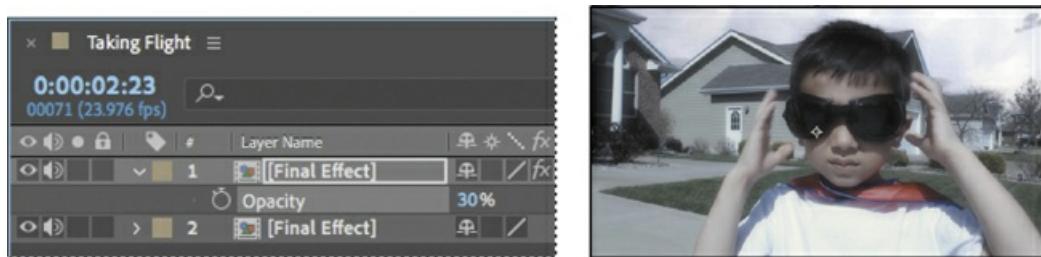
After Effects replaces all the layers in the Taking Flight composition with a single layer named Final Effect.

3. Select the Final Effect layer, and choose Edit > Duplicate to make a copy of it.
4. With the top layer selected, choose Effect > Blur & Sharpen > Gaussian Blur.
5. In the Effect Controls panel, change the Blurriness to **40**.



The effect is too strong. You'll reduce the opacity of the layer that contains the effect.

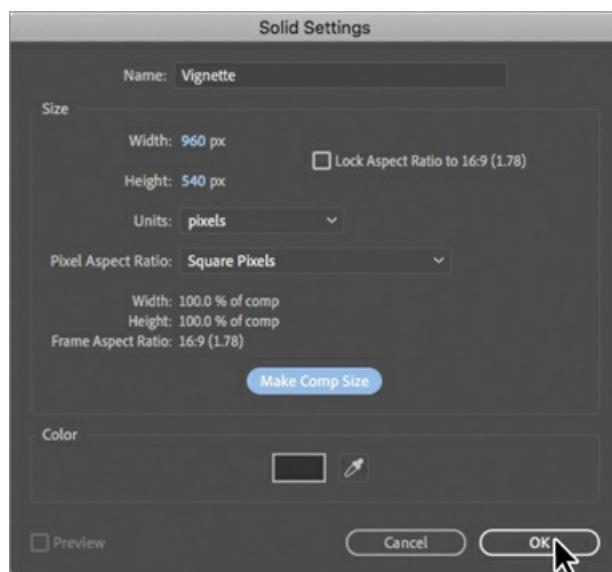
- With the top layer selected, press the T key to reveal the Opacity property for the layer. Change its value to **30%**.



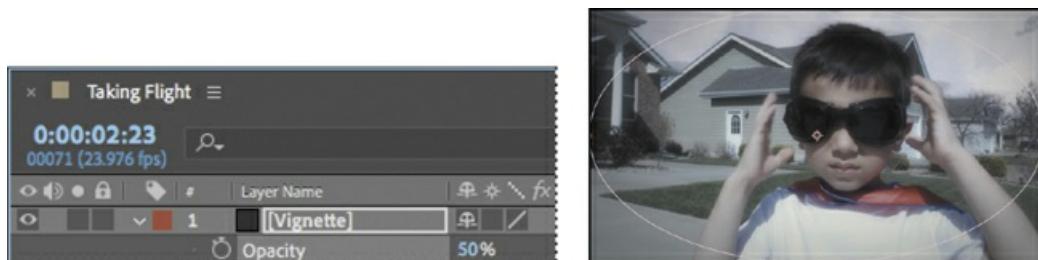
## Adding a vignette

You'll use a new solid layer to create a vignette for the movie.

- Choose Layer > New > Solid.
- In the Solid Settings dialog box, do the following:
  - Name the layer **Vignette**.
  - Click the Make Comp Size button.
  - Change the color to black (R=0, G=0, B=0).
  - Click OK.



3. Select the Ellipse tool (○), hidden beneath the Rectangle tool (□) in the Tools panel, and then double-click the Ellipse tool to add an elliptical mask that is automatically sized to fit the layer.
4. In the Timeline panel, select the Vignette layer, and press the M key twice to reveal the mask properties. Change the Mask Mode to Subtract, and change the Mask Feather value to **300** pixels.
5. Press the T key to reveal the Opacity property, and change its value to **50%**.



6. Hide the properties for all layers.
7. Preview your movie!
8. Save the file.

## Extra credit

### Cloning an object in a scene

You can copy an object, and then use motion tracking to ensure it remains in sync with the rest of the scene. You'll use the Clone Stamp tool to place a second light on the other side of the door in the background of the Close Shot clip. Cloning in After Effects is similar to cloning in Photoshop, but in After Effects, you can clone across the entire timeline, rather than in a single image.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Double-click the lower Final Effect layer in the Timeline panel to open the Final Effect composition.

You want to make the change to the copy of the composition that is not blurred.

3. Double-click the Close Shot layer in the Timeline panel to open it in the Layer panel.

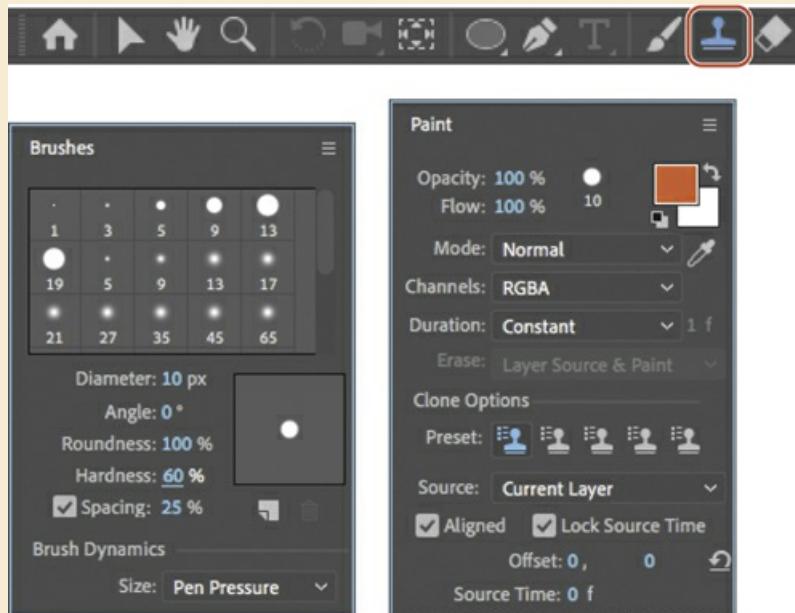
You can paint only on individual layers—not on the composition as a whole.

4. Select the Clone Stamp tool in the Tools panel.

The Clone Stamp tool samples the pixels on a source layer and applies the sampled pixels to a target layer; the target layer can be the same layer or a different layer in the same composition.

When you select the Clone Stamp tool, After Effects adds the Brushes and Paint panels to the stack.

5. Open the Brushes panel and enlarge it if necessary. Then change the Diameter to **10** pixels and the Hardness value to **60%**.
6. Enlarge the Paint panel. Make sure the Mode is set to Normal and the Duration to Constant. The source should be set to Current Layer. Select Aligned and Lock Source Time, and make sure the Source Time is set to 0 frames.



The Constant setting applies the Clone Stamp effect from the current time forward. Because you're starting at the beginning of the timeline, the changes you make will affect every frame in the layer.

When Aligned is selected in the Paint panel, the position of the sample point—the clone position—changes for subsequent strokes to match the movement of the Clone Stamp tool in the target Layer panel so you can use multiple strokes to paint the entire cloned object. The Lock Source Time option lets you clone a single source frame.

7. In the Layer panel, position the cursor at the top of the lamp. Alt-click (Windows) or Option-click (macOS) to designate a source point for cloning.
8. Click next to the left side of the door, and then click and drag to clone the light. Be careful not to clone part of the door in the process. If you make a mistake, undo and start over with a new source point.



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**► Tip**

If you make a mistake, just press Ctrl+Z (Windows) or Command+Z (macOS) to undo the stroke, and then try again.

9. When the second light is in place, scrub through the clip. The cloned light remains stationary while the rest of the scene moves; it isn't in sync with the side of the building. You'll use tracking data to fix the problem.
10. In the Timeline panel, expand the properties for the Close Shot layer, and then expand the Motion Trackers, Tracker 1, and Track Point 1 properties. Then, still in the Close Shot layer, expand the Effects, Paint, Clone 1, and Transform Clone 1 properties.
11. Drag the pick whip for the Transform Clone 1 Position property to the Track Point 1: Attach Point property, and release it. (You may need to enlarge the Timeline panel to see both properties at once.)

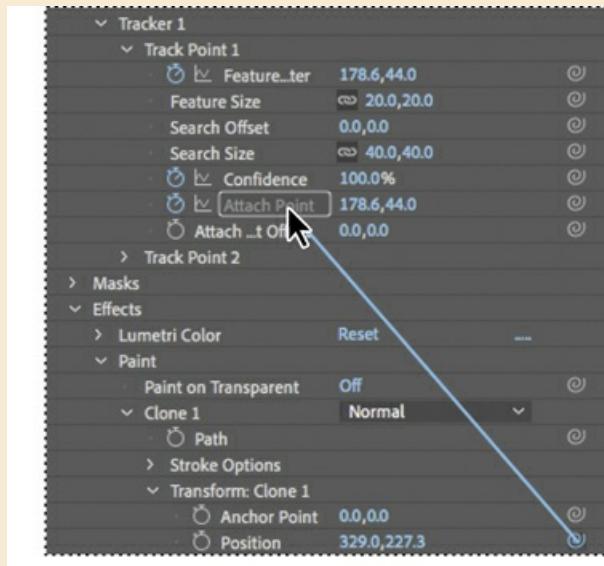
The expression you created ties the position of the cloned light to the tracking data you created for the clip earlier in the lesson. The light will travel with the image. But it may be in the wrong place. You can correct its relationship to the door by adjusting its anchor point.

12. Adjust the Transform: Clone 1: Anchor Point property until the light is positioned next to the door.

You might need to zoom out to see where the light is while adjusting the anchor point values. Your values will probably be different from ours.

13. Scrub through the clip to verify that the light is positioned properly. When you're satisfied that it is, close the Close Shot tab in the Layer panel and the Final Effect composition tab in the Timeline panel. Preview the entire composition to see your work.

14. Choose File > Save to save your work.



## Review questions

- 1** What's the difference between color correction and color grading?
- 2** How can you key out a background in After Effects?
- 3** When would you use the mask tracker?

### **Review answers**

- 1** Color correction is performed to correct errors in white balance and exposure or to ensure color consistency from one shot to another. Color grading is more subjective; its goals are to optimize the source material, to focus attention on a key element in the shot, or to create a color palette to match the visual look the director prefers.
- 2** There are multiple options in After Effects for keying out a background. In this lesson, you used Keylight (1.2) and the Color Range effect to key out the background so that you could replace it with another.
- 3** Use the mask tracker when you need to track a mask that does not change shape, but that does change position, scale, or rotation through a clip. For example, you can use it to track a person in an action shot, a wheel, or an area of the sky.

# 11 Creating Motion Graphics Templates

## Lesson overview

In this lesson, you'll learn how to do the following:

- Add controls to the Essential Graphics panel.
- Create checkboxes to select a background image.
- Protect portions of a project from time-stretching.
- Export a Motion Graphics template (.mogrt) file.
- Create master properties for layers in nested compositions.
- Work with a Motion Graphics template in Adobe Premiere Pro.
- Create master properties.



This lesson will take approximately an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: MOTION GRAPHICS TEMPLATE FOR TV SHOW TITLE SEQUENCE

With Motion Graphics templates, you can preserve the style and settings for a project while giving colleagues control over specific editorial decisions in Adobe Premiere Pro.

### Getting started

Using the Essential Graphics panel in After Effects, you can create Motion Graphics templates that let your colleagues edit aspects of the composition in Adobe Premiere Pro. You decide which properties are editable as you create the template, and then you can share the template using Creative Cloud libraries or by sending your colleague the Motion Graphics template (.mogrt) file.

You'll create a Motion Graphics template for the title sequence of a noir television show in which the main title text needs to remain constant but the episode subtitle, background images, and effect settings can change.

First, you'll preview the sample movie and then set up the project.

1. Make sure the following files are in the Lessons/Lesson11 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: Embrace.psd, Holding\_gun.psd, Man\_Hat.psd, and Stylized\_scene.psd
  - In the Sample\_Movies folder: Lesson\_11.avi, Lesson11.mov
2. Open and play the Lesson11.avi sample movie in Windows Movies & TV or the Lesson11.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

When you begin this lesson, restore the default application settings for After Effects. See

“Restoring default preferences” on page 3.

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS). When prompted, click OK to delete your preferences. Click New Project in the Home window.

After Effects opens to display an empty, untitled project.

4. Choose File > Save As > Save As.
5. In the Save As dialog box, navigate to the Lessons/Lesson11/Finished\_Project folder. Name the project **Lesson11\_Finished.aep**, and click Save.

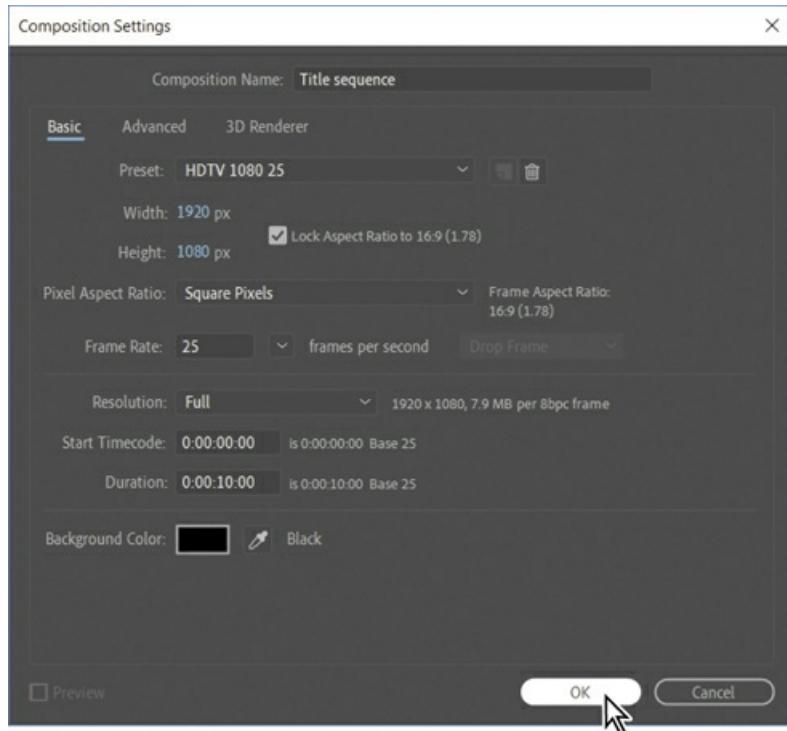
## Preparing a master composition

To create a template, you first need to create an After Effects composition upon which the template will be based. You’ll create a master composition that contains the background image assets and an animated title and subtitle.

## Creating the composition

First, import the assets, and create the composition.

1. Double-click an empty area of the Project panel to open the Import File dialog box.
2. Navigate to the Lessons/Lesson11/Assets folder on your hard disk, and then Shift-click to select all four PSD files. Click Import or Open.
3. Click the New Composition button in the Composition panel.
4. In the Composition Settings dialog box, do the following, and then click OK:
  - Name the composition **Title sequence**.
  - Choose HDTV 1080 25 from the Preset menu.
  - Enter **10:00** for the Duration.
  - Select black for the Background Color.



5. Drag the Embrace.psd file into the Timeline window.



Displaying a background file will make it easier to position your text.

## Adding animated text

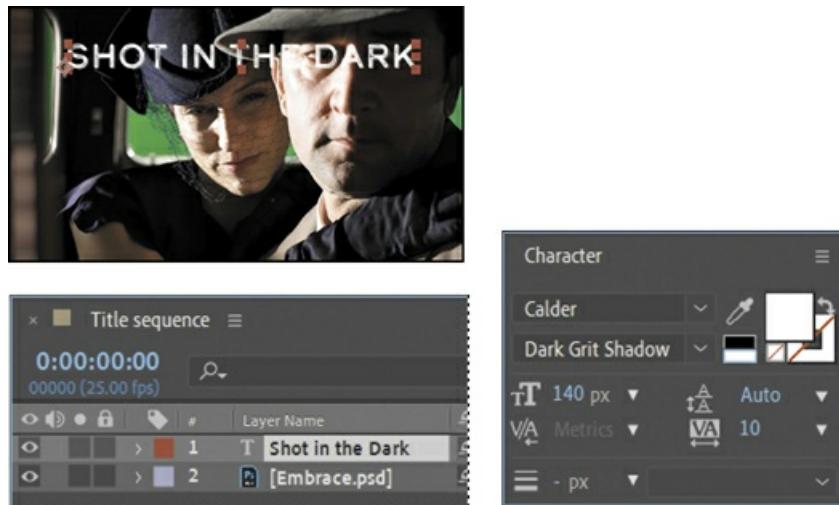
The project includes a series title that appears at the top of the screen and moves down as it grows larger, and an episode title that appears letter by letter and then later explodes off the screen. You'll create both layers and animate them.

1. Select the Horizontal Type tool (**T**) in the Tools panel, and click an insertion point in the Composition panel.

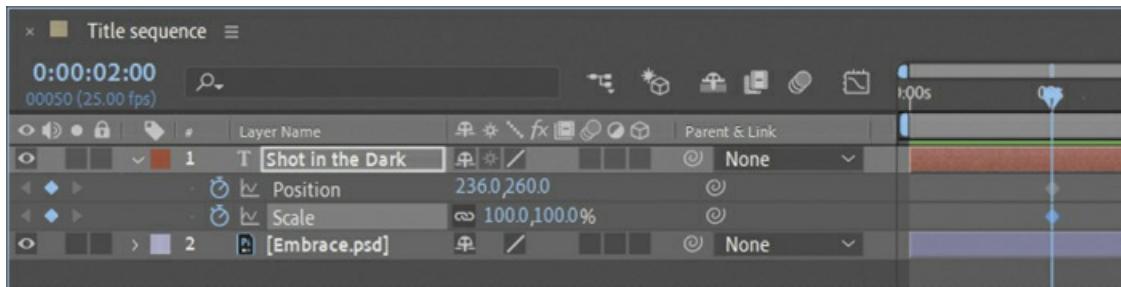
After Effects adds a new layer to the Timeline panel and opens the Character panel.

2. Type **Shot in the Dark** in the Composition panel.
3. In the Character panel, click next to the font name to open the font menu. If you do not already have Calder Dark Grit Shadow and Calder Dark fonts on your system, click Add Adobe Fonts, and then activate the fonts using Adobe Fonts. Or choose a different font in the following step.

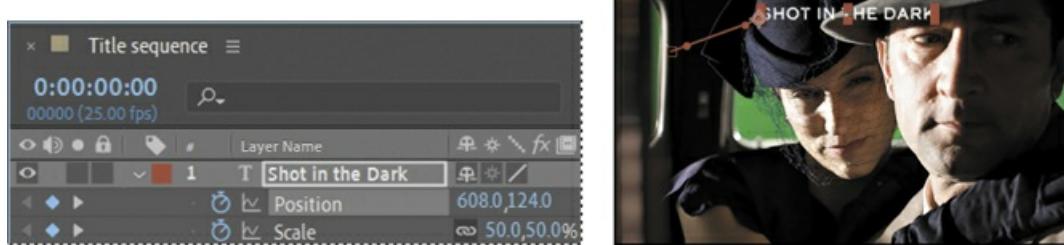
- With the text selected in the Composition panel, select the following settings in the Character panel:
  - Font Family: Calder
  - Font Style: Dark Grit Shadow
  - Fill Color: White
  - Stroke: None
  - Font Size: **140** px
  - Tracking: **10%**
- Select the Selection tool (P), and then position the title in the center of the top half of the scene in the Composition panel.



- Go to 2:00. With the Shot in the Dark layer selected, press P and then Shift+S to see both the Position and Scale properties. Click the stopwatch next to each of the properties to create initial keyframes.



- Press the Home key to go to the beginning of the time ruler. Change the scale to **50%**. With the Selection tool, drag the title so that it is centered at the top of the Composition panel. After Effects creates keyframes for the Scale and Position properties.



8. Go to 2:10. Then, select the Horizontal Type tool in the Tools panel again, and type **Episode 3: A Light in the Distance** in the Composition panel.
9. Select the text in the Composition panel, and then make the following changes to settings in the Character panel:
  - Font Family: Calder
  - Font Style: Dark
  - Font Size: **120** px
  - Horizontal Scale: **50%**

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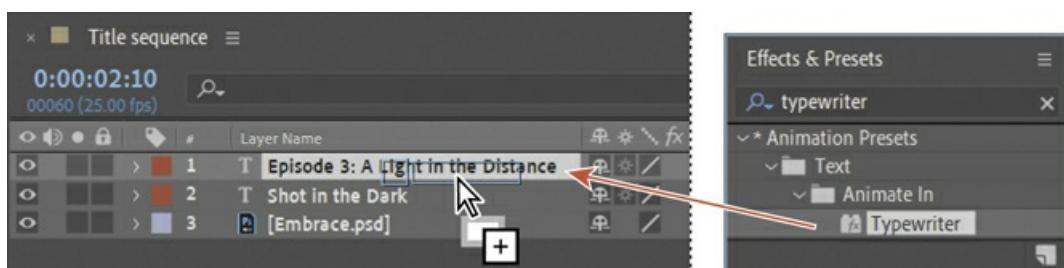
#### ● Note

If you didn't activate Calder Dark from Adobe Fonts in step 3, activate it now, or choose a different font in step 9.

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10. Go to 9:00. In the Effects & Presets panel, type **explosion** in the search bar. Then select the Explosion 2 animation preset, and drag it onto the Episode 3 layer in the Timeline panel.
11. Go back to 2:10. In the Effects & Presets panel, type **typewriter** in the search bar. Then select the Typewriter animation preset, and drag it onto the Episode 3 layer in the Timeline panel.



- 12.** Select the Selection tool in the Tools panel, and then center the text in the bottom third of the screen.



- 13.** Press the Home key or move the current-time indicator to the beginning of the time ruler. Then press the spacebar to preview the movie. Press the spacebar again to stop playback.



- 14.** Hide the properties for both text layers, and then choose File > Save to save your work so far.

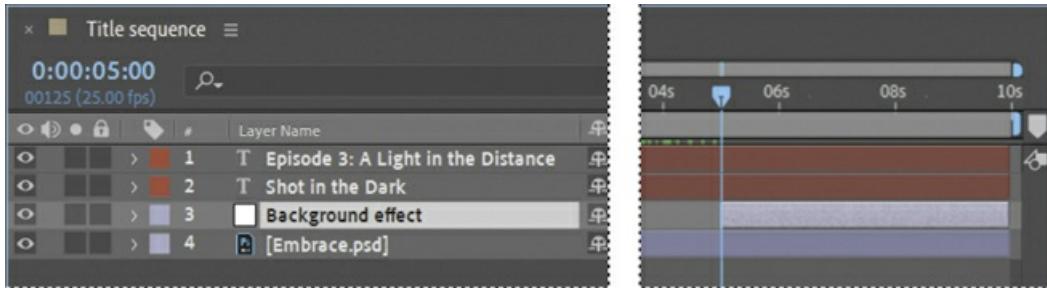
## Animating a background image

You've animated the text, but the background image just sits there. Because this is a noir series, you'll add an unsettling effect. You'll use an adjustment layer to apply the effect only after the text has appeared on the screen.

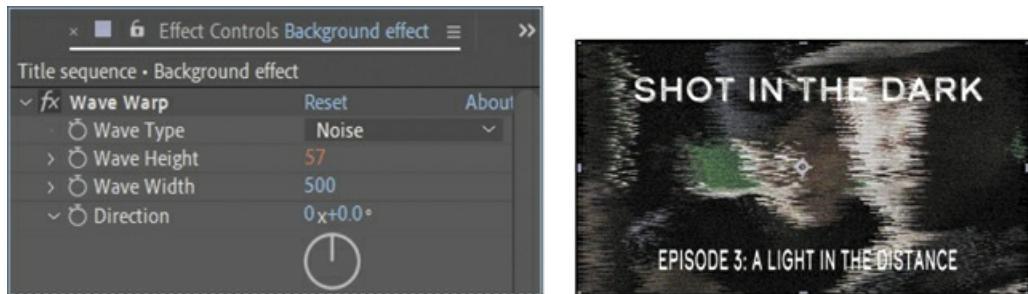
1. Select the Embrace.psd layer in the Timeline panel.
2. Choose Layer > New > Adjustment Layer. Rename the layer **Background effect**.

After Effects creates a new adjustment layer immediately above the layer you selected. The adjustment layer will affect all layers below it.

3. Go to 5:00. Then press Alt+[ (Windows) or Option+[ (macOS) to trim the layer so that its in point is at 5 seconds.



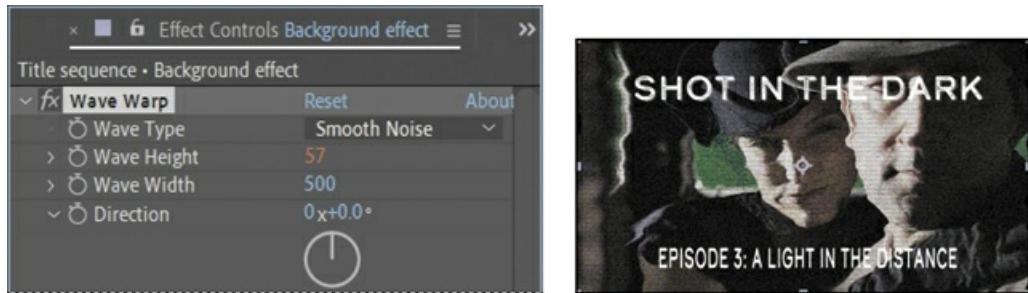
- In the Effects & Presets panel, type **bad TV** in the search bar. Then select the Bad TV 3 - weak animation preset, and drag it onto the Background effect layer in the Timeline panel.



- Press the Home key or move the current-time indicator to the beginning of the time ruler. Then press the spacebar to preview the movie. Press the spacebar again to stop playback.

The series title slides down, the episode title appears, and then the image becomes distorted. Near the end of the time ruler, the episode title explodes off the screen. The image is challenging to see once the effect is applied. You can change a setting in the effect to make the image clearer.

- In the Effect Controls panel, choose Smooth Noise from the Wave Type menu. Then preview the sequence again to see the difference.



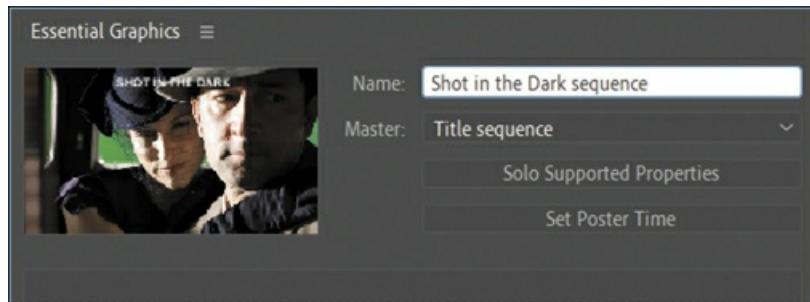
- Choose File > Save to save your work so far.

## Setting up a template

You use the Essential Graphics panel to build custom controls and share them as Motion Graphics templates. Drag properties into the panel to add controls you want to make editable. In the panel, you can customize the names of controls, and you can group them to help others understand their function. You can open the Essential Graphics panel separately, or select the Essential Graphics workspace to open the panels you're most likely to use in creating a template, including the Effects & Presets panel.

- Choose Window > Workspace > Essential Graphics.

2. In the Essential Graphics panel, choose Title sequence from the Master menu. Your template will be based on the Title sequence composition.
3. Type **Shot in the Dark sequence** for the template name.



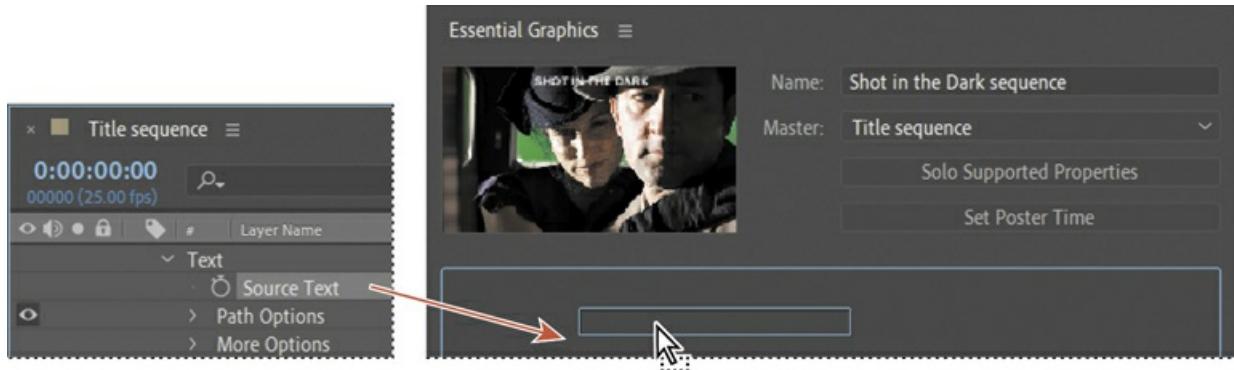
### Adding properties to the Essential Graphics panel

You can add the controls for most effects, transform properties, and text properties to Motion Graphics templates. You'll give your colleagues options to replace the episode title and adjust it, and to adjust the settings of the Bad TV - weak effect.

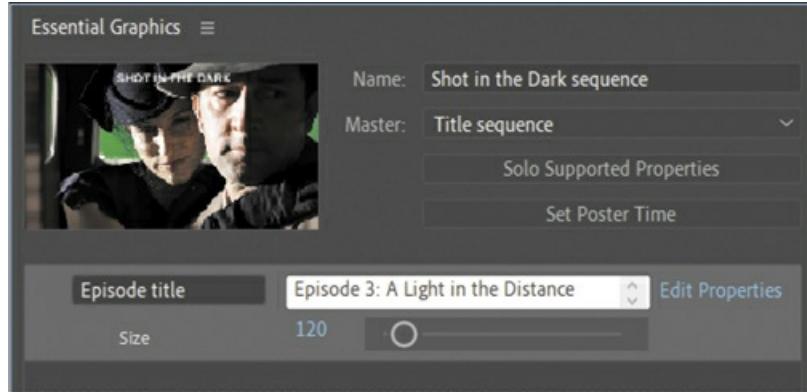
### Making the text editable

The episode title for this title sequence will change for each episode, so the editor needs to be able to edit the text. For every text layer, there is a source text property that you can add to the Essential Graphics panel.

1. In the Timeline panel, expand the Text properties for the Episode 3 layer.
2. Drag the Source Text property into the Essential Graphics panel.



3. Click the Source Text label in the Essential Graphics panel, and then type **Episode title**.
4. Click Edit Properties next to the Episode title property, select Enable Font Size Adjustment, and click OK.



A text size slider appears beneath the Episode title property in the Essential Graphics panel.

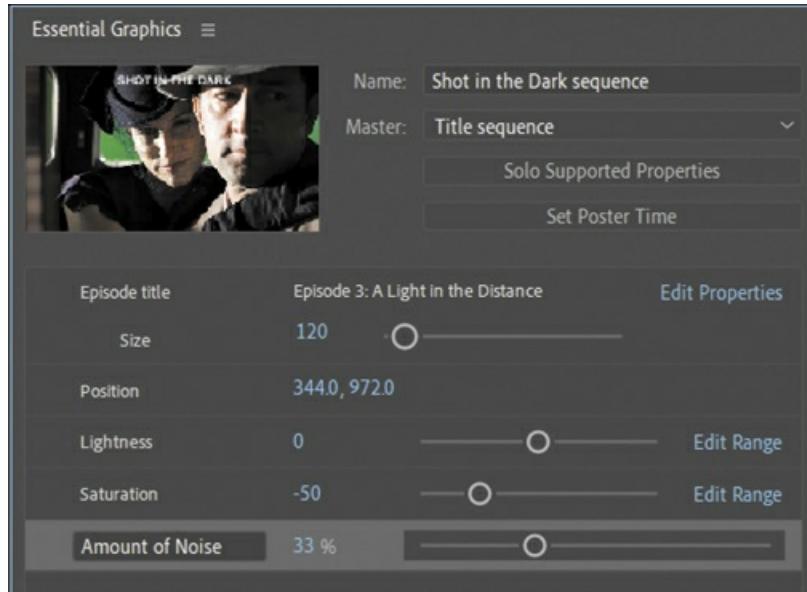
5. In the Timeline panel, select the Episode 3 layer, and press P to display the Position property. Then, drag the Position property into the Essential Graphics panel.

The episode title text, font size, and position will be editable to Motion Graphics template users; other attributes are protected from editing.

## Adding effects properties

Many effects properties can be included in Motion Graphics templates. You can see which properties in a composition are compatible with the Essential Graphics panel by clicking Solo Supported Properties. You'll add properties to change the appearance of the effect, which may need to be lighter or darker depending on the background image selected.

1. In the Essential Graphics panel, click Solo Supported Properties to display only the properties you can add in the Timeline panel.
2. In the Timeline panel, hide the properties for the Shot in the Dark and Episode 3 layers, because you don't need to add any more text properties to the template.
3. Under the Color Balance properties for the Background effect layer, drag Lightness into the Essential Graphics panel. Then, drag Saturation into the Essential Graphics panel.
4. Under the Noise properties for the Background effect layer, drag Amount of Noise into the Essential Graphics panel.

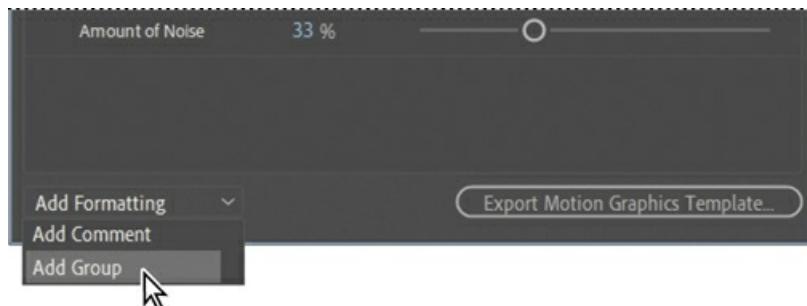


5. Drag the sliders in the Essential Graphics panel to see how the appearance of the effect changes. Press Ctrl+Z or Command+Z to undo any changes you made.

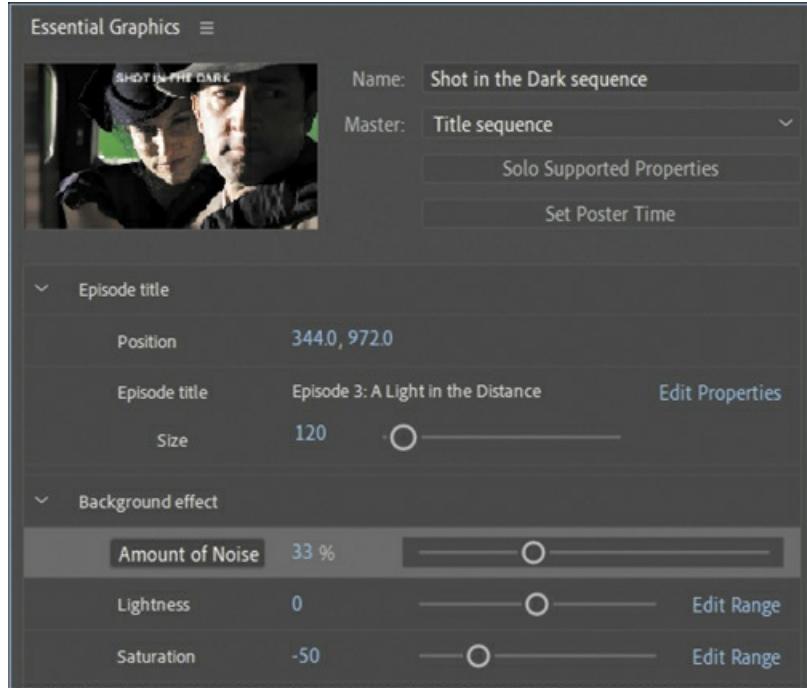
## Grouping properties

It's hard to tell what the properties currently in the Essential Graphics panel affect. You could change each of their names to make their effect clear, but it's easier to group them. You'll create groups for properties related to the episode title and those related to the background effect.

1. Choose Add Group from the menu at the bottom of the Essential Graphics panel. (By default, it says Add Formatting.)



2. Name the group **Episode title**, and then drag the Episode title and Episode title position properties into the group. The Size slider travels with the Episode title property.
3. Deselect all properties, choose Add Group from the menu again, and then name the new group **Background effect**.
4. Drag the Saturation, Lightness, and Amount of Noise properties into the Background effect group.



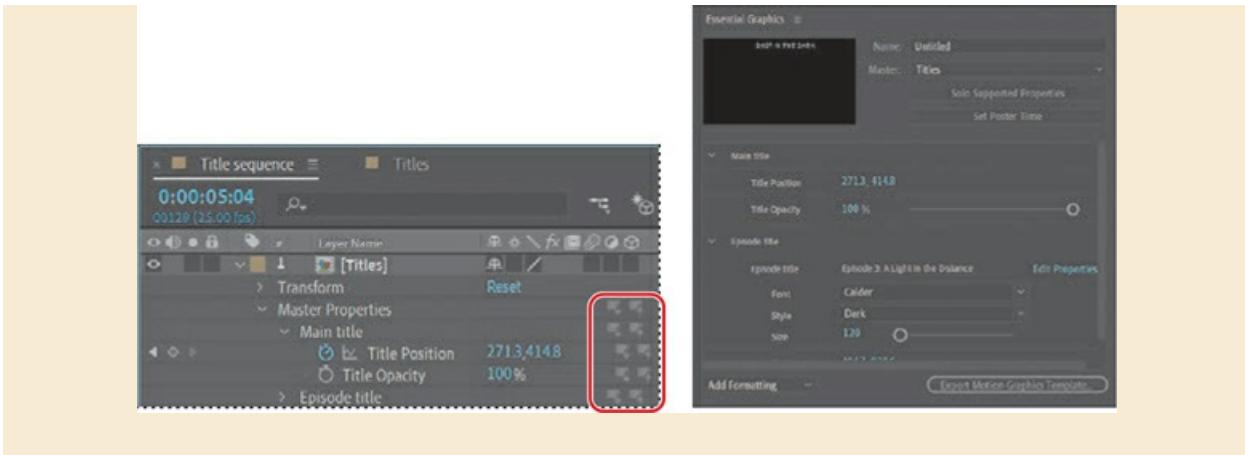
5. Hide the properties for all layers in the Timeline panel, and then choose File > Save to save your work so far.

## Creating master properties

The Essential Graphics panel lets you create Motion Graphics templates. However, you can also use it to create master properties, which give you access to specific properties within nested compositions. Using master properties, you can retain quick access to properties you need to edit frequently without having to open the nested composition and find the properties for a specific layer.

To specify master properties, open the nested composition. In the Essential Graphics panel, choose the nested composition from the Master menu. Then drag properties from layers in the composition to the Essential Graphics panel. You can rename them and group them just as you do when creating a template.

To use the master properties, just expand the properties for the nested composition in the Timeline panel, and then expand Master Properties. They appear just as you've set them up in the Essential Graphics panel.



## Providing image options

For this template, you want to provide editors with a choice of background images that are appropriate for different episodes. There are multiple ways to do this, but you'll add checkboxes so they can toggle the visibility of each image.

First, you'll add the images to the Timeline panel.

1. Select the Project tab to bring the panel forward. Then drag the Holding\_Gun.psd, Man\_Hat.psd, and Stylized\_Scene.psd files to the bottom of the Timeline panel.

The adjustment layer named Background effect will affect all the layers beneath it in the Timeline panel.

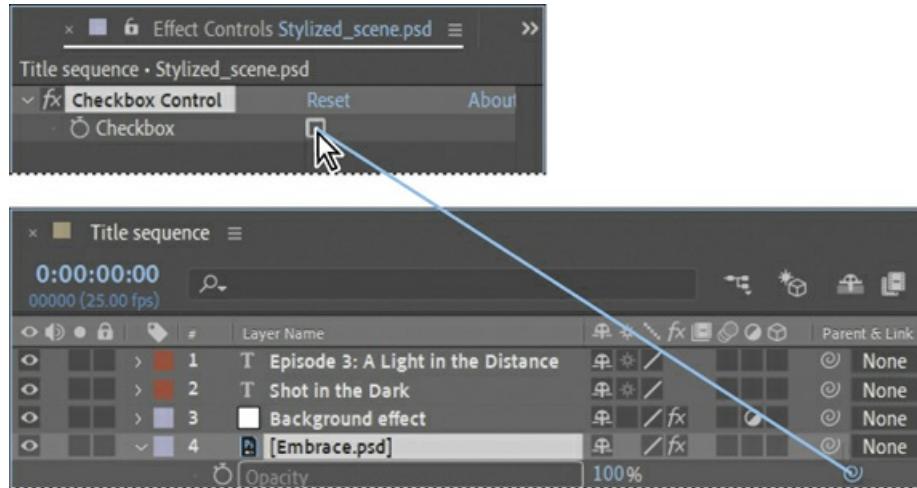
2. In the Timeline panel, select the Embrace.psd layer, and then Shift-select the Stylized\_scene.psd layer to select all four image layers. Then, choose Effect > Expression Controls > Checkbox Control.

After Effects adds the Checkbox Control effect to each of the selected layers.

3. With all four layers still selected, press T to display their Opacity properties.

For each layer, you'll create an expression that ties the Opacity property to the appropriate checkbox.

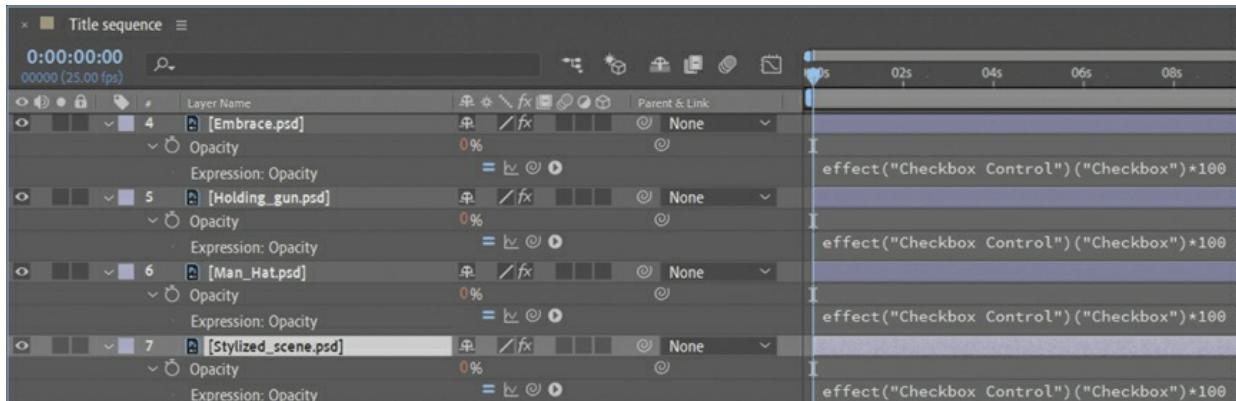
4. Deselect all layers, and then select the Embrace.psd layer.
5. Drag the pick whip for the Opacity property in the Embrace.psd layer to the Checkbox property in the Effect Controls panel.



**6.** Expand the Opacity property to see the expression.

After Effects created the default expression *effect ("Checkbox Control")("Checkbox")*, which identifies the related effect. You want to set the opacity to 100% when the checkbox is selected, so you'll add that instruction to the expression.

- 7.** Type **\*100** at the end of the existing expression.
- 8.** Repeat steps 4–7 for each of the other image layers.

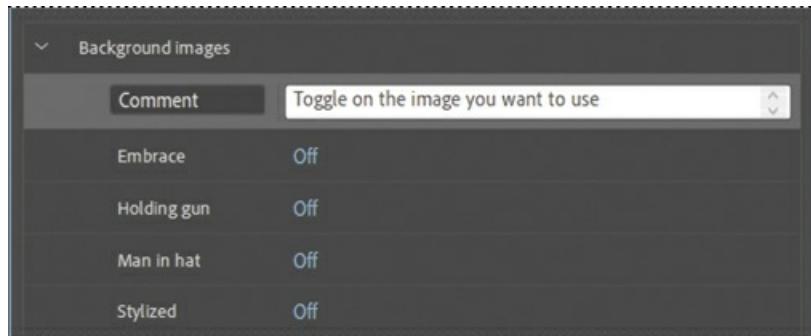


Now you're ready to add the controls to the Essential Graphics panel.

- 9.** Select all four image layers in the Timeline panel, and press E to display the effects for each layer.
- 10.** In the Embrace.psd layer, expand the Checkbox Control properties to see the Checkbox property. Then drag the Checkbox property into the Essential Graphics panel.
- 11.** Rename the Checkbox property **Embrace**.
- 12.** Repeat steps 10–11 for each of the other layers, renaming the Checkbox properties **Holding gun**, **Man in hat**, and **Stylized**, respectively.
- 13.** Choose Add Group from the menu at the bottom of the Essential Graphics panel, and name the group **Background images**.
- 14.** Drag the image checkboxes into the Background images group.
- 15.** Choose Add Comment from the menu at the bottom of the Essential Graphics panel. Then,

type **Toggle on the image you want to use.**

16. Drag the comment to the top of the Background images group, and then drag the Background images group above the Background effect group.



Now the template controls are tidy and easy to understand.

17. Select one of the checkboxes to display a default background image.
18. Hide the properties for all layers in the Timeline panel, and then choose File > Save to save your work so far.

### Protecting the timing of a section

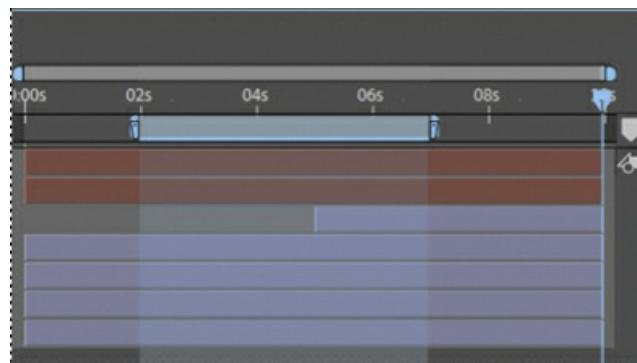
The Responsive Design features in After Effects and Premiere Pro let you author adaptive motion graphics. The Responsive Design – Time feature, specifically, preserves the duration of time in a particular region of a composition in a Motion Graphics template while enabling time stretching in unprotected regions. You can preserve the timing of specific areas in compositions you export as Motion Graphics templates or in nested compositions within After Effects.

You'll protect the duration of the episode title's transition. That way, an editor in Premiere Pro will be able to shift the timing of other areas, such as shortening the time before the text explodes, but speeding up or slowing down time elsewhere won't affect the protected area.

1. In the Timeline panel, drag the Work Area Start marker to 2:00.
2. Drag the Work Area End marker to 5:00.

You've reduced the work area to the area that you want to protect from time-stretching.

3. Choose Composition > Responsive Design – Time > Create Protected Region From Work Area.



The protected area is shaded in the Timeline panel.

4. Choose File > Save.

## Exporting the template

You've added properties to the Essential Graphics panel, renamed them to make sense to an editor in Adobe Premiere Pro, and tested their effects. Now you're ready to export the template so that your colleagues can use it. You can share it through a Creative Cloud library or save it to a local drive as a Motion Graphics template (.mogrt) file to distribute yourself. The template includes all the source images, videos, and properties.

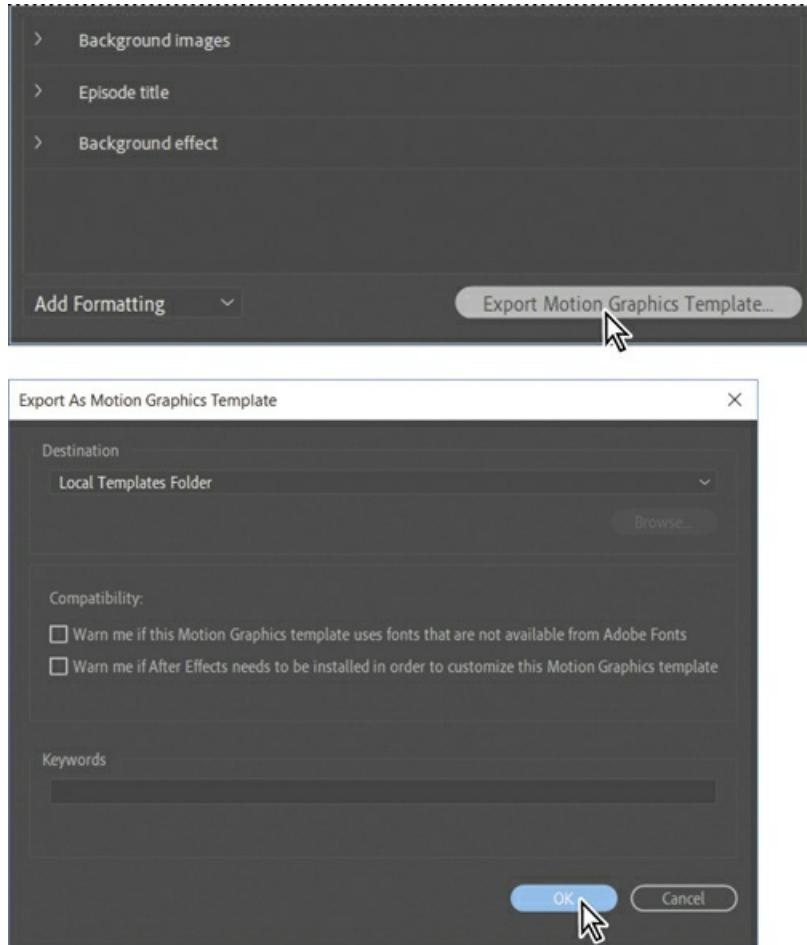
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### ► Tip

If you don't have the original project file available, you can open a .mogrt file as a project file in After Effects. When you select the .mogrt file in the Open Project dialog box, you'll be prompted to select a folder for the extracted files. After Effects extracts the components and recreates the project file.

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1. Click Export Motion Graphics Template in the Essential Graphics panel.
2. In the Export As Motion Graphics Template dialog box, make sure Local Templates Folder is selected, and click OK.



By default, Premiere Pro looks for Motion Graphics templates in the Motion Graphics Templates folder on your local computer. However, you can choose to save the template to a different folder on your computer or to a Creative Cloud library, which you can access from other devices.

3. Choose File > Save, and then close the project.

## Extra credit

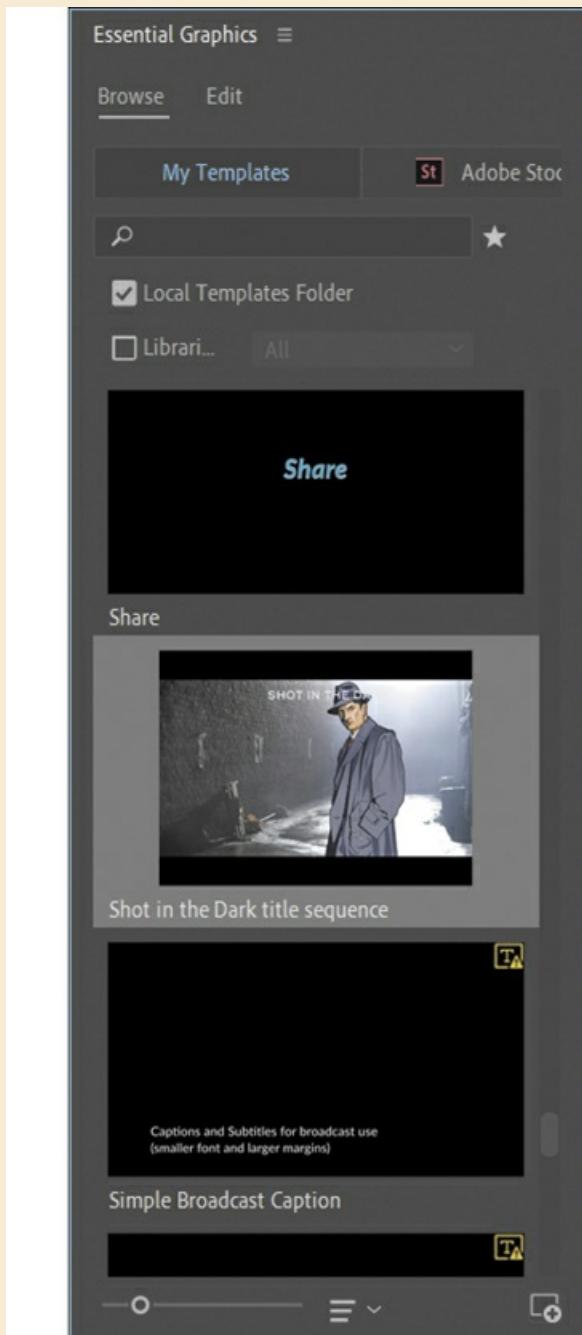
### Using a Motion Graphics template in Adobe Premiere Pro

You can use the template to edit the title sequence in Premiere Pro.

1. Open Premiere Pro. Click New Project in the Home window.
2. Name the project **Shot in the Dark opening**, and save it in the Lessons/Lesson11/Finished\_Project folder. Click OK.
3. Choose Window > Workspaces > Graphics to open the Essential Graphics panel and other panels you're likely to use with it.
4. Choose File > New > Sequence, select the HDV > HDV 1080p25 preset, and click OK.
5. Make sure Local Templates Folder is selected in the Essential Graphics panel, and

scroll to the template you created. Premiere Pro includes several standard templates; they're listed alphabetically.

6. Drag your template from the Essential Graphics panel onto the new sequence in the Timeline panel. If prompted, click Change Sequence Settings to match the clip.

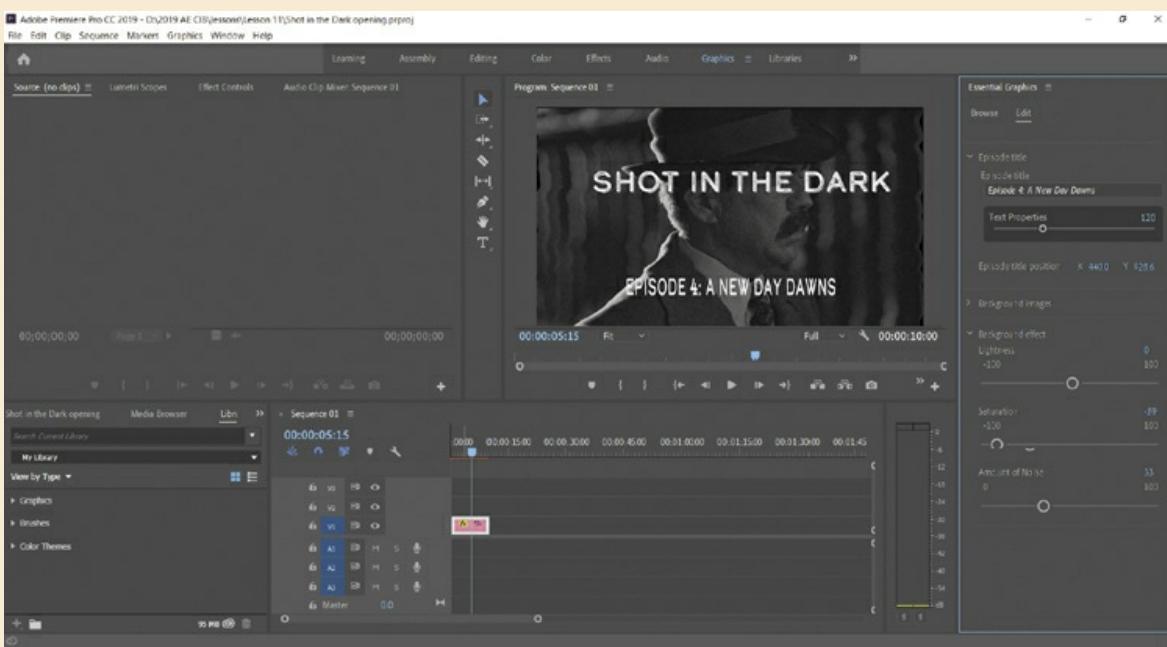


As the template loads, Premiere Pro displays a media offline message.

7. When the template has loaded, press the spacebar to preview the clip, and then go to 5:15 so you can see the episode title text and the effect.
8. Click the Edit tab in the Essential Graphics panel, double-click the Program Monitor panel if you don't see the template controls in the Essential Graphics panel, and then

make changes to the settings in the Essential Graphics panel. Press the spacebar to see the changes you made.

9. In the Timeline panel, drag the layer to extend it, and then preview again. The title animation at the beginning is extended, as is the timing of the effect on the image. But the episode title animation timing is preserved.
10. Make any other changes you like, save the file, and close Premiere Pro.



## Review questions

- 1 Why would you save a Motion Graphics template from After Effects?
- 2 How do you add controls to the Essential Graphics panel?
- 3 How can you organize controls in the Essential Graphics panel?
- 4 How can you share a Motion Graphics template?

## Review answers

- 1 Saving a Motion Graphics template lets you give your colleagues the ability to edit specific attributes of a composition without sacrificing stylistic control.
- 2 To add a control to the Essential Graphics panel, drag a property from the Timeline panel.
- 3 To organize controls, group them. Choose Add Group from the menu at the bottom of the Essential Graphics panel, name the group, and drag controls into it. You can also add comments to help users understand your intention.
- 4 You can share a Motion Graphics template by exporting it to a shared Creative Cloud library, the local templates folder on the same computer, or a .mogrt file that you distribute to your colleagues.

# 12 Using 3D Features

## Lesson overview

In this lesson, you'll learn how to do the following:

- Create a 3D environment in After Effects.
- Look at a 3D scene from multiple views.
- Create 3D text.
- Rotate and position layers along x, y, and z axes.
- Animate a camera layer.
- Add lights to create shadows and depth.
- Extrude 3D text in After Effects.
- Create a Cinema 4D layer to use in After Effects.



This lesson will take approximately an hour to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: TITLE CARD FOR A PRODUCTION COMPANY

By clicking a single switch in the Timeline panel in After Effects, you can turn a 2D layer into a 3D layer, opening up a whole new world of creative possibilities. Maxon Cinema 4D Lite, included with After Effects, gives you even greater flexibility.

### Getting started

Adobe After Effects can work with layers in two dimensions (x, y) or in three dimensions (x, y, z). So far in this book, you've worked primarily in two dimensions. When you specify a layer as three-dimensional (3D), After Effects adds the z axis, which lets you move the object forward and backward in space. By combining this depth with a variety of lights and camera angles, you can create animated 3D projects that take advantage of the full range of natural motion, lighting and shadows, perspective, and focusing effects. In this lesson, you'll explore how to create and animate 3D layers. Then you'll use Maxon Cinema 4D Lite (installed with After Effects) to add texture to 3D text for a fictional production company.

First, you'll preview the final movie and then set up the project.

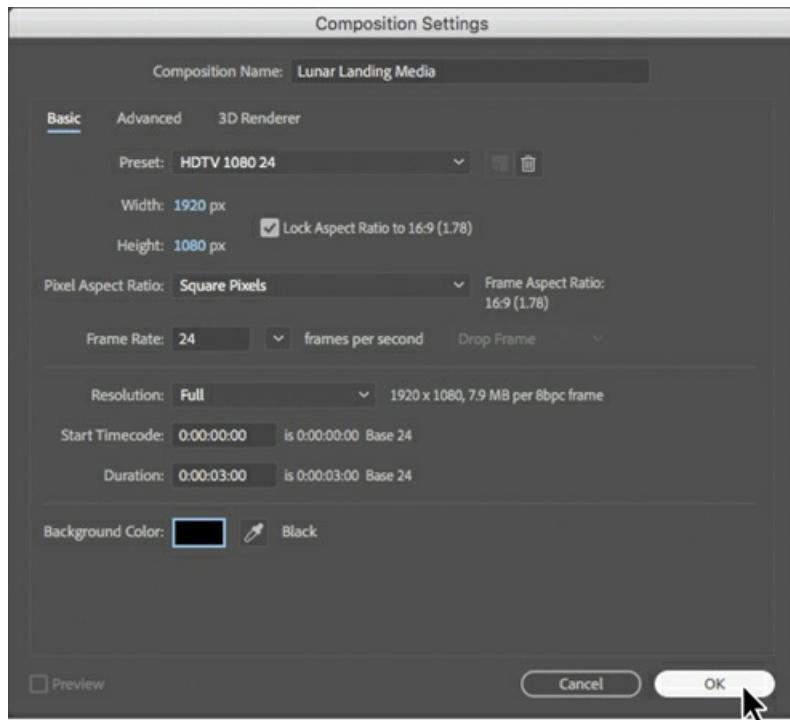
1. Make sure the following files are in the Lessons/Lesson12 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: Lunar.mp3, Space\_Landscape.jpg
  - In the Sample\_Movies folder: Lesson12.avi, Lesson12.mov
2. Open and play the Lesson12.avi sample movie in Windows Movies & TV or the Lesson12.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

When you begin this lesson, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page 3.

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS). When prompted, click OK to delete your preferences. Click New Project in the Home window.

After Effects opens to display an empty, untitled project.

4. Choose File > Save As > Save As.
5. In the Save Project As dialog box, navigate to the Lessons/Lesson12/Finished\_Project folder. Name the project **Lesson12\_Finished.aep**, and click Save.
6. Click the New Composition button (New Composition icon) in the Composition panel.
7. In the Composition Settings dialog box, do the following, and then click OK:
  - Name the composition **Lunar Landing Media**.
  - Choose HDTV 1080 24 from the Preset menu.
  - Enter **3:00** for the Duration.
  - Make sure the Background Color is black.



8. Choose File > Save.

## Creating 3D text

In order to move something in 3D space, you need to make it a 3D object. Initially, any layer has only x (width) and y (height) dimensions, and can be moved only along those axes. But all you have to do to move a layer in three dimensions in After Effects is to turn on its 3D layer switch, which lets you manipulate the object along its z axis (depth). You'll create text, and then make it 3D.

1. Click in the Timeline panel to make it active.

2. Select the Horizontal Type tool (**T**) in the Tools panel.

After Effects adds the Character and Paragraph panels to the stack and opens the Character panel.

3. In the Character panel, select the following settings:

- Font: Futura PT Heavy Oblique
- Fill Color: White
- Stroke: None
- Font Size: **140** px
- Leading: **70** px
- Tracking: **20%**
- Vertical Scale: **65%**

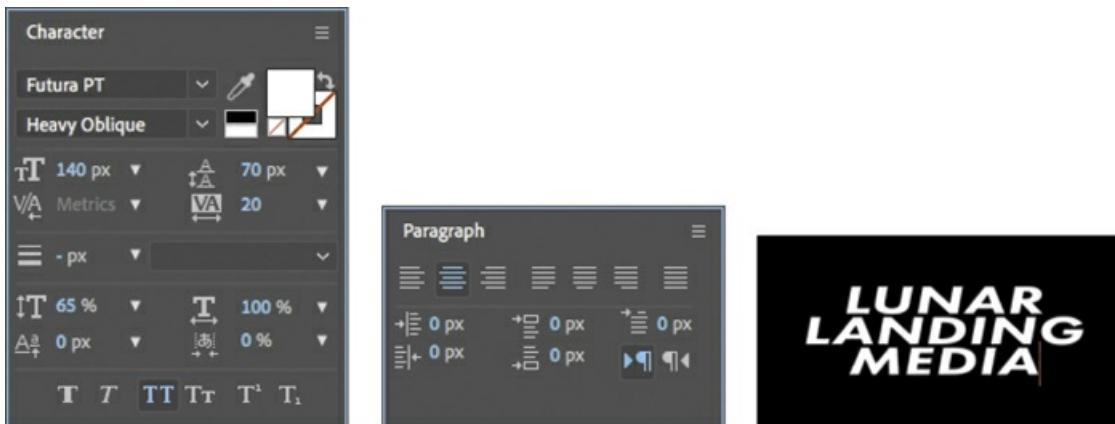
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#### ● Note

If Futura PT is not available, install it using Adobe Fonts. Choose File > Add Fonts From Adobe, search for Futura PT, and activate the font. Once you've activated the font, it will be available in all applications on your system, but you may need to close the Character panel and reopen it to see a newly activated font.

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4. Select All Caps. (You may need to drag the bottom of the Character panel to extend it in order to see all settings.)
5. Open the Paragraph panel, and select the Center Text alignment option.
6. Click anywhere in the Composition panel and type **Lunar**. Then press Enter or Return and type **Landing**, and then press Enter or Return again and type **Media**, so that each word is on its own line, as in the image below.

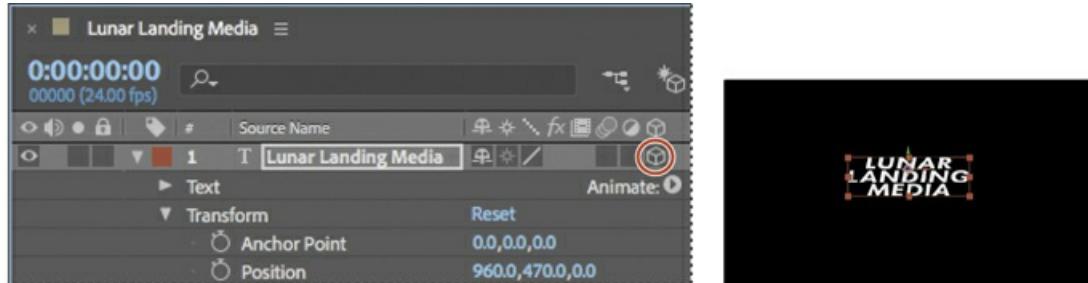


7. Select the Selection tool (**▶**).
8. In the Timeline panel, expand the Transform properties for the Lunar Landing Media layer,

and change the Position property to **960, 470**.

The text is roughly centered in the composition.

9. In the Timeline panel, select the 3D Layer switch () for the Lunar Landing Media layer to give it three dimensions.



Three 3D Rotation properties appear in the Transform group for the layer, and properties that previously supported only two dimensions now display a third value for the z axis. In addition, a new property group named Material Options appears.

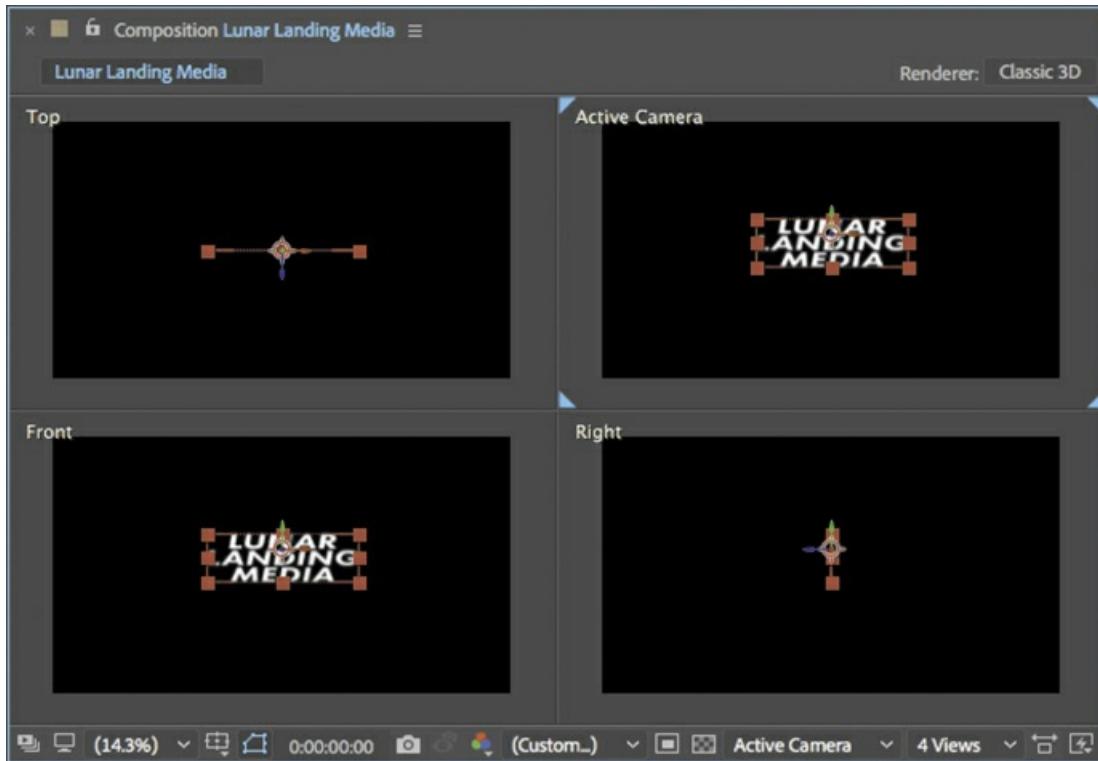
When the layer is selected, a color-coded 3D axis appears over the layer's anchor point in the Composition panel. The red arrow controls the x axis, the green arrow controls the y axis, and the blue arrow controls the z axis. At the moment, the z axis appears at the intersection of the x and y axes; it may be difficult to see against the black background. The letter x, y, or z appears when you position the Selection tool over the corresponding axis. When you move or rotate the layer while the pointer is over a particular axis, the layer's movement is restricted to that axis.

10. Hide the properties for the Lunar Landing Media layer.

## Using 3D views

Sometimes the appearance of 3D layers can be deceptive. For example, a layer might appear to be scaling smaller along its x and y axes when it's actually moving along the z axis. You can't always tell from the default view in the Composition panel. The Select View Layout pop-up menu at the bottom of the Composition panel lets you divide the panel into different views of a single frame, so you can see your work from multiple angles. You specify different views using the 3D View pop-up menu.

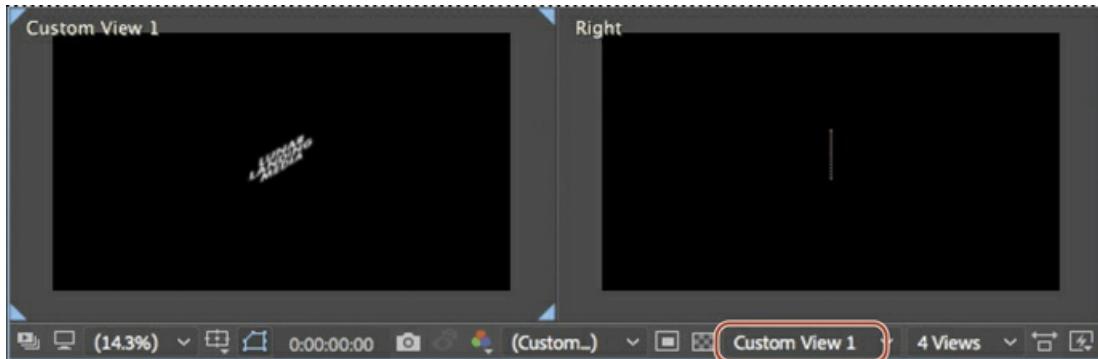
1. At the bottom of the Composition panel, click the Select View Layout pop-up menu, and choose 4 Views, if your screen is large enough to display them. Otherwise, choose 2 Views - Horizontal.



With 4 Views selected, the upper left quadrant displays the scene from the top (along the y axis). There, you can see the z axis, and it's clear that the text layer has no depth. The lower left quadrant shows the view from the front. The upper right quadrant displays what the camera sees, but because there is no camera in the scene, it's the same as the front view. The lower right quadrant shows the view from the right, as if you were observing it along the x axis.

With 2 Views - Horizontal selected, the left view shows the scene from the top, and the right shows the camera's view (currently the front view).

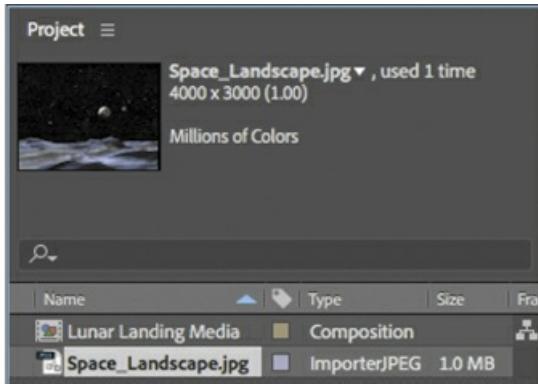
2. Click the Front view to make it active. (Blue corner tabs appear around the active view.) Then, from the 3D View pop-up menu, choose Custom View 1 to see the scene from a different perspective. (If your Composition window displays only two views, click the Top view, and choose Custom View 1 from the 3D View pop-up menu.)



Viewing your 3D scene from different perspectives can help you align elements more accurately, view how layers are interacting with each other, and understand how objects, lights, and cameras are positioned in 3D space.

## Importing a background

The text in your title card should appear to be moving in outer space. You'll import an image to use as a background.



1. Double-click an empty area of the Project panel to open the Import File dialog box.
2. Navigate to the Lesson12/Assets folder, and double-click the Space\_Landscape.jpg file.
3. Drag the Space\_Landscape.jpg item into the Timeline panel, placing it at the bottom of the layer stack.
4. Rename the Space\_Landscape.jpg layer **Background**.
5. In the Timeline panel, select the Background layer, and then click the 3D Layer switch ( ) to convert it to a 3D layer.

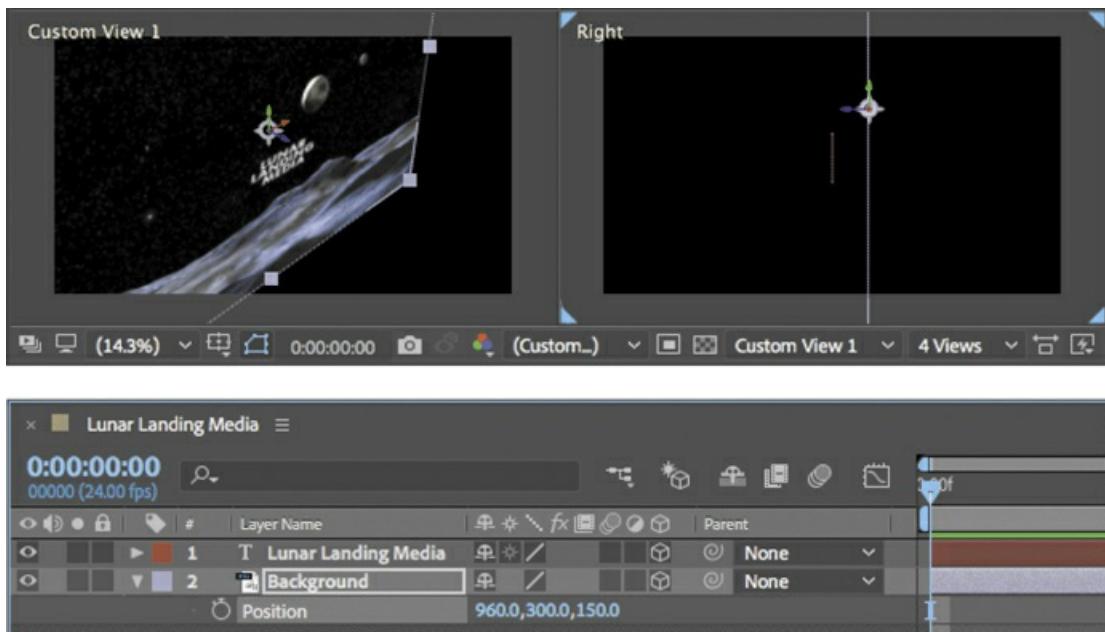
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### ● Note

If you're displaying only two views, select the Active Camera view, and choose Right from the 3D View pop-up menu. Then complete step 6.

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6. Make sure the Background layer is selected. Then, in the Right view in the Composition panel, drag the z-axis arrow (the blue arrow) to the right to move the Background layer further behind the text. Watch the views as you drag to see how the layer interacts with 3D space.
7. In the Timeline panel, press the P key to display the Position property for the Background layer. Change the Position to **960, 300, 150**.



8. Press P to hide the Position property, and then choose File > Save to save your work so far.

## Adding 3D lights

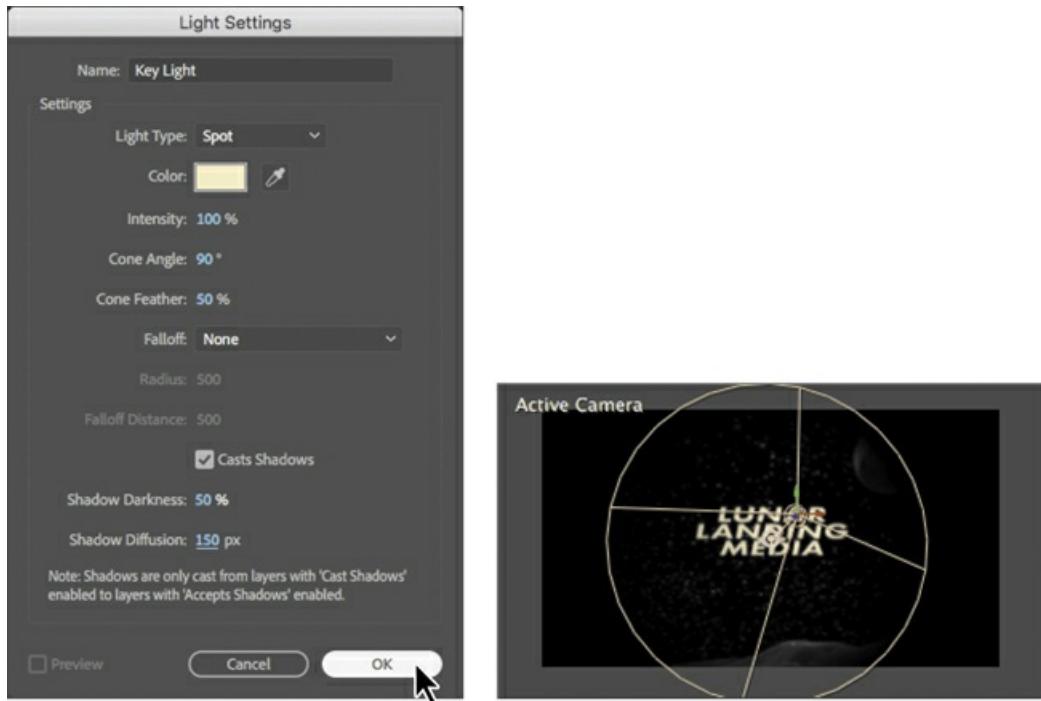
You've created a 3D scene, but it doesn't yet look three-dimensional from the front. Adding light to a composition creates shadows that give depth to the scene. You'll create two new lights for your composition.

### Creating a light layer

In After Effects, a *light* is a type of layer that shines light on other layers. You can choose from among four different types of lights—Parallel, Spot, Point, and Ambient—and modify them with various settings. Lights, by default, are directed toward a point of interest, which is the focus area of the scene.

1. Deselect all layers, so that the new layer you create will appear at the top of the layer stack.
2. Press the Home key or move the current-time indicator to the beginning of the time ruler.
3. Choose Layer > New > Light.
4. In the Light Settings dialog box, do the following:
  - Name the layer **Key Light**.
  - Choose Spot from the Light Type menu.
  - Set Color to a light orange (R=255, G=235, B=195).
  - Make sure Intensity is set to **100%** and Cone Angle to **90** degrees.
  - Make sure Cone Feather is set to **50%**.
  - Select the Casts Shadows option.
  - Set Shadow Darkness to **50%** and Shadow Diffusion to **150** pixels.

- Click OK to create the light layer.

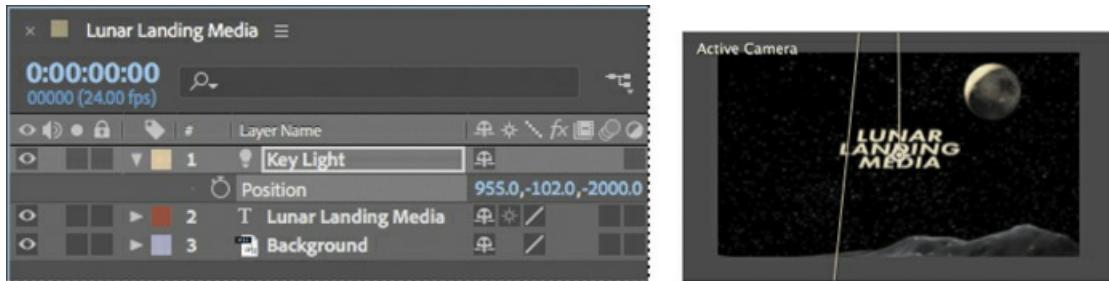


In the Timeline panel, the light layer is represented by a light bulb icon (💡). In the Composition panel, a wireframe illustrates the light's position, with a cross-hairs icon (⊕) representing the point of interest.

## Positioning the spotlight

The point of interest for this light is currently the center of the scene. Because that's where the text layer is located, you don't need to adjust it. However, you'll change the light position so the scene looks less bleak.

- Select the Key Light layer in the Timeline panel, and press the P key to reveal the Position property for the light layer.
- In the Timeline panel, type **955, -102, -2000** in the Position property. The light is now in front of and above the object, aiming down.

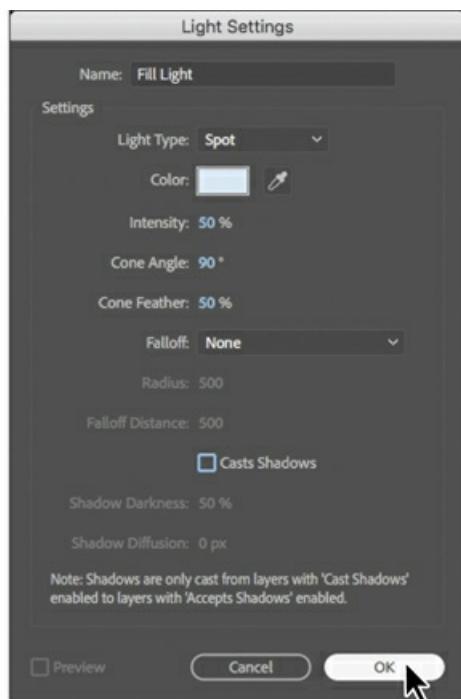


## Creating and positioning the fill light

The key light gives the scene a moody look, but it's still very dark. You'll add a fill light to

lighten the darker areas.

1. Choose Layer > New > Light.
2. In the Light Settings dialog box, do the following:
  - o Name the layer **Fill Light**.
  - o Choose Spot from the Light Type menu.
  - o Set the Color to a light blue (R=205, G=238, B=251).
  - o Set Intensity to **50%** and Cone Angle to **90** degrees.
  - o Make sure Cone Feather is set to **50%**.
  - o Deselect Casts Shadows.
  - o Click OK to create the light layer.



3. In the Timeline panel, select the Fill Light layer, and press the P key to reveal its Position property.
4. Change the position to **2624, 370, -1125**.

A composite image showing the After Effects Timeline panel and the Active Camera view. The Timeline panel on the left shows a project named 'Lunar Landing Media' with four layers: 'Fill Light' (selected), 'Key Light', 'Lunar Landing Media', and 'Background'. The 'Fill Light' layer has its 'Position' property revealed, with values set to 2624.0, 370.0, -1125.0. The Active Camera view on the right shows a 3D scene of a moon landscape with a camera view showing the text 'LUNAR LANDING MEDIA'.

The text stroke, stars, and moon highlight are all much brighter now.

5. Hide the open properties for all layers, and choose File > Save.

## Casting shadows and setting material properties

The scene is looking better, with a mix of warm and cool colors. However, it still doesn't look three-dimensional. You'll change the Material Options properties to determine how the 3D layers interact with the lights and shadows.

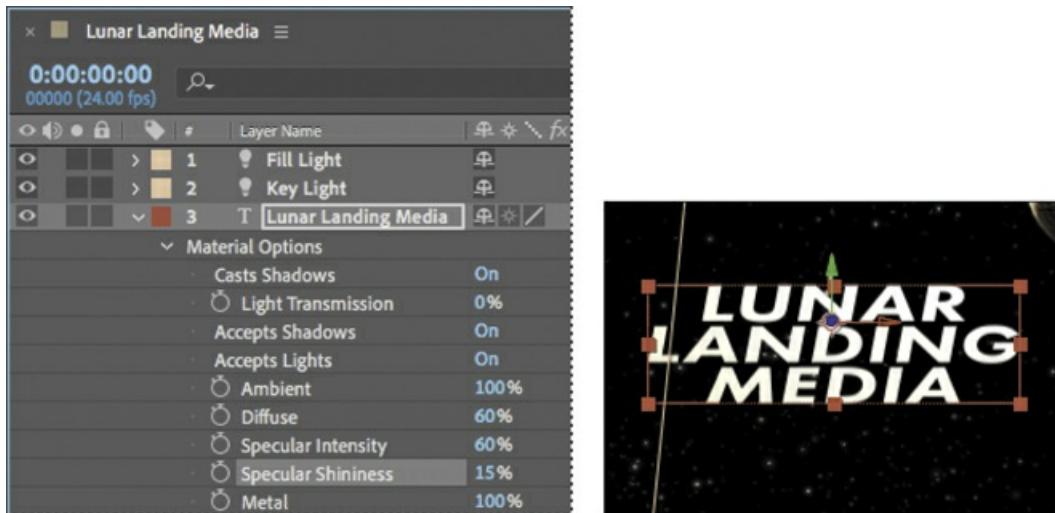
1. Select the Lunar Landing Media layer in the Timeline panel, and press the A key twice (AA) to reveal the Material Options properties for the layer.

The Material Options property group defines the surface properties of the 3D layer. You can also set shadow and light transmission values.

2. For Casts Shadows, click the word *Off* to toggle the setting on. (Make sure it says *On*, not *Only*.)

The text layer now casts shadows based on the lights in the scene.

3. Change the Diffuse value to **60%** and the Specular Intensity to **60%** so that the text layer reflects more of the light in the scene.
4. Increase the Specular Shininess to **15%** to give the surface a more metallic shine.



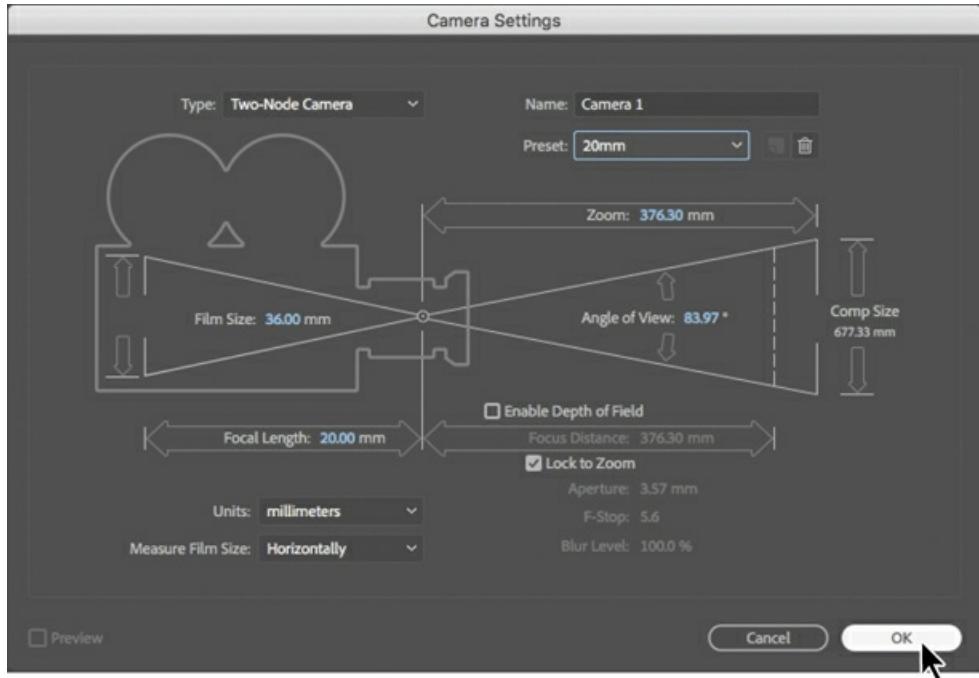
5. Hide the properties for the Lunar Landing Media layer.

## Adding a camera

You've already seen that you can view a 3D scene from different perspectives. You can also view 3D layers from various angles and distances using layers called *cameras*. When you set a camera view for your composition, you look at the layers as though you were looking through that camera. You can view a composition through the active camera or through a named, custom camera. If you have not created a custom camera, then the active camera is the same as the default composition view.

So far, you have been viewing this composition primarily from the Top, Right, and Custom View 1 angles. Currently, the Active Camera view doesn't let you see your composition from any specific angle. To see everything you want to see, you'll create a custom camera.

1. Deselect all layers, and then choose Layer > New > Camera.
2. In the Camera Settings dialog box, choose 20mm from the Preset menu, and click OK.

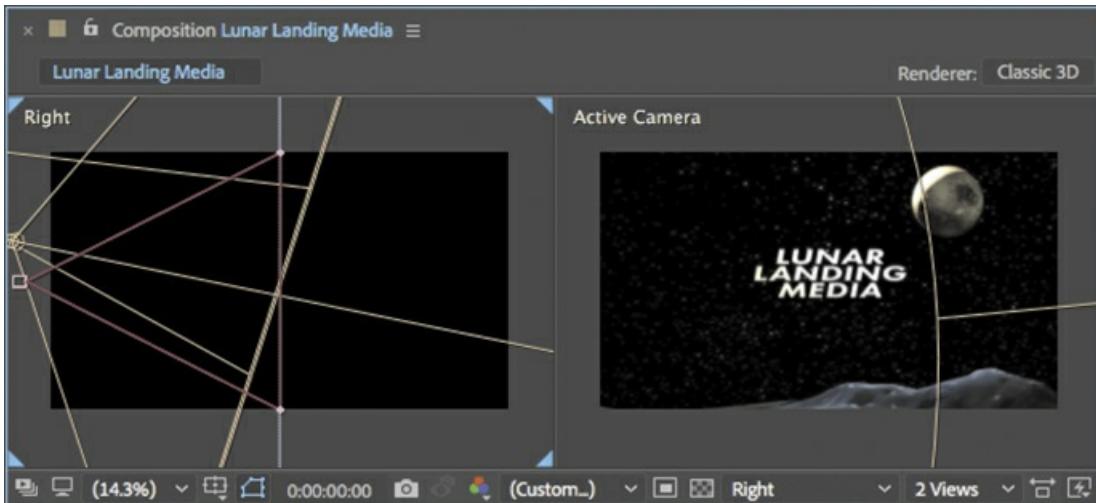


The Camera 1 layer appears at the top of the layer stack in the Timeline panel (with a camera icon next to the layer name), and the Composition panel updates to reflect the new camera layer's perspective. The view should change slightly, because the 20mm preset shows a wider field of view than the default. If you didn't notice the scene change, toggle the visibility of the Camera 1 layer to see it, and then make sure it's visible.

### ► Tip

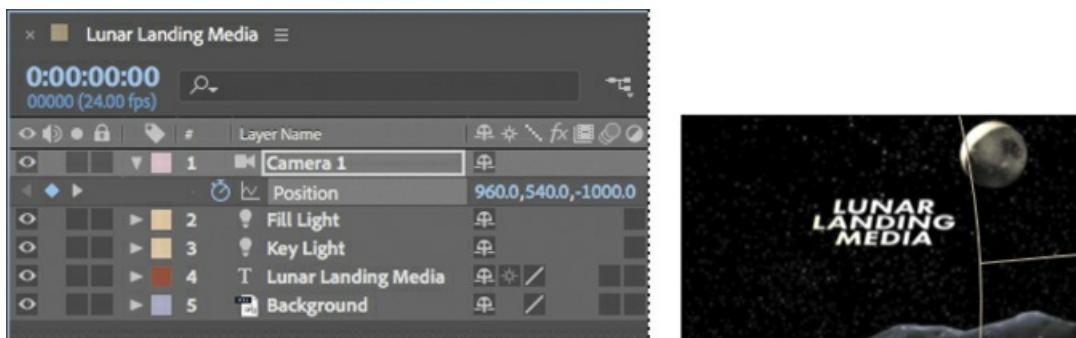
After Effects displays the wireframes for cameras by default. To see wireframes only when cameras (or spotlights) are selected, or not at all, choose View Options from the Composition panel menu, and then choose the options you want from the Camera Wireframes and Spotlight Wireframes menus. Then click OK.

3. Choose 2 Views - Horizontal from the Select View Layout pop-up menu at the bottom of the Composition panel. Change the view on the left to Right, and make sure the view on the right is set to Active Camera.



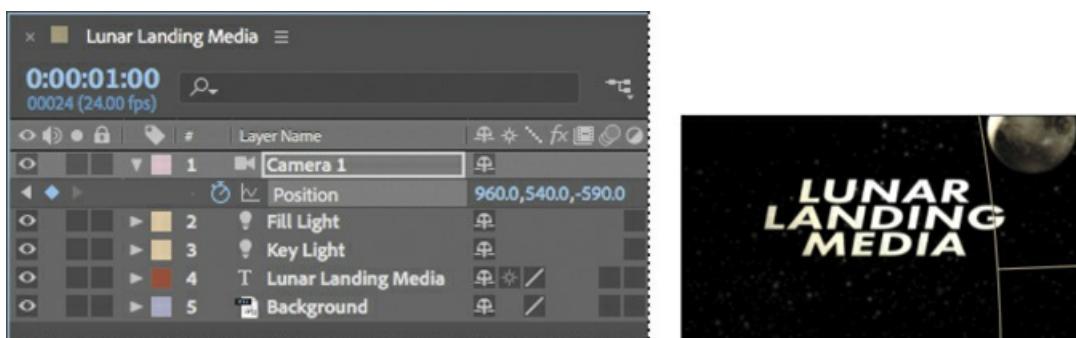
Like light layers, camera layers have a *point of interest* that can be used to determine what the camera looks at. By default, the camera's point of interest is the center of the composition. That's where your text currently is, so that point of interest works well.

4. Make sure the current-time indicator is at the beginning of the time ruler. Select the Camera 1 layer, and press the P key to reveal the Position property for the layer. Create an initial keyframe by clicking the stopwatch icon (⌚) next to the Position property.
5. Set the z-axis value to **-1000**.



The camera moves slightly closer to the text.

6. Go to 1:00.
7. Change the z-axis value to **-590**.



The camera moves much closer to the text.

8. Right-click or Control-click the second Position keyframe, and choose Keyframe Assistant > Easy Ease In.
9. Move the current-time indicator through the timeline to 1:00. As the camera moves through the scene, notice how the light reflects off the text layer and how the overall image is influenced by the wider camera lens.

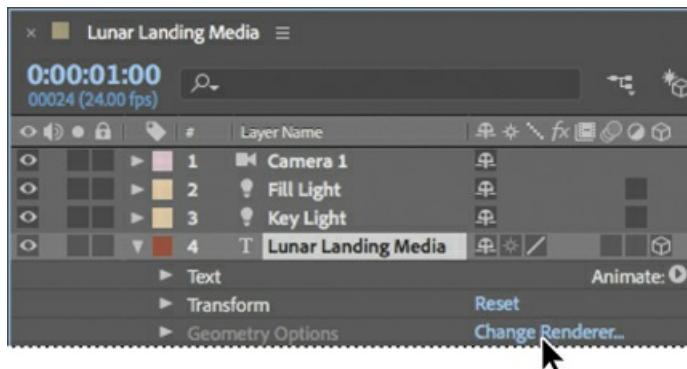


10. Hide the Position property for the Camera 1 layer, and choose File > Save.

### Extruding text in After Effects

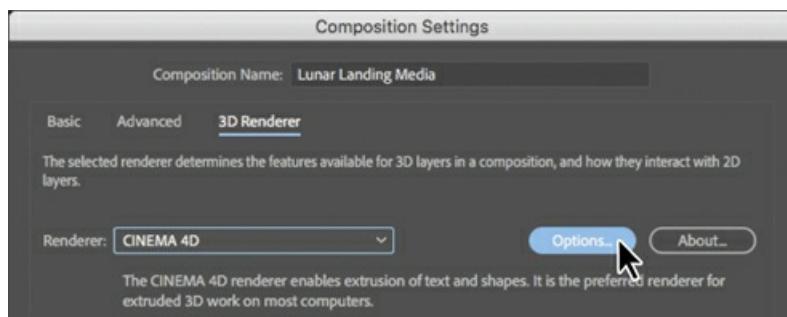
Using the Cinema 4D renderer, you can extrude text and shapes within After Effects. You'll use the Geometry Options properties to make the text a little more interesting.

1. Expand the Lunar Landing Media layer in the Timeline panel.
2. Next to Geometry Options (currently dimmed), click Change Renderer.



The Composition Settings dialog box opens, with the 3D Renderer tab active.

3. Choose Cinema 4D from the Renderer pop-up menu, and click Options.



4. Move the Quality slider to 32.



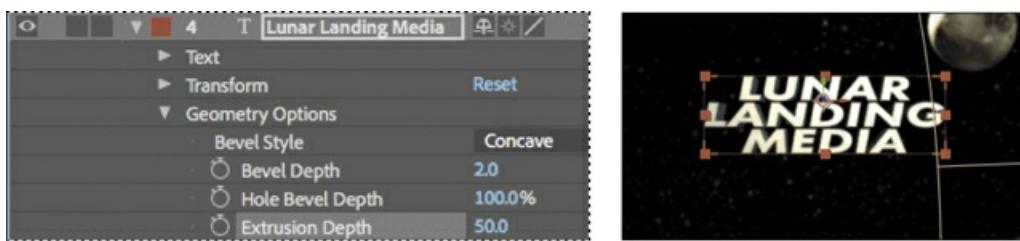
5. Click OK to close the Cinema 4D Renderer Options dialog box, and then click OK again to close the Composition Settings dialog box.

#### ► Tip

To quickly open the options dialog box, click the wrench icon next to the renderer name at the top of the Composition panel.

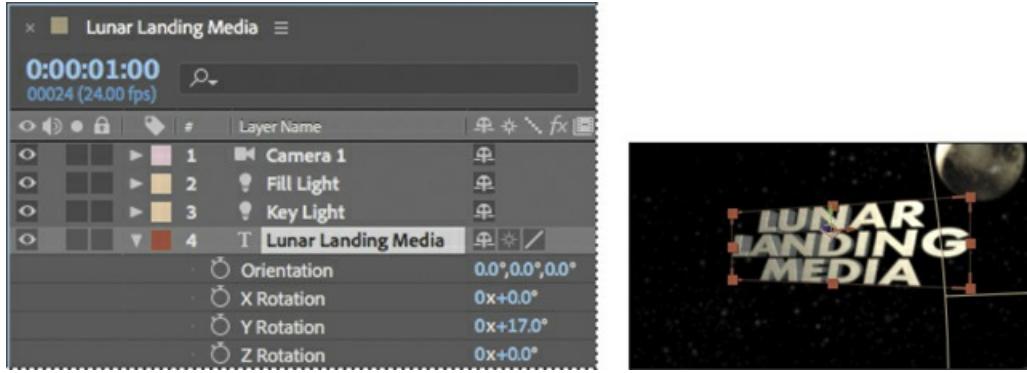
The Cinema 4D renderer options include a single Quality value, which determines how the CINEMA 4D renderer draws 3D layers. A lower value results in faster rendering but lower rendering quality. Choose a Quality setting that balances rendering speed with the 3D rendering quality your project requires.

6. Expand Geometry Options for the Lunar Landing Media layer.
7. Choose Concave from the Bevel Style menu.
8. Change the Extrusion Depth to **50**.



It's not obvious that you've extruded the text. You'll adjust the text's angle to show off the effect and to provide additional interest to the scene.

9. Select the Lunar Landing Media layer, and press R to reveal the Rotation properties.
10. Change the Y Rotation to **17**.



**11.** Hide all properties for the layer.

## 3D channel effects

Several 3D channel effects (3D Channel Extract, Depth Matte, Depth of Field, and Fog 3D) can extract the image depth data (called z-depth) from a nested 3D composition to apply special effects. First, precompose 3D layers if they’re not already nested. Then apply the effect to the nested composition, and make adjustments in the Effect Controls panel. You can learn more about depth passes and 3D channel effects in After Effects Help.

## Working with Cinema 4D Lite

After Effects installs a version of Maxon Cinema 4D that lets motion graphics artists and animators insert 3D objects directly into an After Effects scene without pre-rendering passes and potentially complicated file exchanges. You can continue to edit 3D objects in Cinema 4D Lite after you’ve added them to your After Effects composition.

You’ll use Cinema 4D Lite to create a textured subtitle, which you’ll add to the After Effects scene below the main text.

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### note

After Effects uses a different coordinate numbering convention than other 3D applications. In After Effects, the upper left corner of the composition is considered 0, 0. In many 3D applications, including Maxon Cinema 4D, the center of the world (often the screen) is the origin, or 0, 0, 0 point. Additionally, the Y distance increases as the cursor moves down the screen in After Effects.

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## Creating a new Cinema 4D layer

You can add a Cinema 4D layer to a composition in After Effects. When you add the layer, After Effects opens Cinema 4D Lite so you can create your 3D scene in a new C4D file. When you

finish your work in Cinema 4D, save the file, and it will update automatically in After Effects. You can return to Cinema 4D to make additional changes to the layer.

1. Deselect all layers in the Timeline panel, and then choose Layer > New > Maxon Cinema 4D File. After Effects displays a Save As dialog box.
2. Name the file **subtitle.c4d**, and save it in the Lesson12/Finished\_Project folder.
3. Click Save.

Saving the file adds a C4D file to the Timeline panel, and After Effects opens the Cineware effect in the Effect Controls panel. Cineware creates and manages the link between After Effects and Cinema 4D.

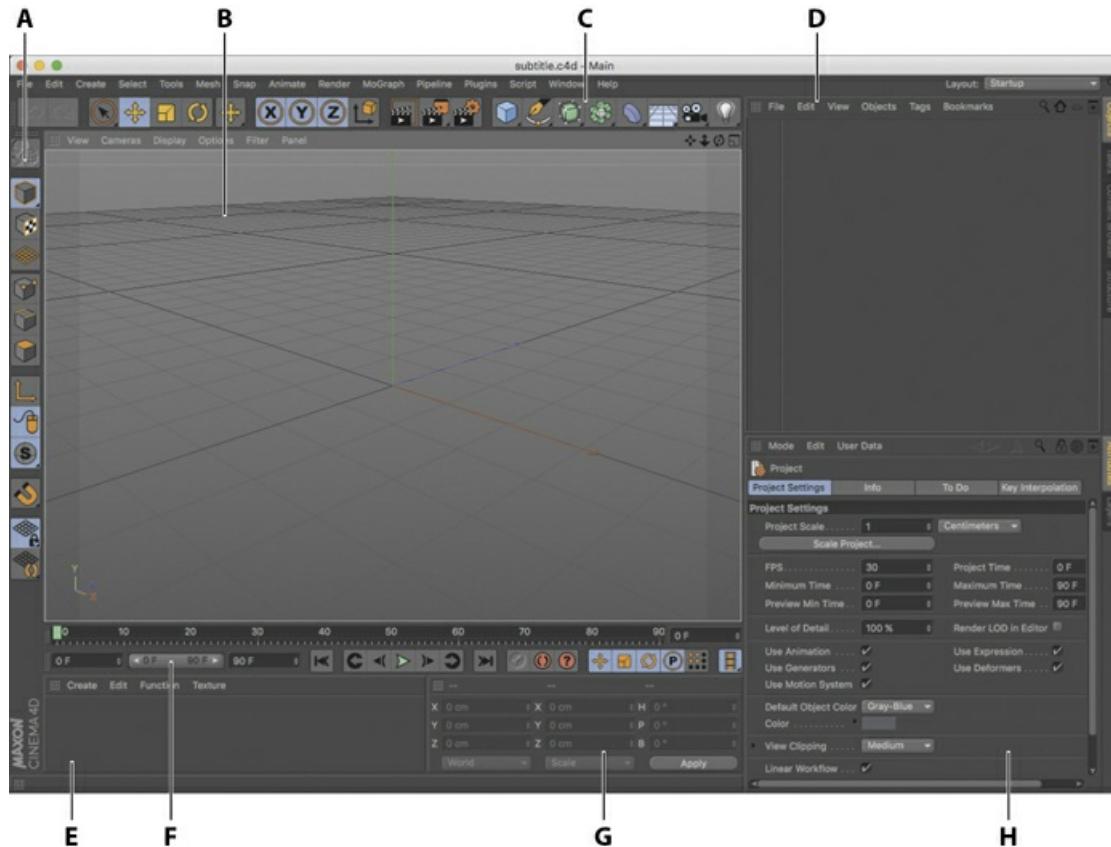
Cinema 4D opens with an empty scene, displaying only the 3D grid.

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### ● Note

You may be prompted to update Cinema 4D, or to register in order to access additional features. You can complete the exercise without doing either, but if you plan to use Cinema4D on your own projects, consider registering and updating the application.

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A. Modes icon palette B. Viewport C. Tools icon palette D. Object Manager E. Material Manager F. Timeline G. Coordinates Manager H. Attribute Manager

## Creating 3D text in Cinema 4D

You'll start by creating the text.

1. In the Tools icon palette (below the menu bar), click and hold the triangle in the lower right corner of the Pen icon to display its menu, and then select the Text tool.

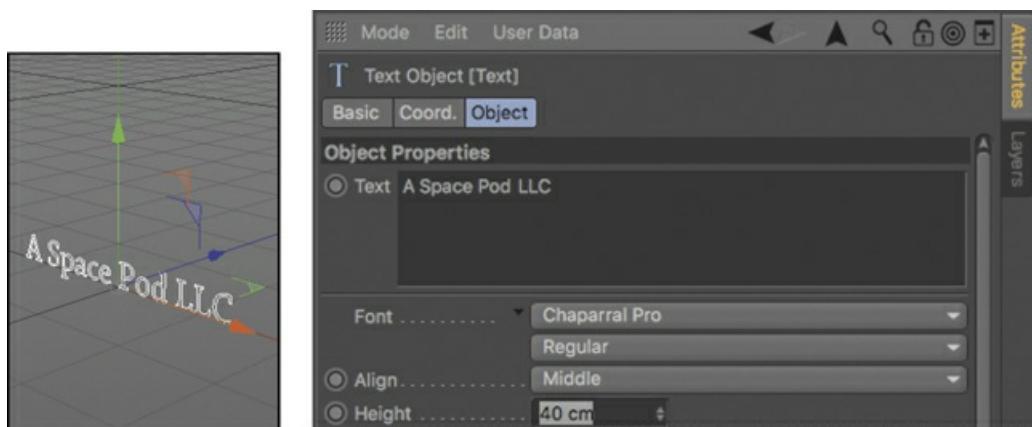


A basic text spline appears in the middle of the scene.

2. In the text box in the Attribute Manager, type **A Space Pod LLC**.

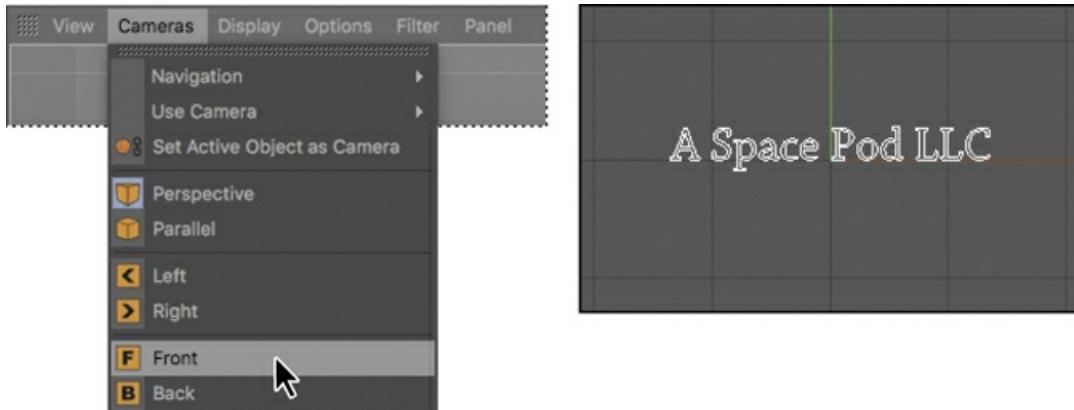
3. In the Attribute Manager, change the text settings as follows:

- Font: Chapparal Pro
- Align: Middle
- Height: **40 cm**



The view is currently from an angle. You want to see how the text looks from the front, so you'll change the camera view.

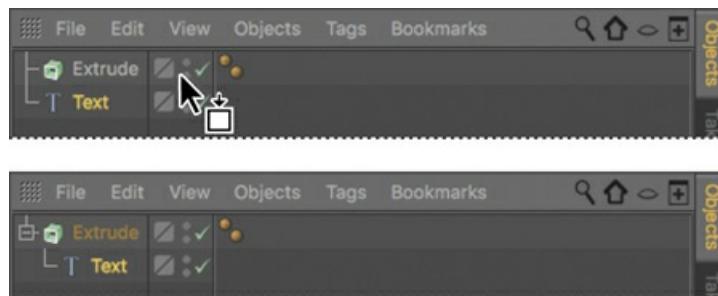
4. Choose Front from the Cameras menu above the Viewport.



5. In the Tools icon palette, click and hold the triangle in the lower right corner of the Subdivision Surface icon to view its menu, and then select Extrude.

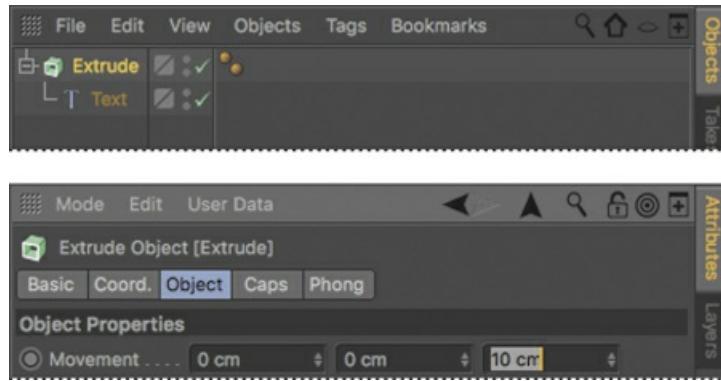


6. In the Object Manager, select the Text object, and then drag it to the middle column to the right of Extrude to parent it. You'll know you've positioned it correctly when the cursor becomes a box with an arrow pointing down.



In the Object Manager, the Text object appears nested below the Extrude object, indicating the parent relationship. The text is now extruded, though you can't tell because you're viewing it from the front.

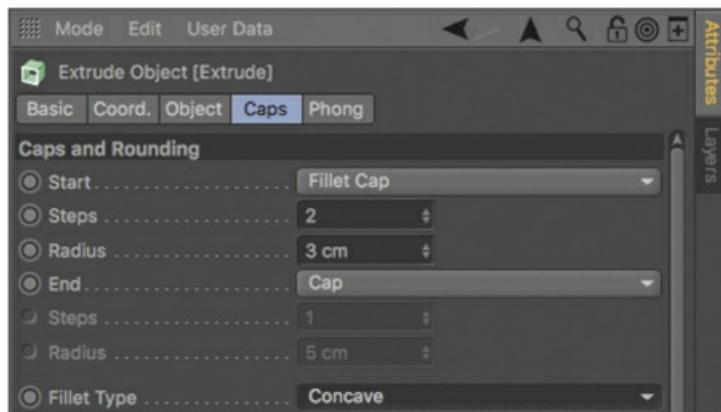
7. In the Object Manager, click the Extrude object to make it active (it turns bright orange).
8. In the Attribute Manager, select the Object tab, and then change the z-axis Movement value to **10 cm** to reduce the extrusion depth.



Now, you'll enhance the text further by beveling the edges and making some adjustments.

**9.** In the Attribute Manager, select the Caps tab, and do the following:

- Choose Fillet Cap from the Start menu.
- Increase the Steps value to 2.
- Decrease the Radius value to 3 cm.
- Choose Concave from the Fillet Type menu.

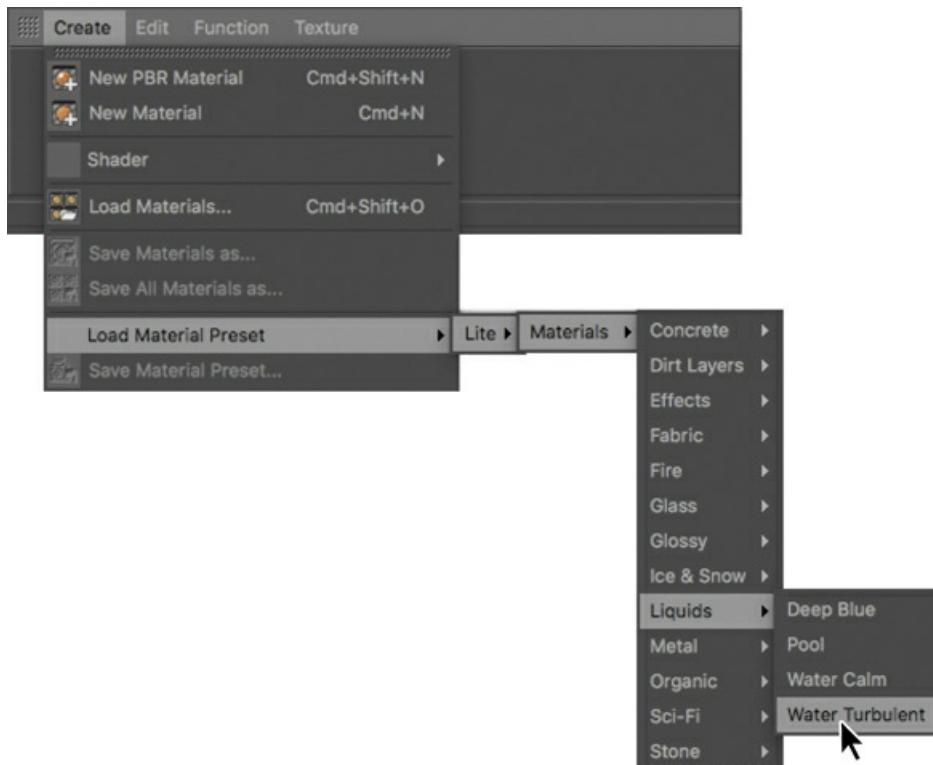


The changes you made give the text an interesting edge.

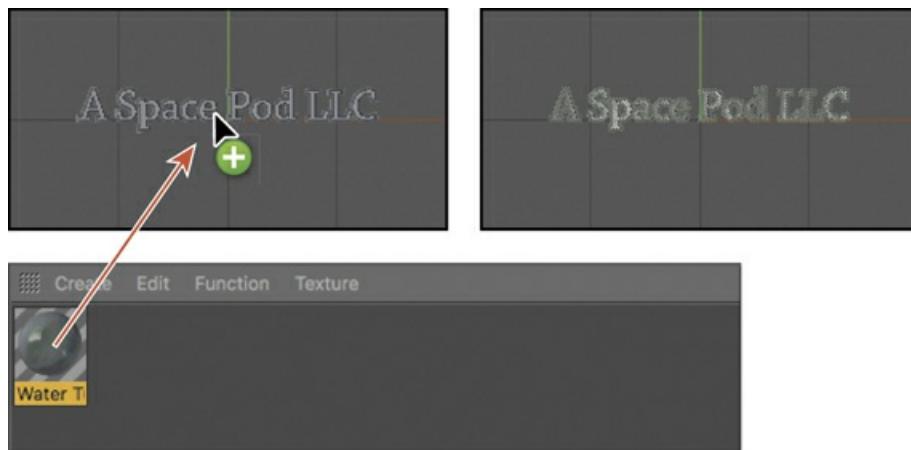
## Adding texture to an object

Cinema 4D Lite comes with a number of preset surfaces you can apply to 3D objects. You'll add a subtle water texture to the text.

1. In the Materials Manager, click Create, and then choose Load Material Preset > Lite > Materials > Liquids > Water Turbulent.



2. In the Materials Manager, click the surface you just added, and drag it onto the text in the Viewport.

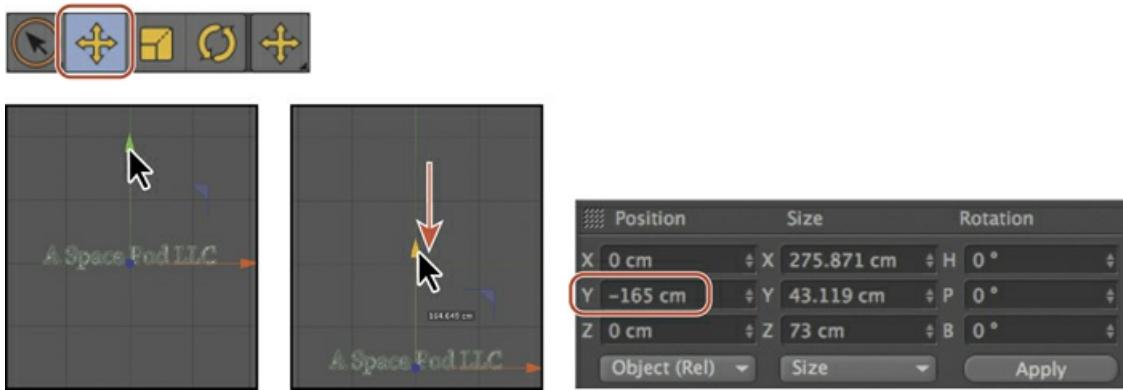


3. Choose File > Save.

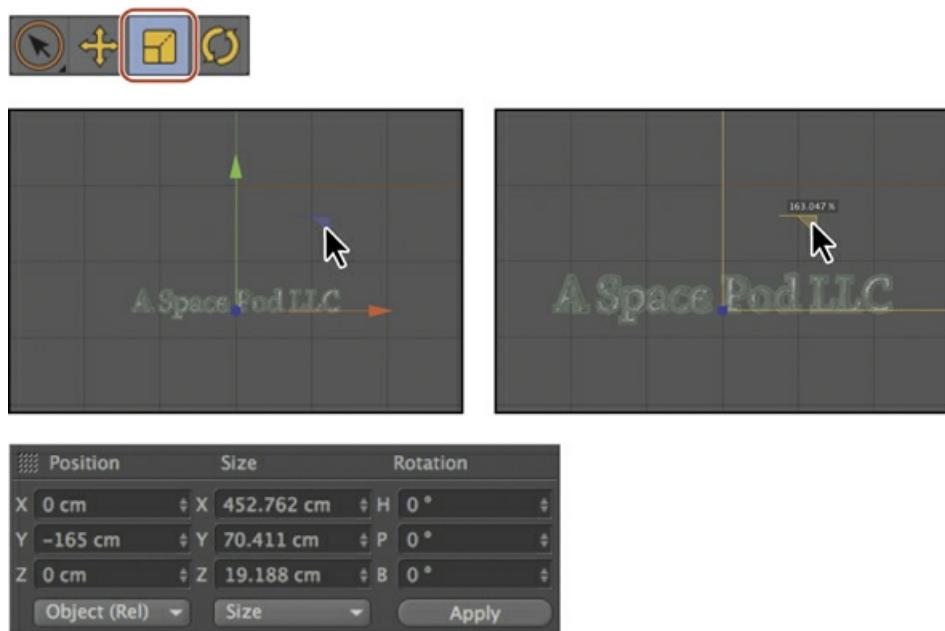
## Positioning the 3D object

Because you'll use the Cinema 4D camera in After Effects, you can position the text in Cinema 4D using the full range of 3D tools. You'll adjust the text in Cinema 4D so that it appears below the title text in After Effects and so that it tilts at the same angle as the other text.

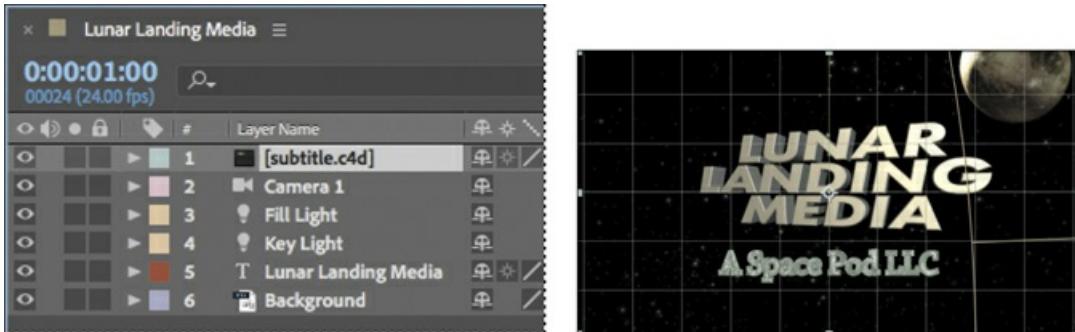
1. Select the Move tool in the Tools icon palette.
2. Drag the green arrow (the y axis) down until the Y value for Position in the Coordinates Manager is about -165 cm.



3. Select the Scale tool in the Tools icon palette.
4. Drag the blue triangle to the upper right until the tool tip displays approximately 163%. (The XYZ values in the Size column in the Coordinates Manager should be approximately 450 cm, 70 cm, and 20 cm.)



5. Choose File > Save to save the file so far.
6. Return to After Effects to see how the text is currently positioned in the scene.

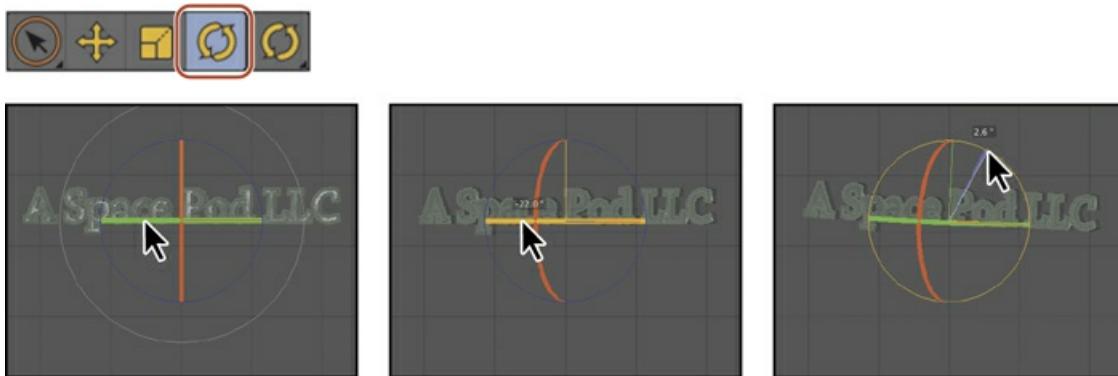


The text looks pretty good, but its angle isn't right. You'll fix that next.

7. Return to Cinema 4D Lite.
8. Select the Rotate tool in the Tools icon palette.
9. Drag the green horizontal bar to the left so that the H rotation value is about  $-22$ .
10. Adjust the inner blue circle to tilt the right edge of the text down just a bit, so that the B rotation value is about  $2.6^\circ$ .

#### ● Note

Cinema 4D Lite displays values for the H (heading), P (pitch), and B (bank) axes for rotation.



### Integrating the C4D layer in After Effects

Now, you'll return to After Effects to work with the 3D text in your project. You've already positioned the layer in Cinema 4D. In After Effects, you'll animate its opacity.

1. Save your file in Cinema 4D Lite, and return to After Effects.
2. Select the subtitle.c4d layer in the Timeline panel to display the Cineware effect in the Effect Controls panel.

While you're working with a Cinema 4D file in After Effects, you should usually choose Software or Standard (Draft) from the Renderer menu in the Cineware effect. However, when you prepare to render your final project, choose Standard (Final) from the Renderer menu.

The Software option uses a faster renderer that doesn't include all the features of the file. The Standard (Final) option renders more slowly, but it gives you a better view of what the Cinema 4D file looks like. You'll choose the Standard (Draft) option so that the grid doesn't show.

3. In the Effect Controls panel, choose Standard (Draft) from the Renderer menu.
4. Make sure the current-time indicator is at 1:00 in the timeline so you can see the final camera view.
5. (Optional) If you'd like to adjust the text position, return to Camera 4D to tweak it, save the file, and return to After Effects again.
6. Press T to reveal the layer's Opacity property, and then click the stopwatch icon (⌚) to set a keyframe at 1:00.
7. Return to the beginning of the timeline, and change the Opacity to **20%**.

## Finishing the project

As a final touch, you'll add an audio file for the title card. You're ready to import the audio file and prepare the file for rendering.

1. Select the Project tab, double-click an empty area of the Project panel, and then navigate to the Lesson12/Assets folder. Double-click the Lunar.mp3 file to import it.
2. Drag the Lunar.mp3 file from the Project panel to the bottom of the layer stack in the Timeline panel.
3. Select the subtitle.c4d layer in the Timeline panel.
4. Click the Effect Controls tab, and then, in the Effect Controls panel, choose Standard (Final) from the Renderer menu.
5. Choose File > Save, and then preview your movie.



You've created a simple 3D scene using After Effects and Cinema 4D Lite, but you've only just scratched the surface of what is possible. Experiment with your own projects to explore your options.

## Review questions

- 1 What happens to a layer when you select its 3D Layer switch?
- 2 Why is it important to look at multiple views of a composition that contains 3D layers?
- 3 What is a camera layer?
- 4 What is a 3D light in After Effects?

## Review answers

- 1 When you select a layer's 3D Layer switch in the Timeline panel, After Effects adds a third axis, the z axis, to the layer. You can then move and rotate the layer in three dimensions. In

addition, the layer takes on new properties that are unique to 3D layers, such as the Materials Options property group.

- 2 The appearance of 3D layers can be deceptive, depending on the view in the Composition panel. By enabling 3D views, you can see the true position of a layer relative to other layers in the composition.
- 3 You can view After Effects 3D layers from any number of angles and distances using layers called *cameras*. When you set a camera view for your composition, you look at the layers as though you were looking through that camera. You can choose between viewing a composition through the active camera or through a named, custom camera. If you have not created a custom camera, then the active camera is the same as the default composition view.
- 4 In After Effects, a light is a type of layer that shines light on other layers. You can choose from among four different types of lights—Parallel, Spot, Point, and Ambient—and modify them with various settings.

# 13 Working with the 3D Camera Tracker

## Lesson overview

In this lesson, you'll learn how to do the following:

- Track footage using the 3D Camera Tracker.
- Add camera and text elements to a tracked scene.
- Set a ground plane and origin.
- Create realistic shadows for new 3D elements.
- Lock elements to planes using solid objects.
- Remove rolling shutter distortions from DSLR footage.



This lesson will take approximately one and a half hours to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: TV AD

The 3D Camera Tracker effect analyzes two-dimensional footage to create a virtual 3D camera that matches the original. You can use this data to add 3D objects that merge realistically with your scene.

### About the 3D Camera Tracker effect

The 3D Camera Tracker effect automatically analyzes the motion present in existing 2D footage, extracts the position and lens type of the real camera that shot the scene, and creates a new 3D camera in After Effects to match it. The effect also overlays 3D track points onto the 2D footage, so you can easily attach new 3D layers onto the original footage.

These new 3D layers have the same movement and perspective changes as the original footage. The 3D Camera Tracker effect even helps create “shadow catchers,” so your new 3D layers can appear to cast realistic shadows and reflections onto the existing footage.

The 3D Camera Tracker performs its analysis in the background. Therefore, you can work on other compositions while the footage is being analyzed.

### Getting started

In this lesson, you’ll create a short ad for a tourism company. You’ll begin by importing the footage and tracking it with the 3D Camera Tracker effect. Then you’ll add 3D text elements that track precisely with the scene. You’ll add images using similar techniques. Finally, you’ll use an effect to quickly add more character to the scene.

First, you’ll preview the final movie and set up your project.

1. Make sure the following files are in the Lessons/Lesson13 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: BlueCrabLogo.psd, Quote1.psd, Quote2.psd, Quote3.psd,

Shoreline.mov

- In the Sample\_Movies folder: Lesson13.avi, Lesson13.mov

2. Open and play the Lesson13.avi sample movie in Windows Movies & TV or the Lesson13.mov sample movie in QuickTime Player to see what you will create in this lesson. When you are done, close Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

When you begin this lesson, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page [3](#).

3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS). When prompted, click OK to delete your preferences. Click New Project in the Home window.

After Effects opens to display an empty, untitled project.

4. Choose File > Save As > Save As.
5. In the Save As dialog box, navigate to the Lessons/Lesson13/Finished\_Project folder.
6. Name the project **Lesson13\_Finished.aep**, and then click Save.

## Importing the footage

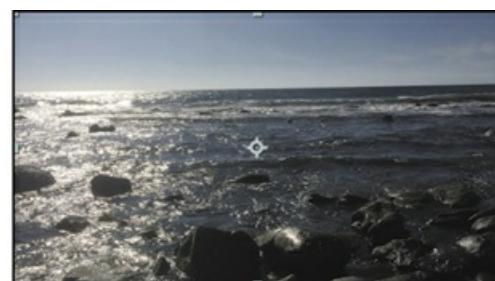
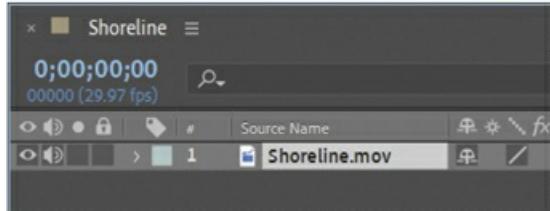
You’ll import five assets for this lesson.

1. Choose File > Import > File.
2. Navigate to the Lessons/Lesson13/Assets folder. Shift-click to select the Quote1.psd, Quote2.psd, Quote3.psd, and Shoreline.mov files, and then click Import or Open.
3. Double-click an empty area in the Project panel to open the Import File dialog box again.
4. Select the BlueCrabLogo.psd file, and click Import or Open.
5. In the BlueCrabLogo.psd dialog box, select Merged Layers, and then click OK.

## Creating the composition

Now, you will create a new composition based on the aspect ratio and duration of the Shoreline.mov file.

1. Drag the Shoreline.mov item onto the Create A New Composition button (新建合成) at the bottom of the Project panel. After Effects creates a new composition named Shoreline and displays it in the Composition and Timeline panels.



2. Drag the current-time indicator across the time ruler to preview the shot.

The camera moves around a beach scene, with a close-up of some scurrying crabs before it zooms back out to a shot of the ocean and rocks. You'll add text, quotes for the crabs, and the company logo.

3. Choose File > Save to save the file.

## Repairing rolling shutter distortions

Digital cameras with CMOS sensors—including video-capable DSLRs, popular for the creation of films, commercials, and television shows—typically have what is commonly known as a “rolling” shutter, which captures a frame of video one scan line at a time. Due to time lag between scan lines, not all parts of the image are recorded at exactly the same time, causing motion to ripple down the frame. If the camera or the subject is moving, the rolling shutter can cause distortions, such as leaning buildings and other skewed images.

The Rolling Shutter Repair effect attempts to correct this problem automatically. To use it, select the problem layer in the Timeline panel, and choose Effect > Distort > Rolling Shutter Repair.



*Due to a rolling shutter distortion, the pillars of the building appear to be leaning.*



*After applying the effect, the building looks much more stable.*

The default settings usually do the trick, but you may need to change the Scan Direction or the Method being used to analyze the footage.

If you plan to use the 3D Camera Tracker effect with footage on which you've used the Rolling Shutter Repair effect, precompose the footage first.

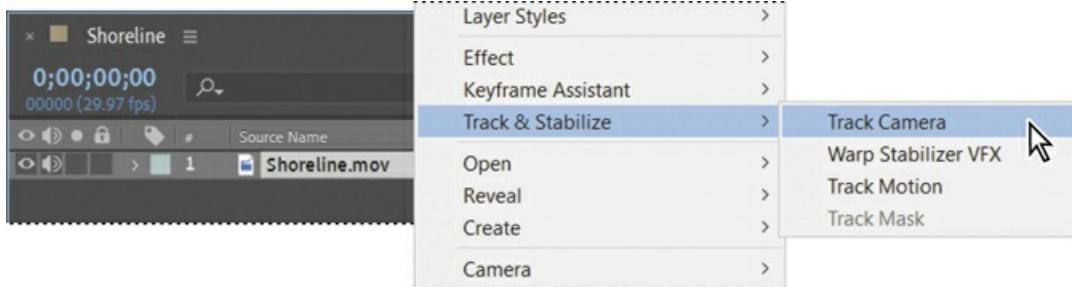
## Tracking the footage

The 2D footage is in place. Now you'll have After Effects track it and interpolate where a 3D camera should be placed.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Right-click (Windows) or Control-click (macOS) the Shoreline.mov layer in the Timeline panel, and choose Track & Stabilize > Track Camera.



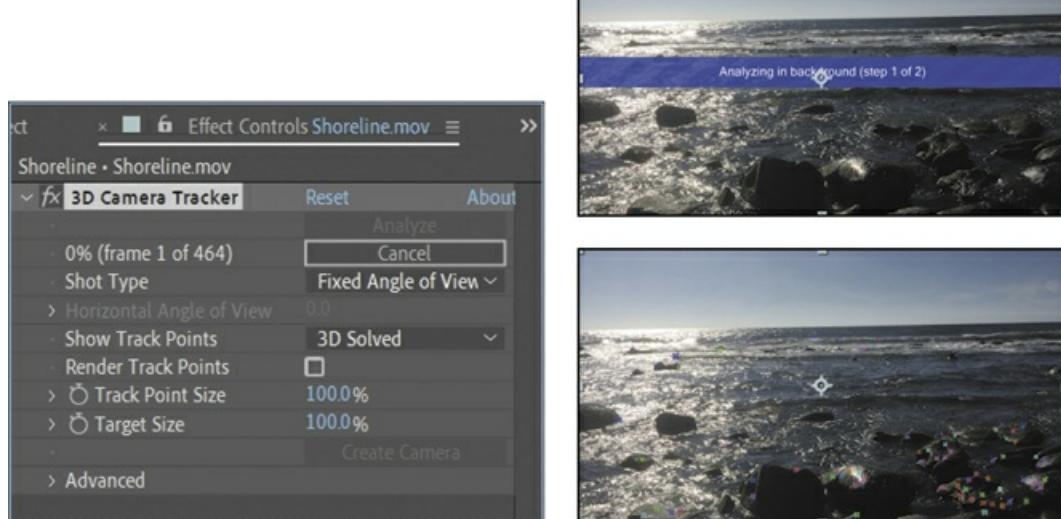
Depending on your system, this may take a while.



After Effects opens the Effect Controls panel and displays its progress as it analyzes the footage in the background. When the analysis is complete, many tracking points appear in the Composition panel. The size of a tracked point indicates its proximity to the virtual camera: Larger points are closer, and smaller points are further away.

### ► Tip

The default analysis is usually sufficient, but you can perform a more detailed analysis to better solve the camera position. The Detailed Analysis option is in the Advanced area of the Effect Controls panel.



3. When the analysis is complete, choose File > Save to save your work so far.

## Creating a ground plane, a camera, and the initial text

You have a 3D scene, but it needs a 3D camera. You'll add a camera when you create the first text element.

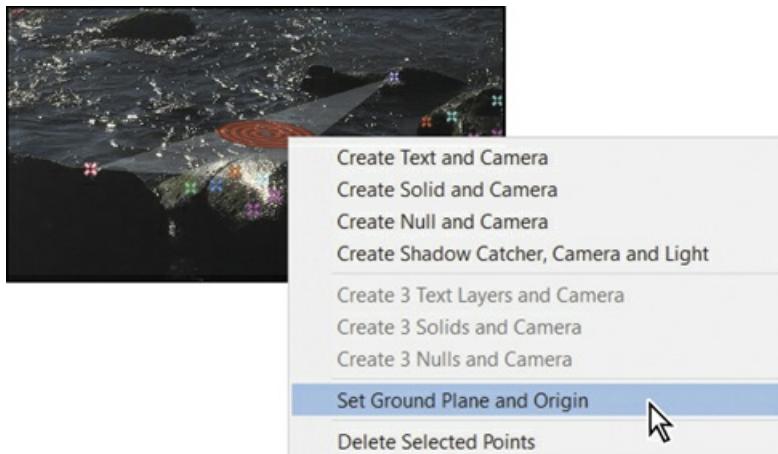
### ● Note

You can also add a camera by clicking the Create Camera button in the Effect Controls panel.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. In the Composition panel, hover the cursor over the water next to the large rocks until you see the displayed target similar to the one in the image below. (If you don't see the track points and target, click the 3D Camera Tracker effect in the Effect Controls panel to make it active.)

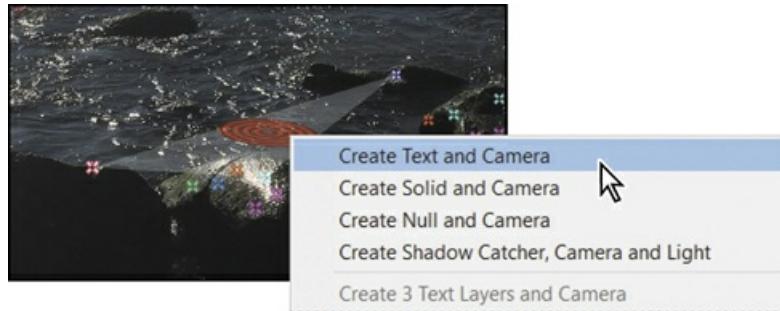
When you hover the cursor between three or more neighboring track points that can define a plane, a semitransparent triangle appears between the points. Additionally, a red target shows the orientation of the plane in 3D space.

3. Right-click (Windows) or Control-click (macOS) the plane, and choose Set Ground Plane And Origin.



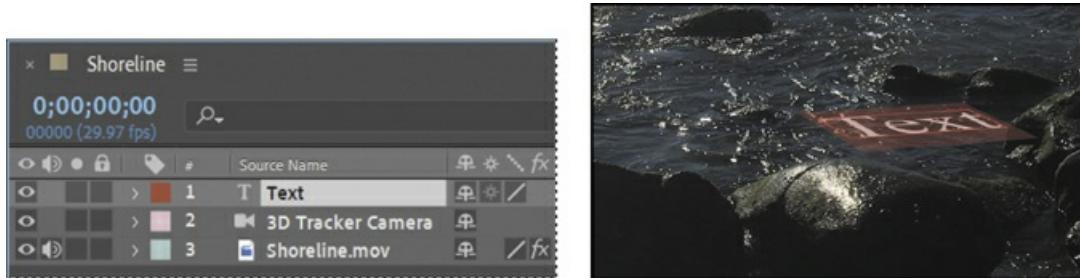
The ground plane and origin provide a reference point, setting a point where the coordinates are (0, 0, 0). Though nothing appears to change in the Composition panel using the Active Camera View, the ground plane and origin make it easier to change the camera's rotation and position.

4. Right-click (Windows) or Control-click (macOS) the same plane, and choose Create Text And Camera.

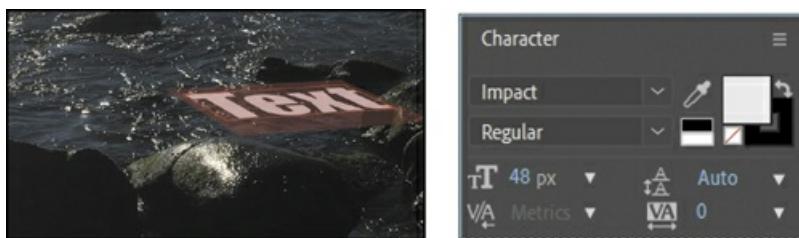


After Effects displays a large text item lying flat in the Composition panel. It also adds two layers to the Timeline panel: Text and 3D Tracker Camera. The 3D switch is enabled for the Text layer, but the Shoreline.mov layer remains 2D. Because the text elements are the only ones that need to be positioned in 3D space, there is no reason to make the background footage layer a 3D layer.

5. Move the current-time indicator along the time ruler. The text remains in position, tracking with the camera. Return the current-time indicator to the beginning of the time ruler.
6. Double-click the Text layer in the Timeline panel to open the Character panel in the stacked panels on the right.



7. In the Character panel, change the font to Impact Regular. Then change the font size to **48** px, the stroke width to **.5** px, and the stroke type to Stroke Over Fill. Make sure the fill color is white and the stroke color is black (the default colors), and that Tracking is set to **0**.

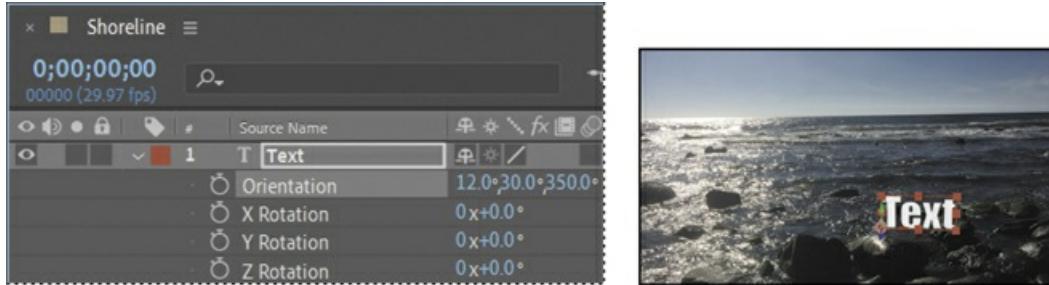


The text looks great, but you want it to stand on end. You'll change its location in space, and then replace it with the advertisement text.

8. Select the Text layer in the Timeline panel to exit text-editing mode. Then, press the R key to display the Rotation property of the layer, and change the Orientation values to **12, 30, 350** degrees.

#### ● Note

If you selected a different target for your ground plane, you may need to use different values. Instead of entering values, you could use the Rotation tool to adjust the individual axes in the Composition panel.

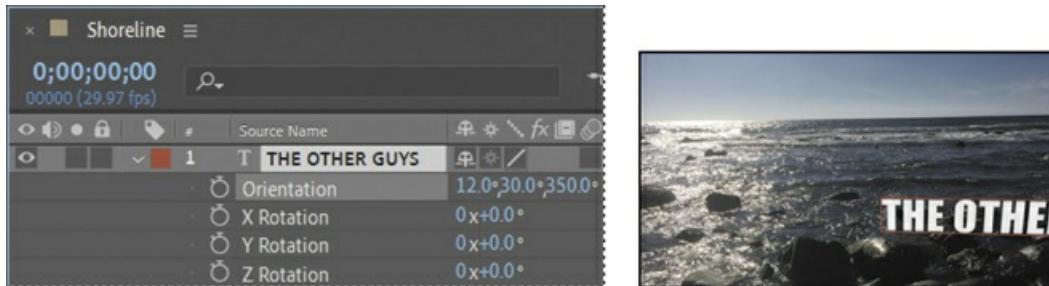


Any new 3D layer you create uses the ground plane and origin to orient the layer in the scene. When you change the Orientation values, the text changes its orientation in space.

9. Double-click the Text layer in the Timeline panel to make it active in the Composition panel.

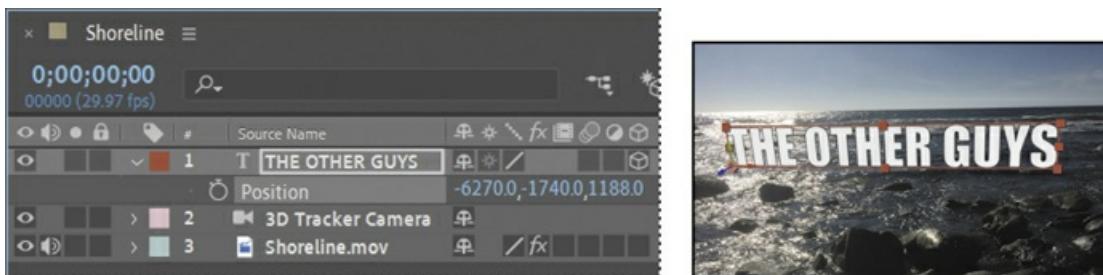
When the text is editable, it appears to have a light red mask surrounding it.

10. With the text selected in the Composition panel, type **THE OTHER GUYS** to replace it. Then select the THE OTHER GUYS layer to exit text-editing mode.



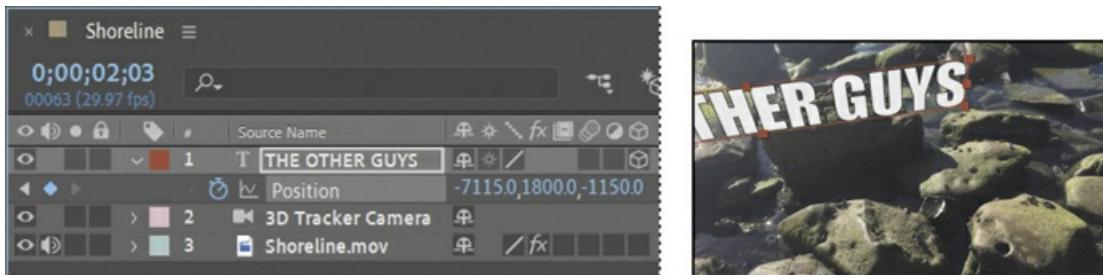
So far, so good. But you want the text to be centered in the scene. You'll reposition the text.

11. Press P to display the Position property for the text layer. Using the Selection tool, drag the text up the screen, so that it is over the water. Or you can type **-6270, -1740, 1188** for the Position property.



If the text stays in the same position, it won't be visible as the camera moves away. You'll animate it to remain visible a bit longer.

12. Click the stopwatch icon (⌚) to create an initial keyframe for the Position property.
13. Go to 2:03. Change the Position property to **-7115, 1800, -1150**, or use the Selection and Rotation tools to position it as it appears in the image below.

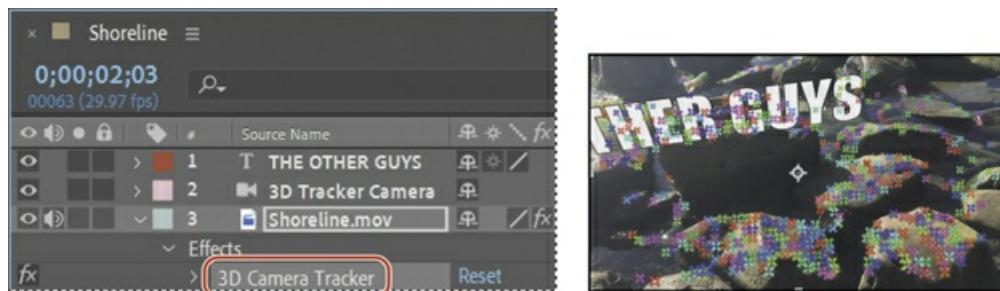


14. Manually scroll through the timeline to preview the text. Then close any open properties, and choose File > Save to save your work so far.

### Creating additional text elements

You created the initial text for the advertisement. Now you need to perform the same tasks to create the rest of the ad. You'll use the same steps to create each label, but because the text appears in different places in the video and needs to shift in relationship to the scene, you'll need to use different position, orientation, and scaling values.

1. Go to 2:03.
2. In the Timeline panel, select the Shoreline.mov layer, and press E to reveal its effects. Then select the 3D Camera Tracker to make it active.



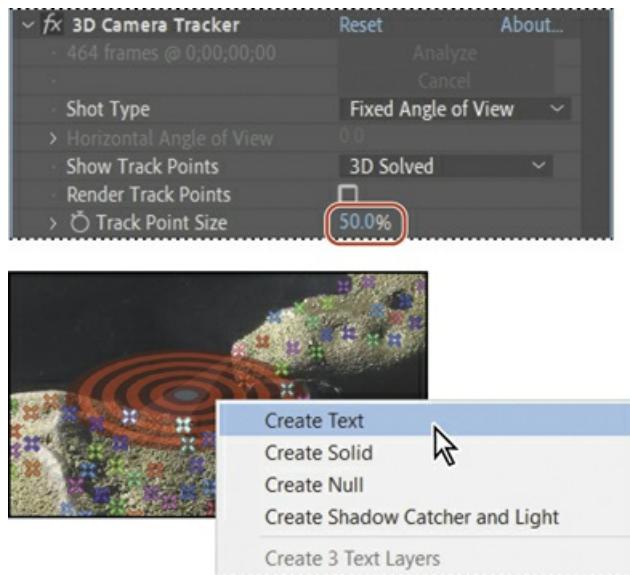

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#### Note

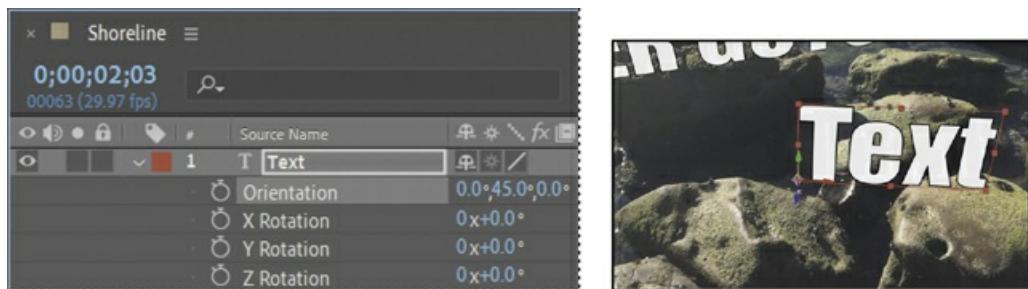
Make sure you select the 3D Camera Tracker effect in the Shoreline.mov layer, not the 3D Tracker Camera layer.

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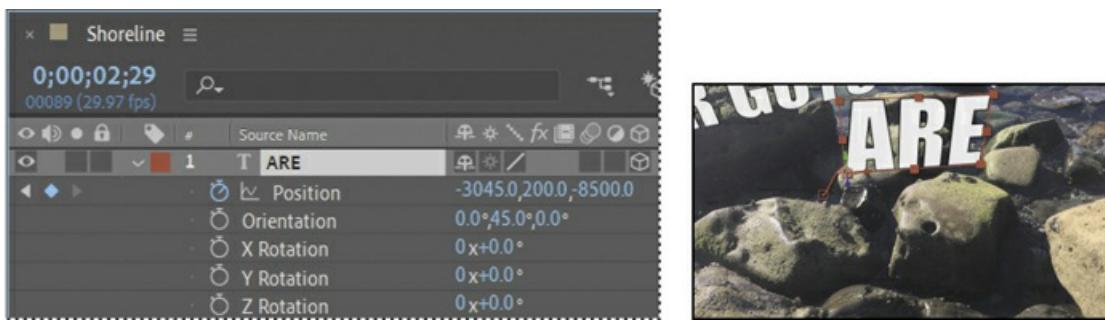
3. In the Effect Controls panel, change the Track Point Size value to 50% so you can see the track points more clearly.
4. Make sure the Selection tool is selected. Then, in the Composition panel, hover over an area so that the red target lies flat across the rocks, right-click or Control-click the target, and choose Create Text.



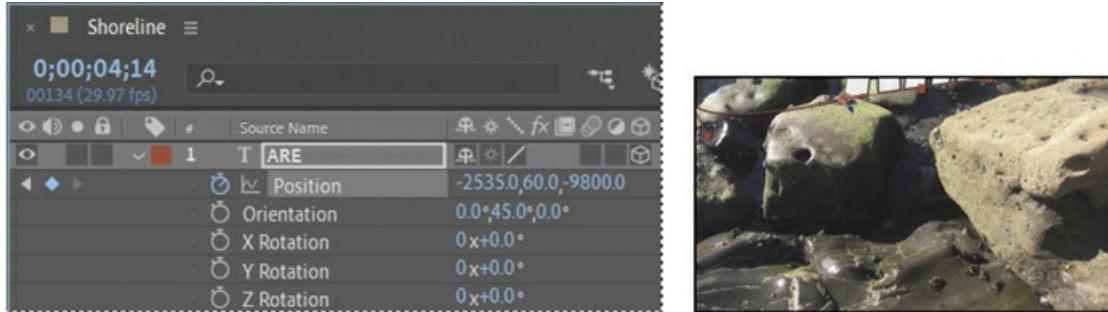
5. Select the Text layer in the Timeline panel, and press the R key to reveal the Rotation values. Then change the Orientation values to **0, 45, 0**.



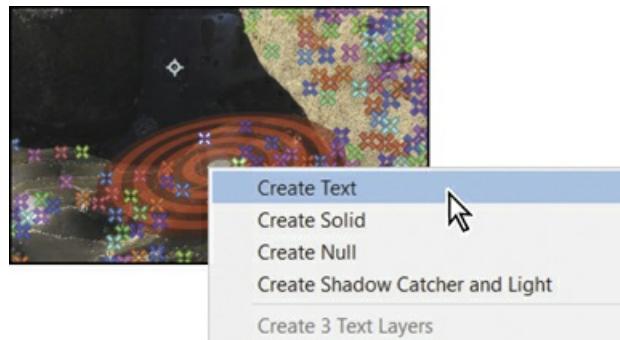
6. Double-click the Text layer to make it editable, and then type **ARE** in the Composition panel. Click the ARE layer to exit text-editing mode.
7. Press Shift+ P to display the Position property. Then click the stopwatch icon (⌚) to create an initial keyframe.
8. Go to 2:29, and move the text so that its position is similar to the text in the image below.



9. Go to 4:14. Use the Hand tool (⤒) to move the composition so that you can see the text box outside the frame, and then use the Selection tool to drag it so that the bottom of the text is visible, as shown in the image below. Or, you can adjust the Position values.



10. Hide the properties for the layer. If you used the Hand tool to reposition the image, move it back now. Then select the Selection tool, and manually preview the text animation.
11. Go to 4:14, and activate the 3D Camera Tracker track points again by selecting the Shoreline.mov layer in the Timeline panel, and then either selecting 3D Camera Tracker under the Shoreline.mov layer or selecting 3D Camera Tracker in the Effect Controls panel.
12. With the Selection tool, select a target for a flat plane against the large rock on the right. Then right-click the target, and choose Create Text.



13. Select the Text layer in the Timeline panel, and press R, and then Shift+P+S to see the Rotation, Position, and Scale properties. Then change the Orientation values to **0, 45, 10**, and the Scale property to **2000%**.
14. Double-click the Text layer, and then type **SCRAMBLING** in the Composition panel.
15. Go to 3:10, where this text should first be visible. Use the Selection tool to drag the text so that it starts below “ARE” and continues offscreen. You can also use the Rotation tool. When you’re satisfied with its position, click the stopwatch icon to create an initial keyframe for the Position property.



16. Go to 4:21, and use the Selection tool to move the text as it appears in the image below. Then do the same at 6:05 and 7:04, so that the text continues to move down and toward the left.



The text is in position, but you want it to appear suddenly on the screen. You'll trim the layers to stagger their appearance.

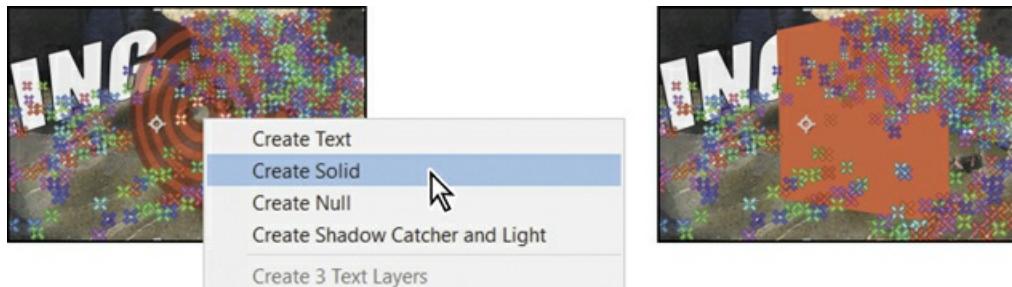
17. Go to 2:03, select the ARE layer, and press Alt+[ (Windows) or Option+[ (macOS). Then go to 3:10, select the Scrambling layer, and press Alt+[ or Option+[ again.
18. Close Properties. Choose File > Save to save your work.
19. Press the spacebar to preview the text animation. Press the spacebar again to stop playback.



### Locking an image to a plane with a solid layer

You created the advertising copy in After Effects, but the crabs' expressions are in quotation bubbles, which are easier to include as images. You'll attach the PSD files to solid layers in After Effects to lock them to specific planes.

1. Go to 6:06, select the Shoreline.mov layer in the Timeline panel, and select the 3D Camera Tracker effect in the Effect Controls panel.
2. With the Selection tool, move the cursor so that the target is on a vertical plane as in the image below. Right-click the target, and choose Create Solid.



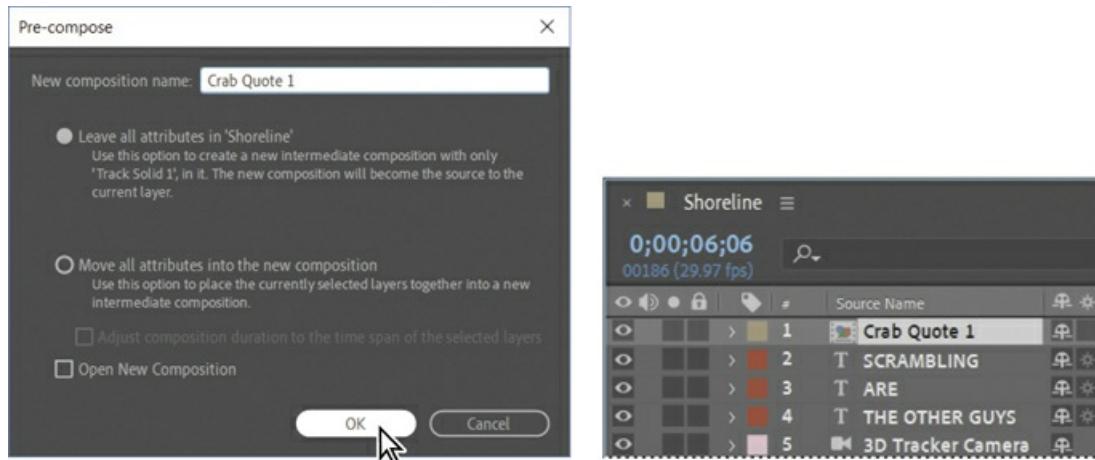
After Effects creates a Track Solid 1 layer, and a colorful solid square appears in the Composition panel.

## Adjusting the camera's depth of field

You can make the computer-generated elements more closely match the source footage if you adjust the depth of field for the 3D camera. If you use the values that were used in the camera that shot the original footage, 3D objects that are further away from the camera appear to be more out of focus.

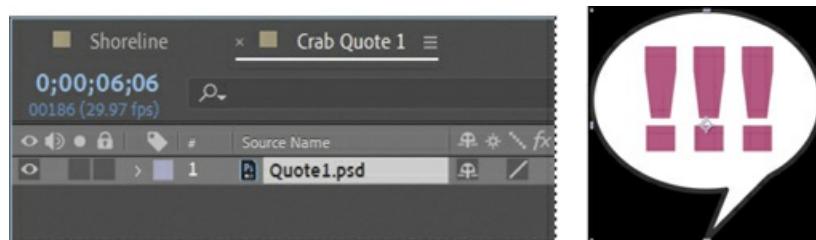
To adjust the depth of field, select the 3D Camera Tracker layer in the Timeline panel, and then choose Layer > Camera Settings.

3. Right-click or Control-click the Track Solid 1 layer in the Timeline panel, and choose Pre-compose. Then, in the Pre-compose dialog box, name the layer **Crab Quote 1**, and click OK.



After Effects creates the Crab Quote 1 composition, which contains the Track Solid 1 layer.

4. Double-click the Crab Quote 1 composition to open it. In the Timeline panel, delete the Track Solid 1 layer.
5. Drag the Quote1.psd file from the Project panel into the Timeline panel.
6. Choose Layer > Transform > Fit to Comp Width.



7. Select the Shoreline Timeline panel.

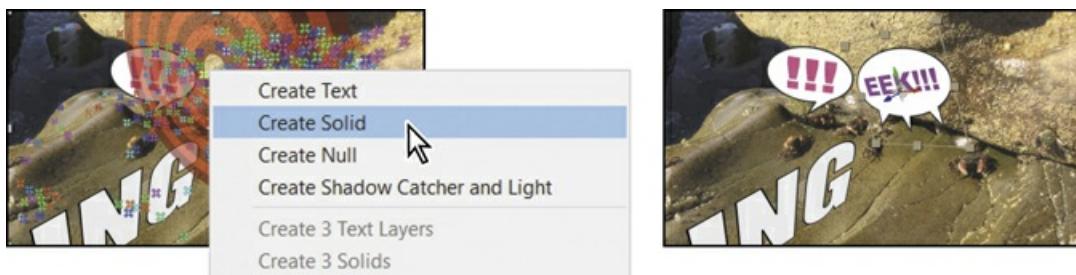


After Effects displays the Quote1.psd image where you created a solid layer.

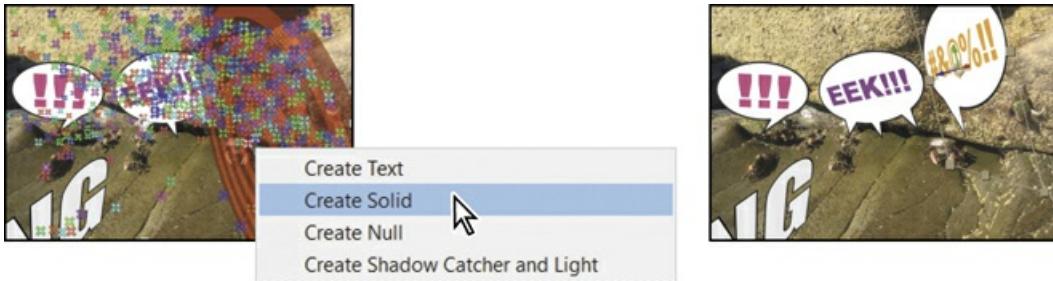
8. Use the Selection and Rotation tools to position and scale the quote so that it appears to relate to a cluster of crabs.



9. Go to 7:15, and select the 3D Camera Tracker effect again. Reduce the Track Point Size to 25% so you can see the track points more clearly. Then, find a vertical plane against a rock, right-click the target, and choose Create Solid.
10. Right-click or Control-click the Track Solid 1 layer, and choose Pre-compose. In the Pre-compose dialog box, name the composition **Crab Quote 2**, and then click OK.
11. Double-click the Crab Quote 2 composition to open it. Delete the Track Solid 1 layer, drag the Quote2.psd file to the Timeline panel, and choose Layer > Transform > Fit To Comp.
12. Return to the Shoreline Timeline panel, and then adjust the position, rotation, and scale of the quote to match the crabs' position. Click the chain icon to select different Scale values.



13. Go to 9:01, select the 3D Camera Tracker effect again, and reduce the Target Size to 50%. Right-click a target, as shown below, and choose Create Solid.
14. Right-click or Control-click the Track Solid 1 layer, choose Pre-compose, name the composition **Crab Quote 3**, and click OK. Then, double-click the Crab Quote 3 composition to open it, delete the Track Solid 1 layer, drag the Quote3.psd file into the Timeline panel, and choose Layer > Transform > Fit To Comp.
15. Select the Shoreline Timeline panel, and then adjust the position, rotation, and scale of the quote to match the position of the crabs.



16. Choose File > Save to save your work so far.

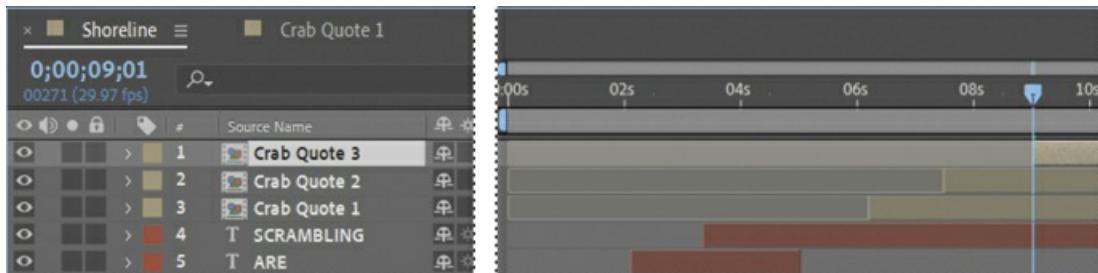
### Tidying the composition

You've done some complex work to create a scene that merges the added components with an existing tableau. You'll preview it to see it in action.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Press the spacebar to preview the movie. Let it play through completely once to cache the video and audio; once it's cached, it should play in real time.
3. Press the spacebar again to stop playback.

It's looking pretty good, but the word **ARE** shows up unexpectedly toward the end, and the crab quotes all appear at once. You'll adjust layers to ensure they appear when you want them to.

4. Go to 5:00, select the ARE layer, and press Alt+] or Option+].
5. Go to 6:06, select the Crab Quote 1 layer, and press Alt+[ or Option+[.
6. Go to 7:15, select the Crab Quote 2 layer, and press Alt+[ or Option+[.
7. Go to 9:01, select the Crab Quote 3 layer, and press Alt+[ or Option+[.



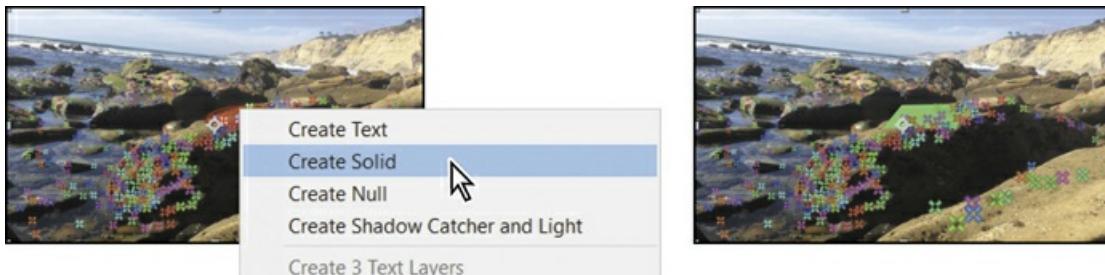
8. Press the spacebar to preview the movie again. Now the text and quotes appear when you expect them to.
9. Press the spacebar again to stop playback.
10. Choose File > Save to save your work so far.

### Adding a final object

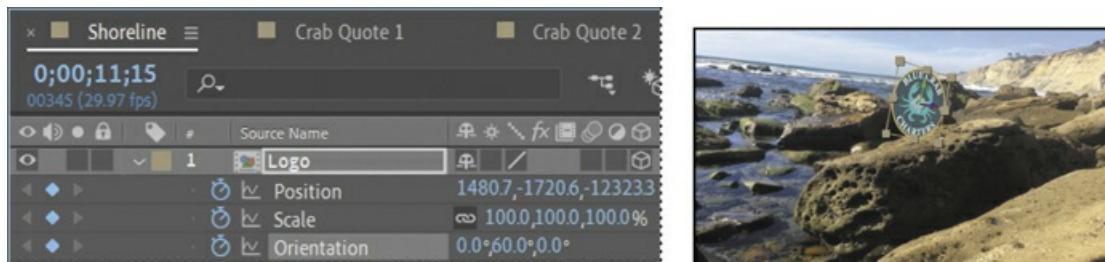
Without the company logo, no one will know who has the competition scrambling. You'll add the logo to the end of the movie using another solid layer.

1. Go to 11:15, select the Shoreline.mov layer, and select the 3D Camera Tracker effect in the Effect Controls panel again. Change the Track Point Size and Target Size back to **100%**.

- Find a plane that is relatively flat on a rock, right-click the target, and choose Create Solid.



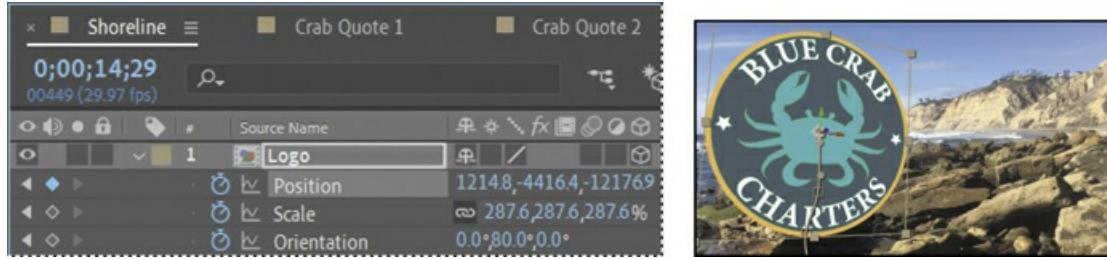
- Right-click or Control-click the Track Solid 1 layer, choose Pre-compose, name the composition **Logo**, and click OK.
- Double-click the Logo composition to open it. Delete the Track Solid 1 layer, and then drag the BlueCrabLogo.psd file into the Timeline panel. With the BlueCrabLogo.psd layer selected, choose Layer > Transform > Fit To Comp.
- Select the Shoreline Timeline panel, and then select the Logo layer.
- Press R to reveal the Rotation property, and then change the Orientation to **0, 60, 0**. Use the Selection tool (►) to drag the logo up to rest on the rock.



- Press Shift+P+S to reveal the Position and Scale properties, too. Click the stopwatch icons (⌚) to create initial keyframes for the Position, Scale, and Orientation properties.
- Go to 12:03, and increase the Scale value (we used 190.5%). Adjust the position and orientation as needed to match the image below.
- Go to 13:04, and increase the Scale value again (we used 249%). Adjust the position if necessary to match the image below.
- Go to 13:25, and increase the Scale value again (we used 285.2%). Adjust the orientation so that the logo faces forward; adjust the position to match the image below.



- Go to 14:29, and adjust the position for the final shot. Hide all layer properties.



## Creating realistic shadows

You've set up your elements, but unlike true 3D objects, they aren't casting any shadows. You'll create a shadow catcher and a light to add depth to your video.

1. Go to 5:00, select the Shoreline.mov layer in the Timeline panel, and select the 3D Camera Tracker effect in the Effect Controls panel.
2. Select the Selection tool in the Tools panel. Then, in the Composition panel, hover until you find a plane that is horizontal against the rocks.

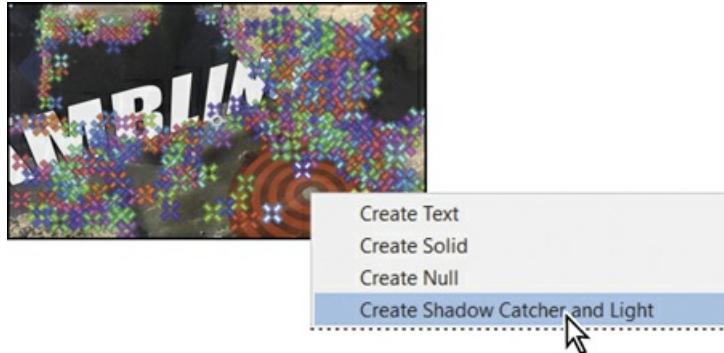
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### Note

Be sure to select the 3D Camera Tracker effect in the Shoreline.mov layer, not the 3D Tracker Camera layer.

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3. Right-click or Control-click the target, and choose Create Shadow Catcher And Light.



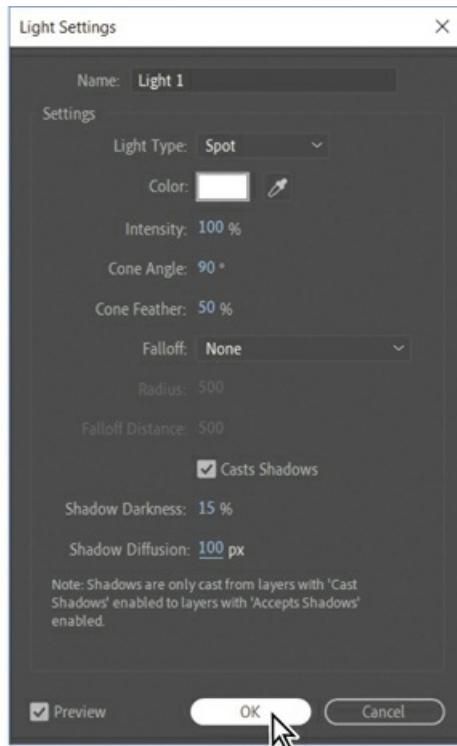
After Effects adds a light source to the scene. The default settings are applied, so a shadow appears in the Composition panel. However, you'll need to reposition the light to match the light in the source footage. The Shadow Catcher 1 layer that After Effects adds to the Timeline panel is a shape layer that has its material options set so that it accepts shadows only from the scene.

4. Select the Light 1 layer in the Timeline panel, and press the P key to reveal the Position property for the layer.
5. Enter the following values for the Position property to reposition the light: **939.6, 169.7, 23.7**.
6. Choose Layer > Light Settings.

## ► Tip

In a real-world project, it's ideal to work with the lighting plan that was used to shoot the original 2D scene. The goal is to have the new 3D lights match the original source lighting as closely as possible.

You can change the intensity, color, and other attributes of the light in the Light Settings dialog box.



7. Choose Spot from the Light menu. Make sure the light color is white. Then change the Shadow Darkness to **15%** and the Shadow Diffusion to **100 px**. Click OK.
8. Select the Shadow Catcher 1 layer in the Timeline panel, and press the S key to reveal the Scale property.
9. Change the Scale value to **340%**.

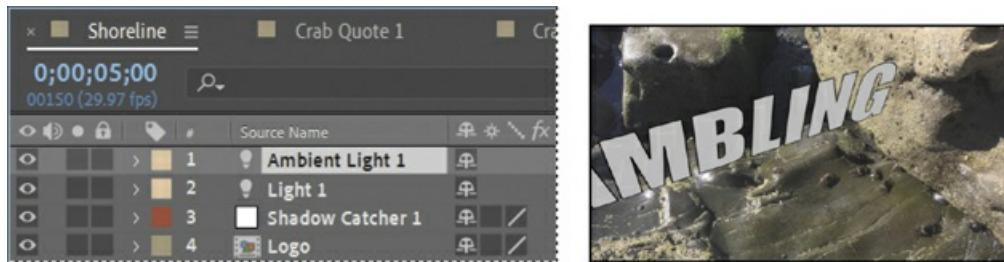
Scaling the Shadow Catcher 1 layer changes the area in which shadows can appear for the light that was created with it.

## Adding ambient light

The shadow looks better after the adjustments you made to the light, but it's now causing the text to appear black. You'll add ambient light to address this. Unlike a spot light, ambient light creates a more diffuse light throughout the scene.

1. Deselect all layers, and then choose Layer > New > Light.

- Choose Ambient from the Light Type menu, and change its Intensity value to **80%**. Make sure the light color is white, just like the spot light.
- Click OK to add the light to the scene.



## Adding an effect

The 3D elements, camera, and lighting are all complete, but you can make the video more interesting by adding a ripple effect to the quotes.

- Go to 6:06.
- In the Effects & Presets menu, type Ripple in the search menu.
- Select the Dissolve-Ripple effect from the Transitions-Dissolves category, and drag it onto the Crab Quote 1 layer in the Timeline panel.

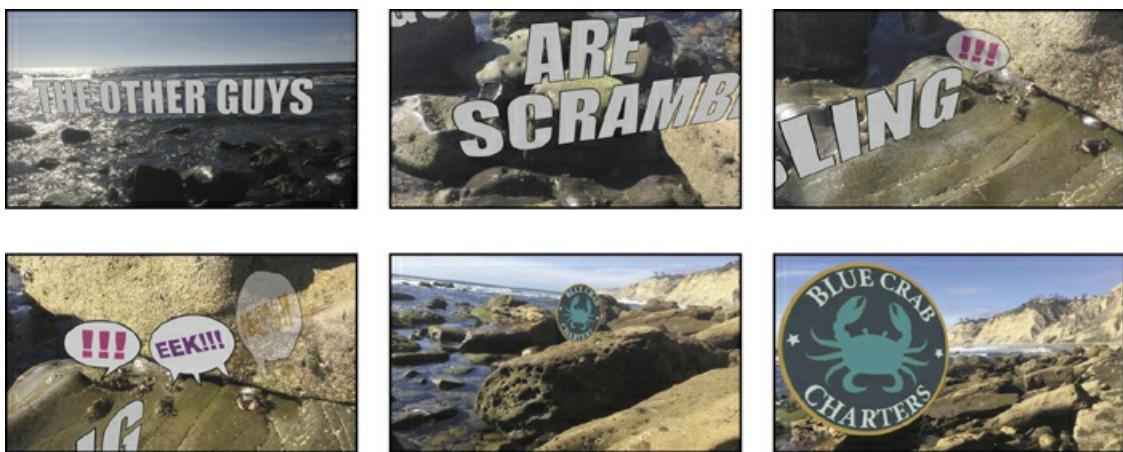
The crab quote disappears, but it will gradually appear and ripple on the screen.

- Go to 7:15, and repeat steps 2 and 3 for the Crab Quote 2 layer.
- Go to 9:01, and repeat steps 2 and 3 for the Crab Quote 3 layer.

## Previewing the composition

All of the elements are in place, along with cameras, lighting, and effects. You'll preview the composition to see the results of your work.

- Press the Home key or move the current-time indicator to the beginning of the time ruler.
- Press the spacebar to preview the movie. Let it play through completely once to cache the video and audio; once it's cached, it should play in real time.



- Press the spacebar again to stop playback.

4. Choose File > Save to save your work so far.

### Review questions

- 1 What does the 3D Camera Tracker effect do?
- 2 How can you make an added 3D element look like it is the same size as elements that are farther from the camera?
- 3 What is the Rolling Shutter Repair effect?

### Review answers

- 1 The 3D Camera Tracker effect automatically analyzes the motion present in existing 2D footage, extracts the position and lens type of the real camera that shot the scene, and creates a new 3D camera in After Effects to match it. The effect also overlays 3D track points onto the 2D footage, so you can easily attach new 3D layers onto the original footage.
- 2 To make an added 3D element appear to recede, so that it looks like it's farther from the camera, adjust its Scale property. Adjusting the Scale property keeps its perspective locked with the rest of the composition.
- 3 The Rolling Shutter Repair effect attempts to correct the “rolling” shutter problem that commonly occurs when you use digital cameras with CMOS sensors, which capture a frame of video one scan line at a time. Due to time lag between scan lines, not all parts of the image are recorded at exactly the same time, causing motion to ripple down the frame. If the camera or the subject is moving, the rolling shutter can cause distortions, such as leaning buildings and other skewed images. To use the effect, select the problem layer in the Timeline panel, and choose Effect > Distort > Rolling Shutter Repair.

# 14 Advanced Editing Techniques

## Lesson overview

In this lesson, you'll learn how to do the following:

- Stabilize a shaky camera shot.
- Use single-point motion tracking to track one object in a shot to another object in a shot.
- Perform multipoint tracking using perspective corner-pinning.
- Create a particle system.
- Use the Timewarp effect to create slow-motion video.



This lesson will take approximately two hours to complete. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## PROJECT: SPECIAL EFFECTS AND EDITING TECHNIQUES

After Effects provides advanced motion stabilization, motion tracking, high-end effects, and other features for the most demanding production environments.

### Getting started

In previous lessons, you've used many of the essential 2D and 3D tools you need for motion graphics design. But Adobe After Effects also offers motion stabilization, motion tracking, advanced keying tools, distortion effects, the capability to retime footage using the Timewarp effect, support for high dynamic range (HDR) color images, network rendering, and much more. In this lesson, you will learn how to use Warp Stabilizer VFX to stabilize a handheld camera shot, how to track one object to another in an image so that their motion is synchronized, and how to use corner-pinning to track an object with perspective. Finally, you will explore two of the high-end digital effects available in After Effects: a particle system generator and the Timewarp effect.

This lesson includes multiple projects. Take a peek at all of them before beginning.

1. Make sure the following files are in the Lessons/Lesson14 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: bee\_swarm.mov, Group\_Approach.mov, majorspoilers.mov, metronome.mov, multipoint\_tracking.mov
  - In the Sample\_Movies folder, the AVI and MOV subfolders, each with the following files: Lesson14\_Multipoint, Lesson14\_Particles, Lesson14\_Stabilize, Lesson14\_Timewarp, and Lesson14\_Tracking.

2. Play the sample movies in the Lesson14/Sample\_Movies/AVI folder in Windows Movies & TV or play the sample movies in the Lesson14/Sample\_Movies/MOV folder in QuickTime Player to see the projects you will create in this lesson.
3. When you're done, quit Windows Movies & TV or QuickTime Player. You may delete these sample movies from your hard disk if you have limited storage space.

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### ● Note

You can view these movies all at once or, if you don't plan to complete these exercises in one session, you can watch each sample movie just before you are ready to complete the associated exercise.

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## Stabilizing a shot

If you shoot footage using a handheld camera, you will probably end up with shaky shots. Unless this look is intentional, you'll want to stabilize your shots to eliminate unwanted motion.

Warp Stabilizer VFX in After Effects automatically removes extraneous jitters. When played back, the motion appears smooth, because the layer itself is scaled and moves incrementally to offset the unwanted movement.

## Bicubic scaling

When you scale video footage or an image to a larger size, After Effects must sample data to add information where none existed before. You can choose which sampling method After Effects uses when scaling a layer. For details, see *After Effects help*.

Bilinear sampling is the method After Effects traditionally used. However, bicubic sampling uses a more complex algorithm that typically provides better results when color transitions are more gradual, as in nearly all real-world photographic images. Bilinear scaling may be a better option for sharp-edged graphics.

To choose a sampling method for a layer, select the layer, and choose *Layer > Quality > Bicubic* or *Layer > Quality > Bilinear*. Bicubic and bilinear sampling are available only for layers that are set to Best quality. (To change a layer's quality setting to Best, choose *Layer > Quality > Best*.) You can also use the *Quality* and *Sampling* layer switch to toggle between the Bilinear and Bicubic sampling methods.

If you need to scale an image by a large amount while preserving details, use the Detail-Preserving Upscale effect instead. The effect preserves the sharpness of sharp lines and curves. For example, you can scale up from SD frame sizes to HD frame sizes, or from HD frame sizes to digital cinema frame sizes. This effect is very closely related to the *Preserve Details* resampling option in the *Image Size* dialog box in Photoshop. Note that using the Detail-Preserving Upscale effect is slower than using either bilinear or bicubic scaling for the layer.

## Setting up the project

As you start After Effects, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page 3.

1. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences.
2. Click New Project in the Home window.

After Effects opens to display a new, untitled project.

3. Choose File > Save As > Save As.
4. In the Save As dialog box, navigate to the Lessons/Lesson14/Finished\_Projects folder.
5. Name the project **Lesson14\_Stabilize.aep**, and then click Save.

## Creating the composition

You’ll start by importing footage and creating the composition.

1. Click New Composition From Footage in the Composition panel.
2. Navigate to the Lessons/Lesson14/Assets folder. Select the bee swarm.mov file, and click Import or Open.

After Effects creates a new composition named bee swarm with the same pixel size, aspect ratio, frame rate, and duration of the source clip.

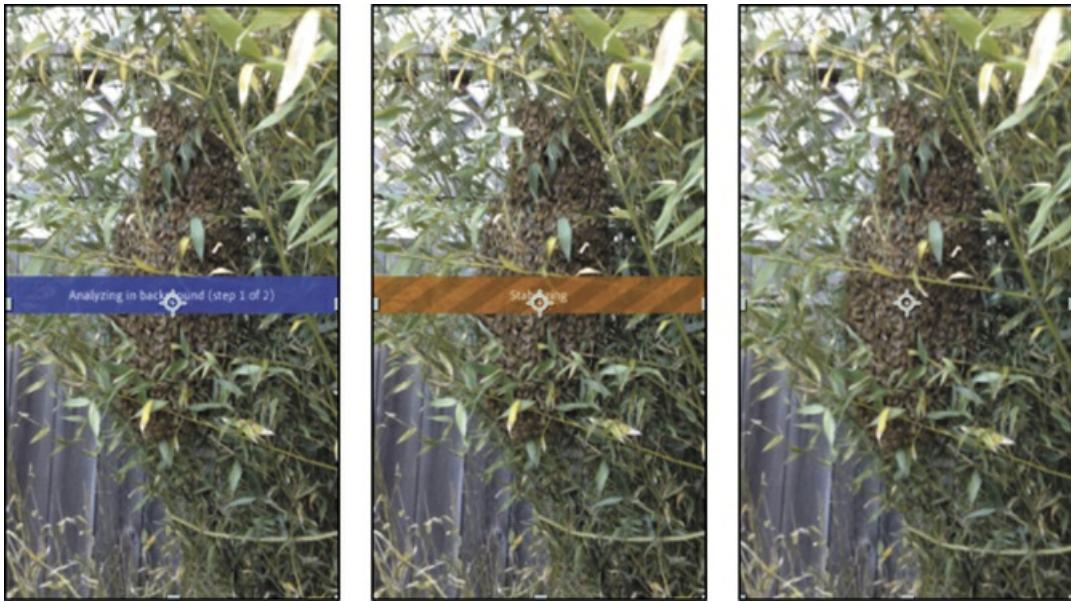
3. Click the Play button in the Preview panel to preview the footage. Press the spacebar to stop the preview when you’ve seen the whole clip.

This clip was shot with a smartphone camera. Bees fly in and out of the swarm, a breeze rustles the vegetation, and the camera moves unsteadily.

## Applying Warp Stabilizer VFX

Warp Stabilizer VFX starts analyzing footage as soon as you apply it. Stabilization is a background process, so you can work on other compositions while it finishes. How long it takes depends on your system. After Effects displays a blue banner while it analyzes the footage and an orange banner while it applies stabilization.

1. Select the bee swarm.mov layer in the Timeline panel, and choose Animation > Warp Stabilizer VFX. The blue banner appears immediately.
2. When Warp Stabilizer VFX has finished stabilizing, and the orange banner has disappeared, press the spacebar to preview the changes.



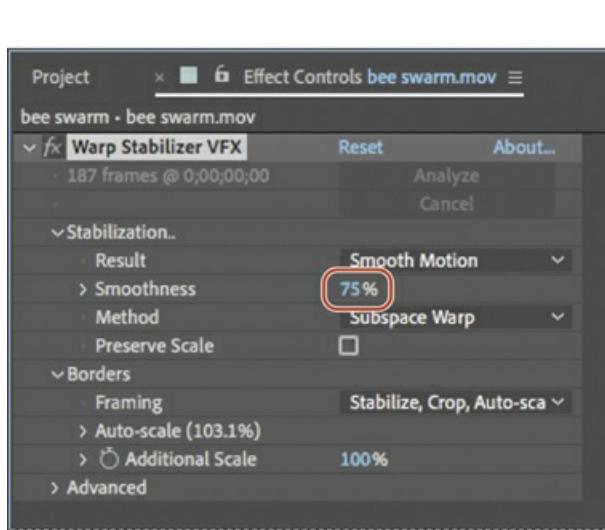
3. Press the spacebar to stop the preview.

The clip is still shaky, but it's smoother than it was initially. Warp Stabilizer VFX moved and repositioned the footage. To see how it applied changes, view the effects in the Effect Controls panel. For example, the clip's borders were scaled up (to about 103%) to hide black gaps that occur when the image is repositioned in the stabilization process. You'll adjust the settings that Warp Stabilizer VFX uses.

## Adjusting the Warp Stabilizer VFX settings

You'll change the settings in the Effect Controls panel to make the shot smoother.

1. In the Effect Controls panel, increase the Smoothness amount to **75%**.



Warp Stabilizer VFX immediately begins stabilizing again. It doesn't need to analyze the

footage, because the initial analysis data is stored in memory.

2. When Warp Stabilizer VFX has finished, preview the changes.
3. Press the spacebar to stop playback when you're done.

It's better, but still a little rough. Rather than change the amount Warp Stabilizer VFX smooths the footage, now you'll change its goal.

4. In the Effect Controls panel, choose No Motion from the Result menu.

With this setting, Warp Stabilizer VFX attempts to lock the camera in position. This requires even more scaling. When No Motion is selected, the Smoothness option is dimmed.

5. When the orange banner disappears, preview the changes again. Press the spacebar to stop the playback.

Now the camera stays in position, so that the movement you notice is the rustling of the leaves in the wind, not the shakiness of the camera. In order to achieve this effect, Warp Stabilizer VFX had to scale the clip to nearly 115% of its original size.

## Warp Stabilizer VFX settings

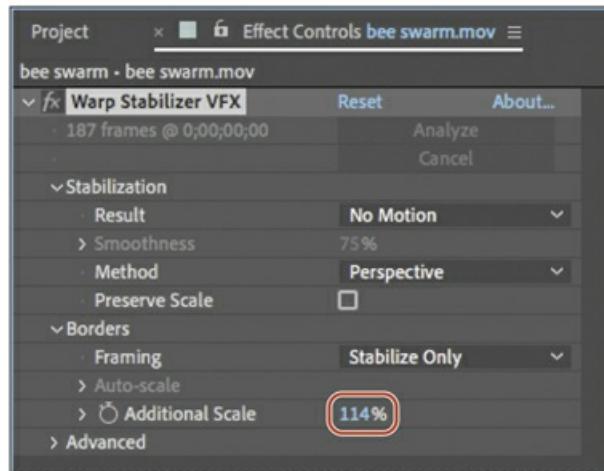
This is a summary of the Warp Stabilizer VFX settings to help you get started. To learn more about the settings, and to read more tips for using the effect successfully, see After Effects Help.

- **Result** controls the intended result. Smooth Motion makes camera movement smoother, but doesn't eliminate it; use the Smoothness setting to control how smooth the movement becomes. No Motion attempts to remove all of the camera motion.
- **Method** specifies the most complex operation the Warp Stabilizer VFX performs on the footage to stabilize it: Position, which is based on position data only; Position, Scale, Rotation, which uses these three types of data; Perspective, which effectively corner-pins the entire frame; or Subspace Warp (the default), which attempts to warp various parts of the frame differently to stabilize the entire frame.
- **Borders** settings adjust how borders (the moving edges) are treated for footage that is stabilized. Framing controls how the edges appear in a stabilizing result, and determines whether the effect crops, scales, or synthesizes edges using material from other frames.
- **Auto-scale** displays the current auto-scale amount, and allows you to set limits on the amount of auto-scaling.
- **Advanced** settings give you even greater control over the actions of the Warp Stabilizer VFX effect.

## Fine-tuning the results

The default analysis works well most of the time, but sometimes you may need to massage the end results even further. In this project, the clip skews subtly in a few places. Casual viewers may not notice the problem, but a keen producer will. You'll change the method that Warp Stabilizer VFX uses to remove the skew.

1. In the Effect Controls panel, choose Perspective from the Method menu.
2. Choose Stabilize Only from the Framing menu.
3. Increase the Additional Scale to **114%**.



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#### ● Note

Scaling a video layer up degrades the image. A good rule of thumb is to increase the layer to no more than 115% the size of the original source.

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4. Preview the changes.

Now the shot looks rock-steady. The only movement is that caused by the wind and the swarming bees.

5. Press the spacebar to stop the playback when you're done.
6. Choose File > Save to save your work, and then choose File > Close Project.

As you have discovered, stabilizing a shot can have drawbacks. To compensate for the movement or rotation data applied to the layer, the frames must be scaled, which could ultimately degrade the footage. If you must use the shot in your production, this may be the best compromise.

---

#### ► Tip

You can use Warp Stabilizer VFX advanced settings to achieve more complex effects, too. To learn more, see *Adobe After Effects CC Visual Effects and Compositing Studio Techniques*, available from Adobe Press.

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## Removing motion blur

If there are moments of blurriness after you stabilize the shot, try applying the Camera Shake Deblur effect. This effect analyzes frames on either side of the blurry frames for apparent sharpness and then blends the non-motion-blurred frames into the blurry frames.

The effect works best on brief moments of blur due to wind or camera bumps.

## Using single-point motion tracking

With the increase in the number of productions that incorporate digital elements into final shots, compositors need an easy way to synchronize computer-generated effects with film or video backgrounds. After Effects lets you do this with the capability to follow, or track, a defined area in the shot, and to apply that movement to other layers. These layers can contain text, effects, images, or other footage. The resulting visual effect precisely matches the original moving footage.

When you track motion in an After Effects composition that contains multiple layers, the default tracking type is Transform. This type of motion tracking tracks position and/or rotation to apply to another layer. When tracking position, this option creates one track point and generates Position keyframes. When tracking rotation, this option creates two track points and produces Rotation keyframes.

In this exercise, you will track a shape layer to the weighted arm of a metronome. This will be especially challenging, as the camera operator chose not to use a tripod.

## Setting up the project

If you've just completed the first project, and After Effects is open, skip to step 3. Otherwise, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page [3](#).

1. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences.
2. Close New Project in the Home window.

After Effects opens to display a new, untitled project.

3. Choose File > Save As > Save As.
4. In the Save As dialog box, navigate to the Lessons/Lesson14/Finished\_Projects folder.

5. Name the project **Lesson14\_Tracking.aep**, and then click Save.

## Creating the composition

You need to import one footage item to start this project. You'll use it to create the composition.

1. Click New Composition From Footage in the Composition panel.
2. Navigate to the Lessons/Lesson14/Assets folder. Select the metronome.mov file, and then click Import or Open.

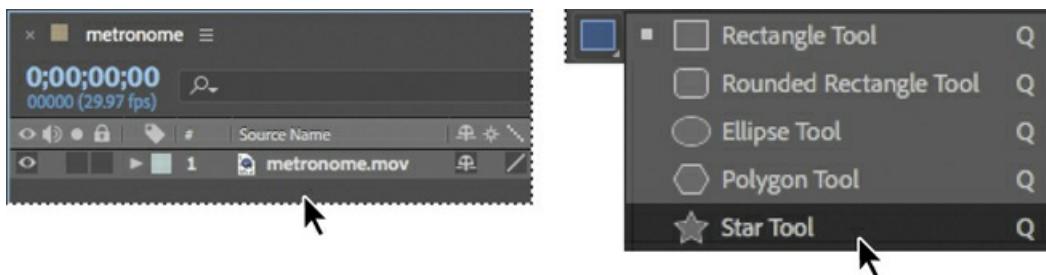
After Effects creates a new composition named metronome, with the same pixel size, aspect ratio, frame rate, and duration as the source clip.

3. Drag the current-time indicator across the time ruler to manually preview the footage.

## Creating a shape layer

You're going to attach a star to the end of the metronome. First, you need to create the star. You'll use a shape layer.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Click an empty area of the Timeline panel to deselect the layer.
3. Select the Star tool (), hidden behind the Rectangle tool ()) in the Tools panel.



4. Click the Fill Color swatch, and select a light yellow (such as R=220, G=250, B=90). Click the word *Stroke*, select None in the Stroke Options dialog box, and click OK.

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### Note

If you don't see the Fill Color swatch, make sure you don't have a layer selected. When a layer is selected, shape tools draw masks.

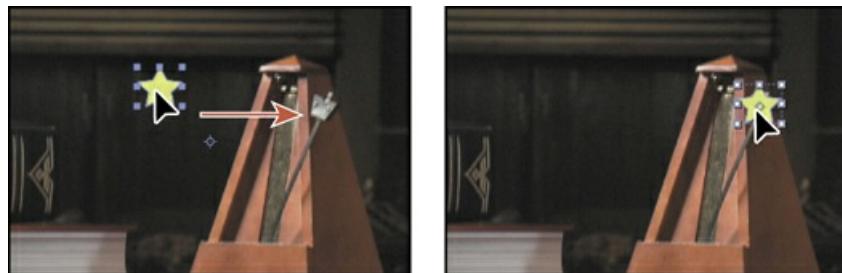
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5. In the Composition panel, draw a small star.
6. Use the Selection tool ( ) to position the star over the weighted end of the pendulum arm.
7. Select Shape Layer 1 to see the layer's anchor point. Use the Pan Behind tool ( ) to move the anchor point to the center of the star shape, if it isn't already there.

### Tip

You can change the preferences to automatically place the anchor point in the center of a new layer shape. Choose Edit > Preferences > General (Windows) or After Effects CC > Preferences > General (macOS). Select Center Anchor Point In New Shape Layers, and click OK.



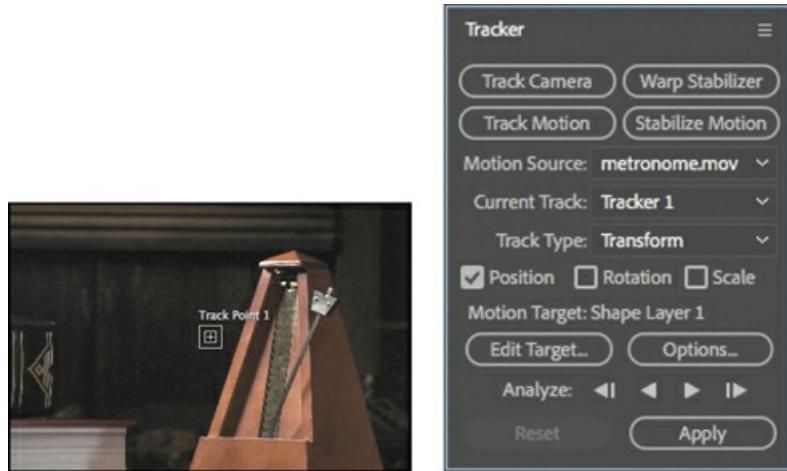
### Positioning the track point

After Effects tracks motion by matching pixels from a selected area in a frame to pixels in each succeeding frame. You create tracking points to specify the area to track. A track point contains a feature region, a search region, and an attach point. After Effects displays the track point in the Layer panel as it tracks.

You will track the metronome weight (the rhombus at the end of its arm) by placing tracking regions around the area that you'll track another layer to. With the star shape added to the Tracking composition, you are ready to position the track point.

1. Select the metronome.mov layer in the Timeline panel.
2. Choose Animation > Track Motion. The Tracker panel opens; increase its size if you can't see all the options.

After Effects opens the selected layer in the Layer panel. The Track Point 1 indicator is in the center of the image.



Notice the settings in the Tracker panel: Metronome.mov is selected in the Motion Source menu. The Current Track is Tracker 1, and the Motion Target is Shape Layer 1, because After Effects automatically sets the Motion Target to the layer immediately above the source layer.

Now, you'll position your track point.

3. Using the Selection tool (►), move the Track Point 1 indicator (drag the empty portion of the inner box) in the Layer panel over the metronome weight.
4. Enlarge the search region (the outer box) to encompass the area around the pendulum. Then adjust the feature region (the inner box) within the weight.




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#### ● Note

In this exercise, you want the star to move atop the metronome weight. However, if you wanted an object to move in relationship to the tracked area but not on top of it, you could reposition the attach point accordingly.

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## Analyzing and applying tracking

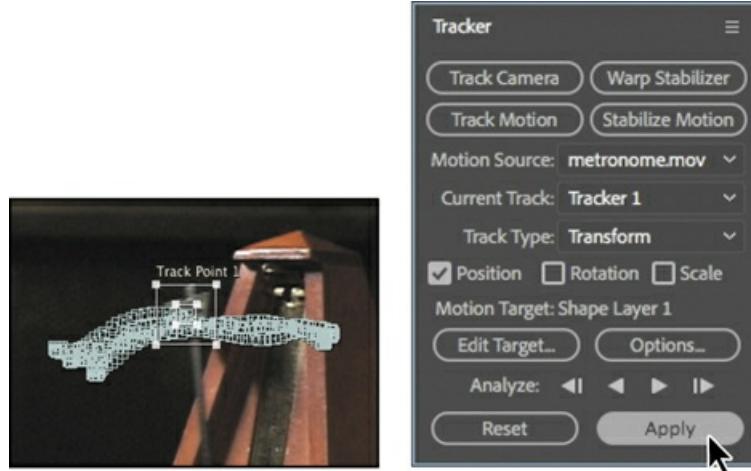
Now that the search and feature regions are defined, you can apply the tracker.

1. Click the Analyze Forward button (►) in the Tracker panel. Watch the analysis to ensure the track point stays with the metronome weight. If it doesn't, press the spacebar to stop the analysis, and reposition the feature region. (See the sidebar “[Checking for drift](#).”)
2. When the analysis is complete, click the Apply button.

3. In the Motion Tracker Apply Options dialog box, click OK to apply the tracking to the x and y dimensions.

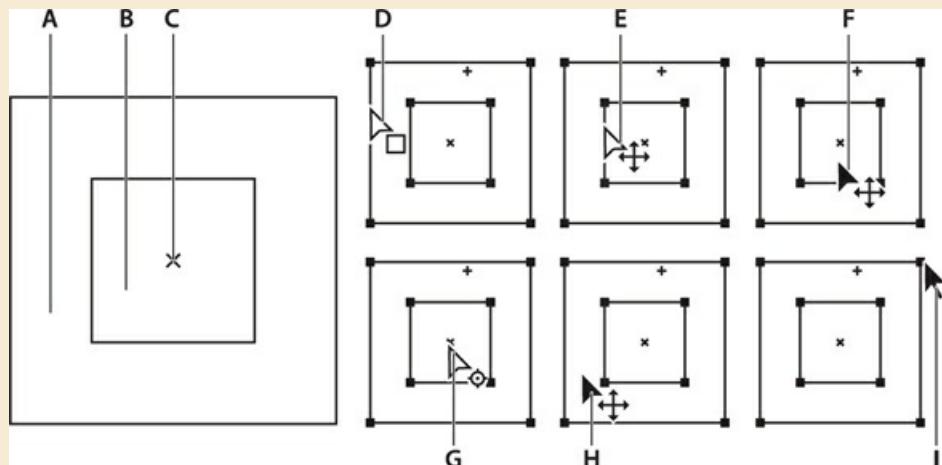
### ● Note

The tracking analysis may take quite a while. The larger the search and feature regions, the longer After Effects takes to analyze tracking.



## Moving and resizing the track points

In setting up motion tracking, it's often necessary to refine a track point by adjusting its feature region, search region, and attach point. You can resize or move these items independently or in groups by dragging with the Selection tool. The pointer icon changes to reflect one of many different activities.



Track point components (left) and Selection tool pointer icons (right):

**A.** Search region **B.** Feature region **C.** Attach point **D.** Moves search region **E.** Moves both regions **F.** Moves entire track point **G.** Moves attach point **H.** Moves entire track point **I.** Resizes region

- To turn feature region magnification on or off, choose Magnify Feature When Dragging from the Tracker panel menu. A check mark appears next to the option when it's on.
- To move only the search region, using the Selection tool, drag the edge of the search region; the Move Search Region pointer (☞) appears (D, above).
- To move just the feature and search regions together, Alt-drag (Windows) or Option-drag (macOS) with the Selection tool inside the feature or search region; the Move Both Regions pointer (☞+) appears (E, above).
- To move only the attach point, using the Selection tool, drag the attach point; the Move Attach Point pointer (☞) appears (G, above).
- To resize the feature or search region, drag a corner handle (I, above).
- To move the feature region, search region, and attach point together, drag with the Selection tool inside the track point area (avoiding the region edges and the attach point); the Move Track Point pointer (☞+) appears.

For more information about track points, see After Effects Help.

The motion-tracking data is added to the Timeline panel, where you can see that the track data is in the metronome layer, but the results are applied to the Position property of the Shape Layer 1 layer.

4. Press the spacebar to preview the movie. The star not only follows the pendulum; it moves with the camera's movement.



5. When you're ready, press the spacebar to stop playback.
6. Hide the properties for both layers in the Timeline panel, choose File > Save, and then choose File > Close Project.

Motion tracking an element onto background footage can be fun. As long as you have a stable feature to track, single-point motion tracking can be quite easy.

## Checking for drift

As an image moves in a shot, the lighting, surrounding objects, and angle of the object can all change, making a once-distinct feature no longer identifiable at the subpixel level. It takes time to develop an eye for choosing a trackable feature. Even with careful planning and practice, you may often find that the feature region drifts away from the desired feature. Readjusting the feature and search regions, changing the tracking options, and trying again are all standard parts of digital tracking. When you notice drifting occurring, try the following:

1. Immediately stop the analysis by pressing the spacebar.
2. Move the current-time indicator back to the last good tracked point. You can see this in the Layer panel.
3. Reposition and/or resize the feature and search regions, being careful not to accidentally move the attach point. Moving the attach point will cause a noticeable jump in your tracked layer.
4. Click the Analyze Forward button to resume tracking.

## Using multipoint tracking

After Effects also offers two more advanced types of tracking that use multiple tracking points: parallel corner-pinning and perspective corner-pinning.

When you track using parallel corner-pinning, you simultaneously track three points in the source footage. After Effects calculates the position of a fourth point to keep the lines between the points parallel. When the movement of the points is applied to the target layer, the Corner Pin effect distorts the layer to simulate skew, scale, and rotation, but not perspective. Parallel lines remain parallel, and relative distances are preserved.

When you track using perspective corner-pinning, you simultaneously track four points in the source footage. When applied to the target footage, the Corner Pin effect uses the movement of the four points to distort the layer, simulating changes in perspective.

You'll attach an animation to a computer monitor using perspective corner-pinning. The effect is similar to the [Lesson 7](#) project, but you'll use a different technique. If you haven't already watched the sample movie for this exercise, do so now.

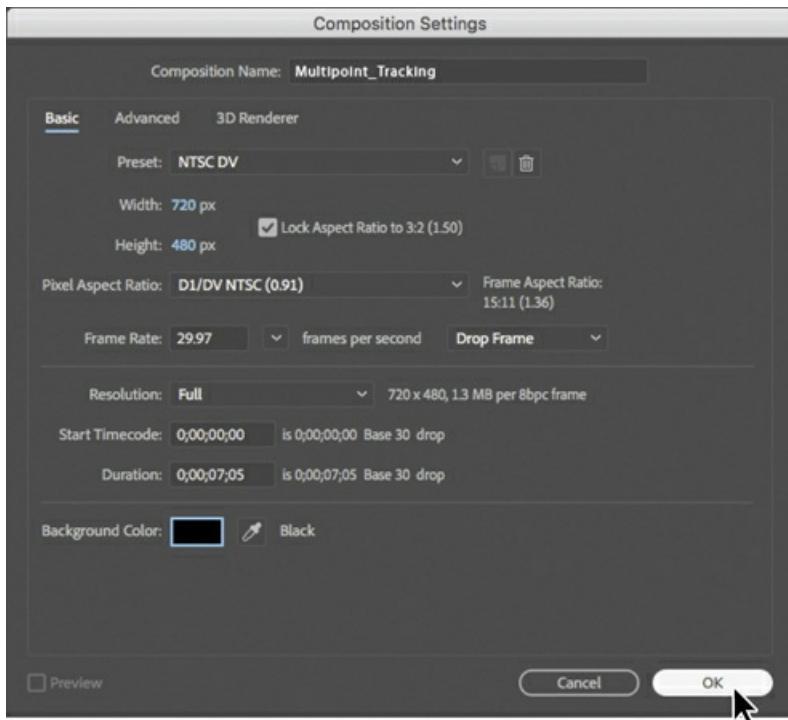
## Setting up the project

Start by launching After Effects and creating a new project.

1. If it's not already open, start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences, and click New Project in the Home window.

After Effects opens to display an empty, untitled project.

2. Choose File > Save As > Save As.
3. In the Save As dialog box, navigate to the Lessons/Lesson14/Finished\_Projects folder.
4. Name the project **Lesson14\_Multipoint.aep**, and then click Save.
5. Double-click an empty area of the Project panel to open the Import File dialog box, and then navigate to the Lessons/Lesson14/Assets folder.
6. Ctrl-click (Windows) or Command-click (macOS) both the majorspoilers.mov and multipoint\_tracking.mov files, and then click Import or Open.
7. Press Ctrl+N (Windows) or Command+N (macOS) to create a new composition.
8. In the Composition Settings dialog box, do the following, and then click OK:
  - Type **Multipoint\_Tracking** in the Composition Name field.
  - Choose NTSC DV from the Preset menu.
  - Set the Duration to **7:05**—the length of the majorspoilers.mov file.

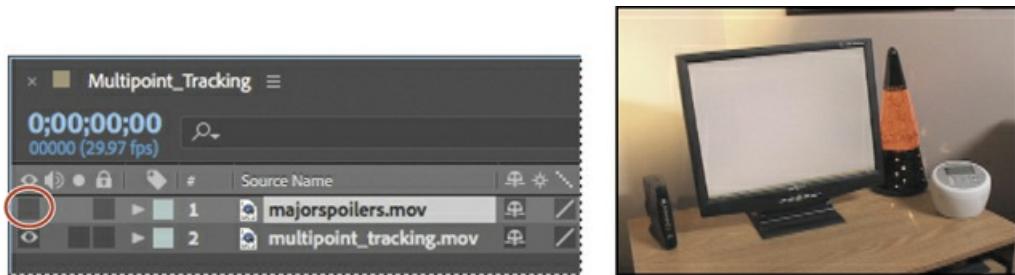


9. Drag the multipoint\_tracking.mov item from the Project panel to the Timeline panel. Manually preview the footage, which is shaky because it was shot with a handheld camera.

Because you're positioning the majorspoilers.mov layer on the computer monitor, it will be fairly easy to place tracking markers on the flat plane. By default, the tracker tracks by luminance, so you will use the areas around the screen that have high contrast differences for tracking.

10. Press the Home key or move the current-time indicator to the beginning of the time ruler.
11. Drag the majorspoilers.mov footage item from the Project panel to the Timeline panel, placing it at the top of the layer stack.
12. To make it easier to place the tracking points, turn off the Video switch for the

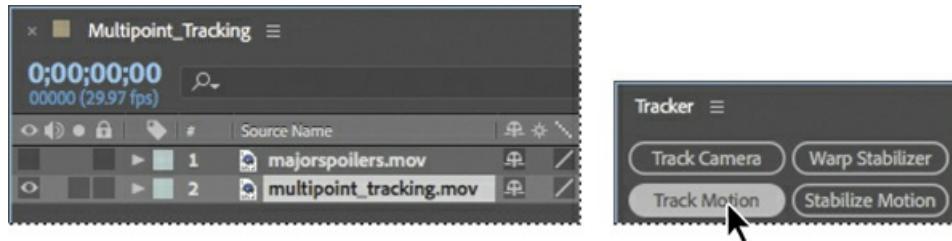
majorspoilers.mov layer in the Timeline panel.



## Positioning the track points

You're ready to add the track points to the multipoint\_tracking.mov layer.

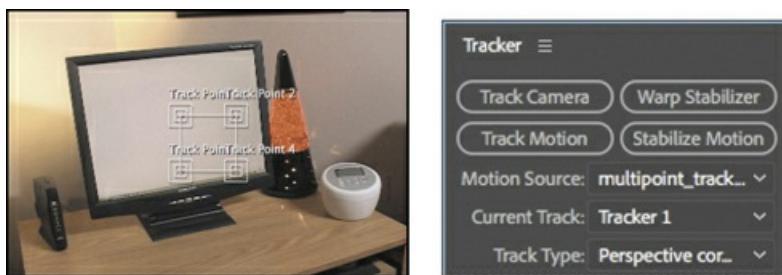
1. Select the multipoint\_tracking.mov layer in the Timeline panel.
2. Choose Window > Tracker to open the Tracker panel, if it isn't open.
3. In the Tracker panel, choose multipoint\_tracking.mov from the Motion Source menu.
4. Select the multipoint\_tracking.mov layer again, and then click Track Motion.



The desk scene opens in the Layer panel, with a track point indicator in the center of the image. However, you will be tracking four points in order to attach the animated movie to the computer screen.

5. Choose Perspective Corner Pin from the Track Type menu.

Three more track point indicators appear in the Layer panel.



6. Drag the track points to four different high-contrast areas of the image. The four corners of the computer screen provide excellent contrast. Use the image below as a guide. (Because the areas of high contrast are also where you want to attach the majorspoilers layer, you don't need to move the attach points.)



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### ► Tip

Refer to the sidebar “[Moving and resizing the track points](#)” on page 350 for help moving the track point regions.

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## Applying the multipoint tracker

You’re ready to analyze the data and apply the tracker.

1. Click the Analyze Forward button (▶) in the Tracker panel. When the analysis is complete, click the Apply button to calculate the tracking.
2. Notice the results in the Timeline panel: You can see the Corner Pin and Position property keyframes for the majorspoilers layer and the track point data for the motion\_tracking layer.
3. Make the majorspoilers layer visible again, move the current-time indicator to the beginning of the timeline, and preview the movie to see the results of the tracker.
4. When you’re done watching the preview, press the spacebar to stop playback.

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### ● Note

If the composition doesn’t appear in the Composition panel, click in the Timeline window to move the current-time indicator and refresh the display.

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If you don’t like the results, return to the Tracker panel, choose multipoint\_tracking.mov from the Motion Source menu, click the Reset button, and try again. With practice, you will become adept at identifying good feature regions.

5. Hide the layer properties to keep the Timeline panel neat, and choose File > Save to save your work.
6. Choose File > Close Project.

**Mocha AE CC**

In many cases, you'll get better and more accurate tracking results using the Mocha AE CC plug-in from Boris FX to track points in video. To track using Mocha, choose Animation > Track In Mocha. You can access the full Mocha interface by choosing Effect > Boris FX Mocha > Mocha AE CC and launching Mocha AE CC.

One advantage of Mocha is that you don't have to accurately place tracking points to obtain a perfect track. Rather than using tracking points, Mocha uses a planar tracker, which attempts to track an object's translation, rotation, and scaling data based on the movement of a user-defined plane. Planes provide more detail to the computer than is possible with single-point and multipoint tracking tools.

When you work with Mocha, you need to identify planes in a clip that coincide with movement you want to track. Planes don't have to be tabletops or walls. For example, if someone is waving goodbye, you can use their upper and lower limbs as two planes. After you track the planes, you can export the tracking data for use in After Effects.

To learn more about Mocha, launch Mocha AE CC, and choose Help > Help.

## Creating a particle simulation

After Effects includes several effects that do an excellent job of creating particle simulations. Two of them—CC Particle Systems II and CC Particle World—are based on the same engine. The major difference between the two is that Particle World enables you to move the particles in 3D space rather than in a 2D layer.

In this exercise, you'll learn how to use the CC Particle Systems II effect to create a supernova that could be used as the opening of a science program or as a motion background. If you haven't already watched the sample movie for this exercise, do so now before continuing.

## Setting up the project

Start by launching After Effects and creating a new composition.

1. If it's not already open, start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences, and click New Project in the Home window.

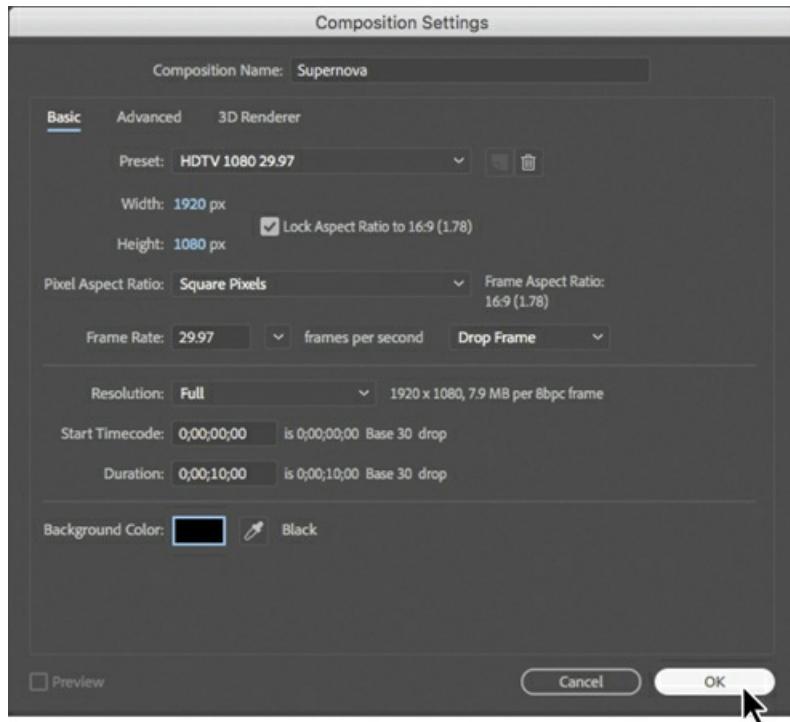
After Effects opens to display an empty, untitled project.

2. Choose File > Save As > Save As.
3. In the Save As dialog box, navigate to the Lessons/Lesson14/Finished\_Projects folder.
4. Name the project **Lesson14\_Particles.aep**, and then click Save.

You don't need to import any footage items for this exercise. However, you do need to create the composition.

5. Click New Composition in the Composition panel.
6. In the Composition Settings dialog box, do the following, and then click OK:

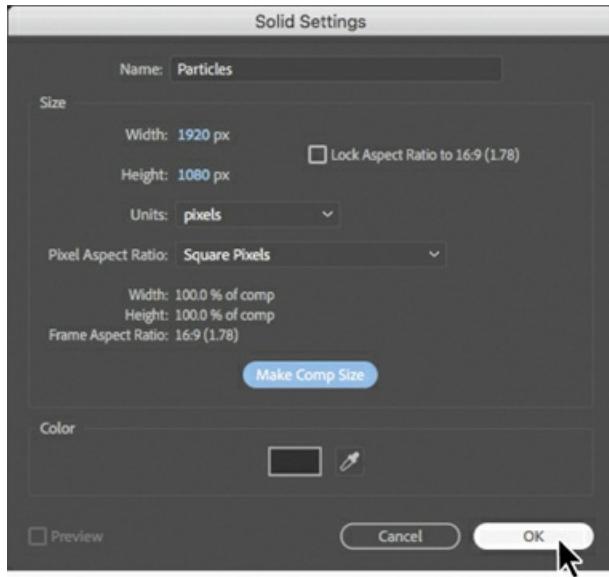
- Type **Supernova** in the Composition Name field.
- Choose HDTV 1080 29.97 from the Preset pop-up menu.
- Set the Duration to **10:00**.



## Creating a particle system

You will build the particle system from a solid layer, so you'll create that next.

1. Choose Layer > New > Solid to create a new solid layer.
2. In the Solid Settings dialog box, type **Particles** in the Name box.
3. Click Make Comp Size to make the layer the same size as the composition. Then click OK.



## Understanding Particle Systems II properties

Particle systems have a unique vocabulary. Some of the key settings are explained here for your reference. They're listed in the order in which they appear (top to bottom) in the Effect Controls panel.

**Birth Rate** Controls the number of particles generated per second. The value itself is arbitrary and does not equal the actual number of particles being generated. However, the higher the number, the more densely packed the particles become.

**Longevity** Determines how long the particles are visible.

**Producer Position** Controls the center point or origin of the particle system. The position is set based on the x, y coordinates. All particles emanate from this single point. You can control the size of the producer by making adjustments to the x and y radius settings. The higher these values, the larger the producer point will be. A high x value and a y value of zero (0) result in a line.

**Velocity** Controls the speed of particles. The higher the number, the faster the particles move.

**Inherent Velocity %** Determines how much of the velocity is passed along to the particles when the Producer Position is animated. A negative value causes the particles to move in the opposite direction.

**Gravity** Determines how fast particles fall. The higher the value, the faster the particles fall. A negative value causes particles to rise.

**Resistance** Simulates particles interacting with air or water, slowing over time.

**Direction** Determines which direction the particles flow. Use with the Direction Animation type.

**Extra** Introduces randomness into the movement of the particles.

**Birth/Death Size** Determines the size of the particles when they are created and when they expire.

**Opacity Map** Controls opacity changes for the particle over its lifetime.

**Color Map** Use with the Birth and Death colors to shade the particles over time.

4. With the Particles layer selected in the Timeline panel, choose Effect > Simulation > CC Particle Systems II.
5. Go to 4:00 to see the particle system.

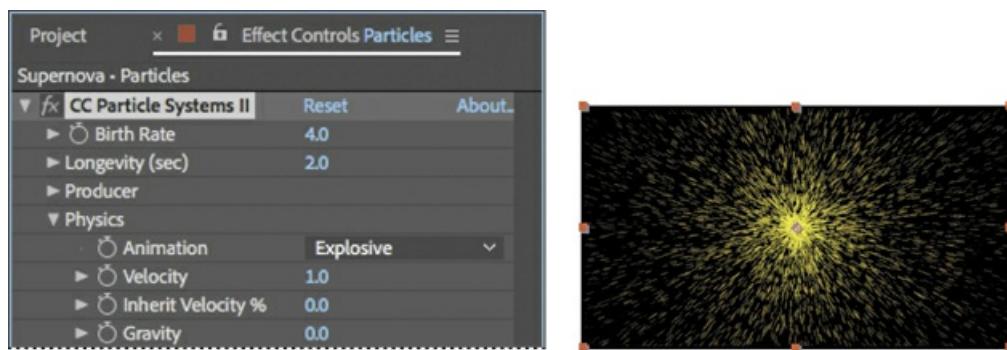


A large stream of yellow particles appears in the Composition panel.

## Customizing the particle effect

You will turn this stream of particles into a supernova by customizing the settings in the Effect Controls panel.

1. Expand the Physics property group in the Effect Controls panel. The Explosive Animation setting works fine for this project, but instead of the particles falling down, you want them to flow out in all directions, so change the Gravity value to **0.0**.



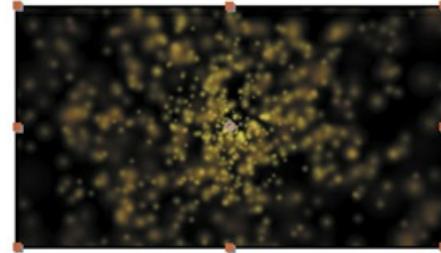
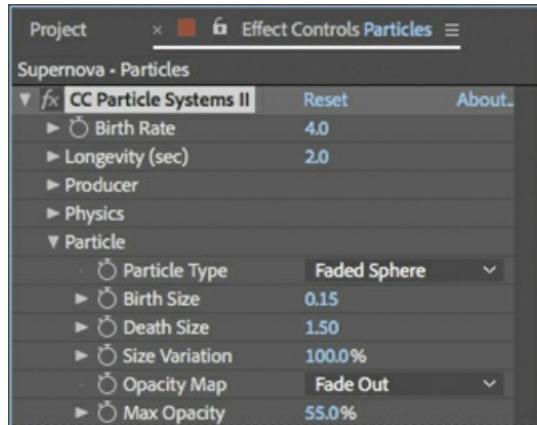
2. Hide the Physics property group, and expand the Particle property group. Then choose Faded Sphere from the Particle Type menu.

Now the particles look intergalactic. Don't stop there, though.

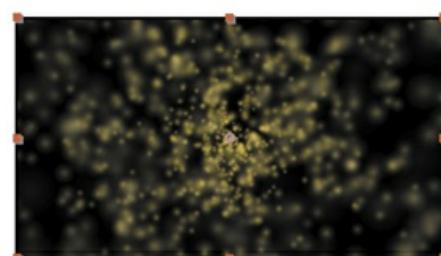
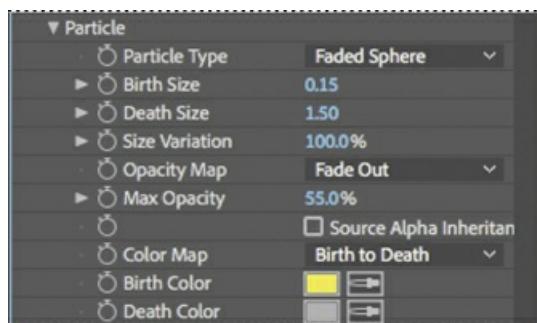
3. Change the Death Size to **1.50**, and increase the Size Variation to **100%**.

This allows the particles to change birth size randomly.

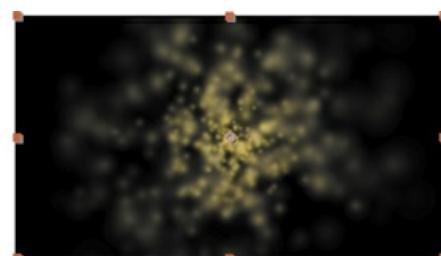
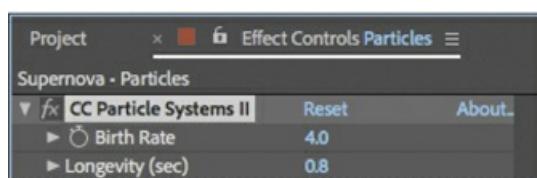
4. Reduce the Max Opacity to **55%** to make the particles semitransparent.



5. Click the Birth Color swatch, and change the color to R=255, G=200, B=50 to give the particles a yellow hue at birth.
6. Click the Death Color swatch, and change the color to R=180, G=180, B=180 to give the particles a light gray hue as they fade out.



7. To keep the particles from staying onscreen too long, decrease the Longevity value to 0.8 seconds.



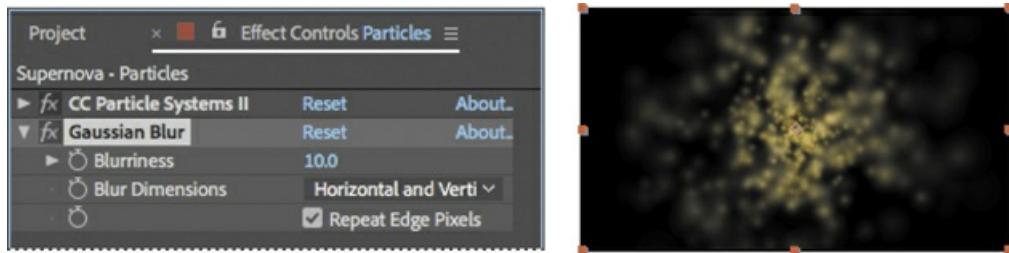
### ● Note

Even though they're at the top of the Effect Controls panel, it is often easier to adjust the Longevity and Birth Rate settings after you have set the other particle properties.

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The Faded Sphere particle type softens the look, but the particle shapes are still too sharply defined. You will fix that by blurring the layer to blend the particles with one another.

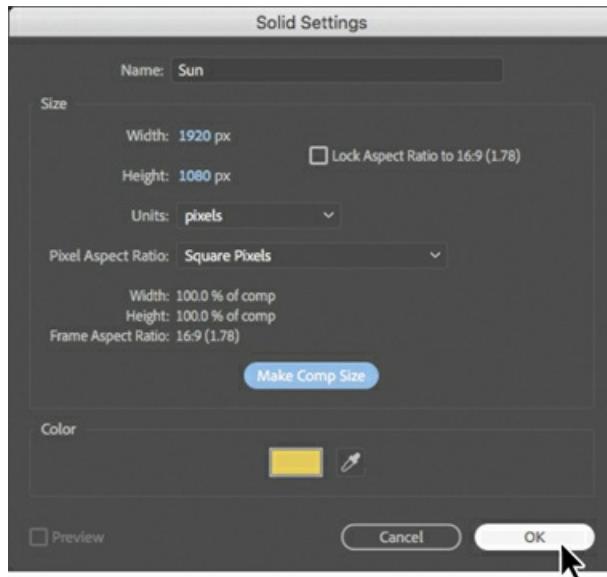
8. Hide the CC Particle Systems II effect properties.
9. Choose Effect > Blur & Sharpen > Gaussian Blur.
10. In the Gaussian Blur area of the Effect Controls panel, increase the Blurriness value to **10**. Then select Repeat Edge Pixels to keep the particles from being cropped at the edge of the frame.



## Creating the sun

You will now create a bright halo of light that will go behind the particles.

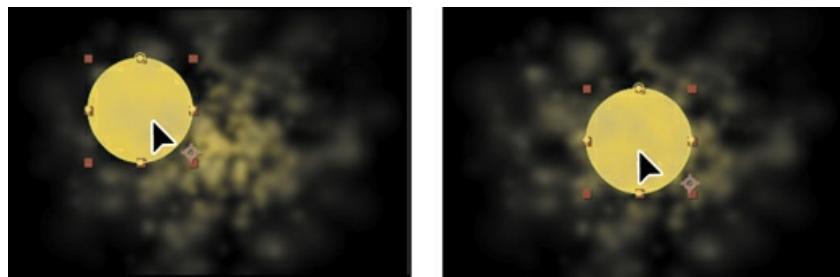
1. Go to 7:00.
2. Press Ctrl+Y (Windows) or Command+Y (macOS) to create a new solid layer.
3. In the Solid Settings dialog box, do the following:
  - Type **Sun** in the Name box.
  - Click Make Comp Size to make the layer the same size as the composition.
  - Click the color swatch, and make the layer the same yellow as the Birth Color of the particles (**255, 200, 50**).
  - Click OK to close the Solid Settings dialog box.



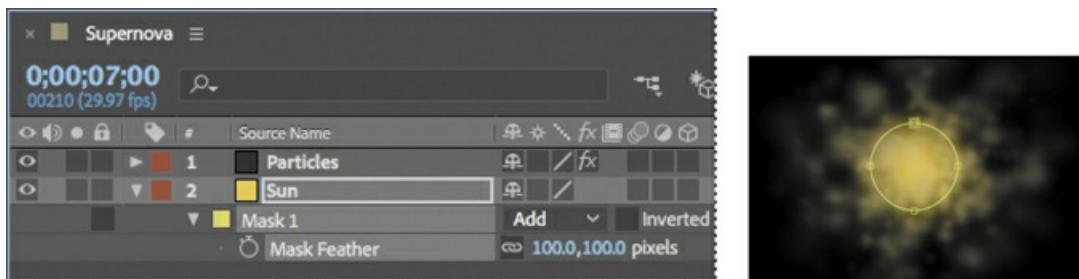
4. Drag the Sun layer below the Particles layer in the Timeline panel.
5. Select the Ellipse tool (●), which is hidden behind the Rectangle tool (■) or the Star tool (★) in the Tools panel, and Shift-drag in the Composition panel to draw a circle with a radius of roughly 100 pixels, or one-fourth the width of the composition. You've created a

mask.

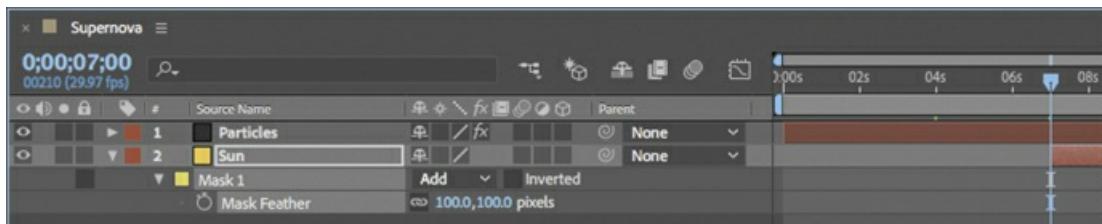
- Using the Selection tool (►), drag the mask shape to the center of the Composition panel.



- With the Sun layer selected in the Timeline panel, press the F key to reveal its Mask Feather property. Increase the Mask Feather amount to **100, 100** pixels.



- Press Alt+[ (Windows) or Option+[ (macOS) to set the In point of the layer to the current time.

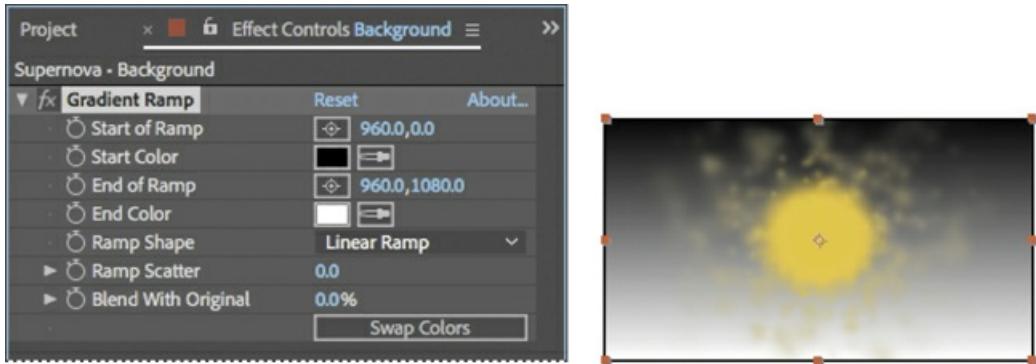


- Hide the properties for the Sun layer.

## Lighting the darkness

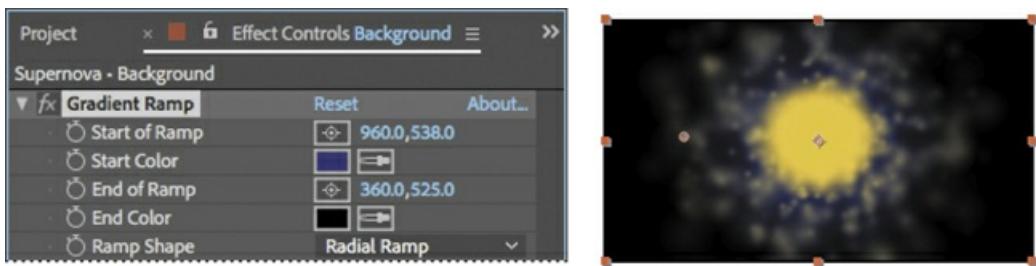
Since the sun is bright, it should illuminate the surrounding darkness.

- Make sure the current-time indicator is still at 7:00.
- Press Ctrl+Y (Windows) or Command+Y (macOS) to create a new solid layer.
- In the Solid Settings dialog box, name the layer **Background**, click the Make Comp Size button to make the layer the same size as the composition, and then click OK to create the layer.
- In the Timeline panel, drag the Background layer to the bottom position in the layer stack.
- With the Background layer selected in the Timeline panel, choose Effect > Generate > Gradient Ramp.



The Gradient Ramp effect creates a color gradient, blending it with the original image. You can create linear ramps or radial ramps, and vary the position and colors of the ramp over time. Use the Start Of Ramp and End Of Ramp settings to specify the start and end positions. Use the Ramp Scatter setting to disperse the ramp colors and eliminate banding.

6. In the Gradient Ramp area of the Effect Controls panel, do the following:
  - Change Start Of Ramp to **960, 538** and End Of Ramp to **360, 525**.
  - Choose Radial Ramp from the Ramp Shape menu.
  - Click the Start Color swatch, and set the start color to dark blue (R=0, G=25, B=135).
  - Set the End Color to black (R=0, G=0, B=0).



7. Press Alt+[ (Windows) or Option+[ (macOS) to set the In point of the layer to the current time.

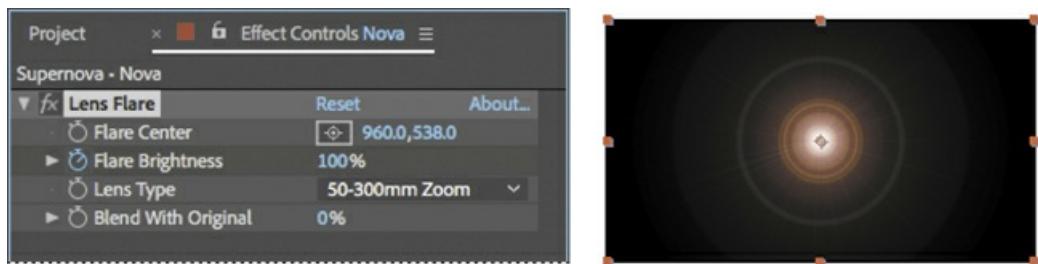
## Adding a lens flare

To tie all the elements together, you'll add a lens flare to simulate an explosion.

1. Press the Home key or move the current-time indicator to the beginning of the time ruler.
2. Press Ctrl+Y (Windows) or Command+Y (macOS) to create a new solid layer.
3. In the Solid Settings dialog box, name the layer **Nova**, click the Make Comp Size button to make the layer the same size as the composition, set the Color to black (R=0, G=0, B=0), and then click OK.
4. Drag the Nova layer to the top of the layer stack in the Timeline panel. Then, with the Nova layer selected, choose Effect > Generate > Lens Flare.



5. In the Lens Flare area of the Effect Controls panel, do the following:
  - Change Flare Center to **960, 538**.
  - Make sure 50–300mm Zoom is selected in the Lens Type menu.
  - Decrease Flare Brightness to **0%**, and then click the Flare Brightness stopwatch icon (⌚) to create an initial keyframe.
6. Go to 0:10.
7. Increase the Flare Brightness to **240%**.
8. Go to 1:04, and decrease the Flare Brightness to **100%**.



9. With the Nova layer selected in the Timeline panel, press the U key to see the animated Lens Flare property.

## About high dynamic range (HDR) footage

After Effects supports high dynamic range (HDR) color.

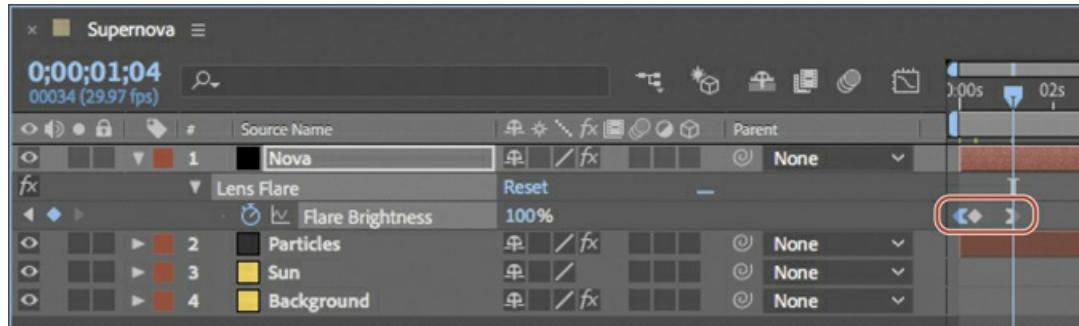
The dynamic range (ratio between dark and bright regions) in the physical world far exceeds the range of human vision and of images that are printed or displayed on a monitor. But while human eyes can adapt to very different brightness levels, most cameras and computer monitors can capture and reproduce only a limited dynamic range. Photographers, motion-picture artists, and others working with digital images must be selective about what's important in a scene, because they're working with a limited dynamic range.

HDR footage opens up a world of possibilities, because it can represent a very wide dynamic range through the use of 32-bit floating-point numeric values. Floating-point numeric representations allow the same number of bits to describe a much larger range of values than integer (fixed-point) values. HDR values can contain brightness levels, including objects as bright as a candle flame or the sun, that far exceed those in 8-bit-per-channel (bpc) or 16-bpc (non-floating-point) mode. Lower dynamic range 8-bpc and 16-bpc modes can represent RGB levels only from black to white, which represents an extremely

small segment of the dynamic range in the real world.

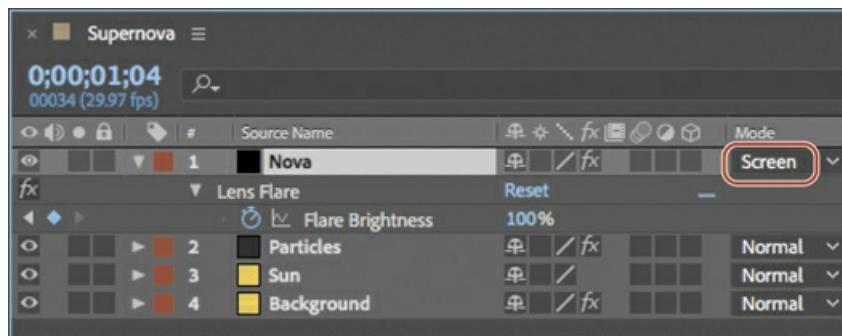
After Effects supports HDR images in a variety of ways. For example, you can create 32-bpc projects to work with HDR footage, and you can adjust the exposure, or the amount of light captured in an image, when working with HDR images in After Effects. For more information about support in After Effects for HDR images, see After Effects Help.

10. Right-click or Control-click the ending Flare Brightness keyframe, and choose Keyframe Assistant > Easy Ease In.
11. Right-click or Control-click the beginning Flare Brightness keyframe, and choose Keyframe Assistant > Easy Ease Out.



Finally, you need to make the layers under the Nova layer visible in the composition.

12. Press F2 to deselect all layers, and choose Columns > Modes from the Timeline panel menu. Then choose Screen from the Mode menu for the Nova layer.



13. Preview the movie. When you're done, press the spacebar to stop the preview.
14. Choose File > Save, and then choose File > Close Project.

## Retiming playback using the Timewarp effect

The Timewarp effect in After Effects gives you precise control over a wide range of parameters when changing the playback speed of a layer, including interpolation methods, motion blur, and source cropping to eliminate unwanted artifacts.

In this exercise, you will use the Timewarp effect to change the speed of a clip for a dramatic slow-motion playback. If you haven't already watched the sample movie for this exercise, do so now.

## Setting up the project

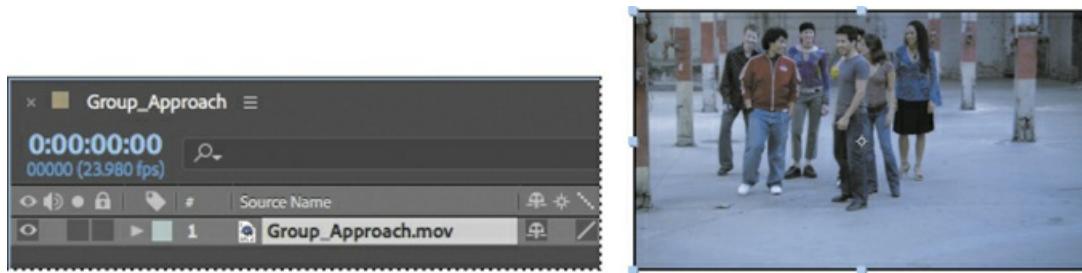
Start by launching After Effects and creating a new project.

1. If After Effects isn't open, start it, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS) to restore default preferences settings. When prompted, click OK to delete your preferences, and click New Project in the Home window.

After Effects opens to display an empty, untitled project.

2. Choose File > Save As > Save As.
3. In the Save As dialog box, navigate to the Lessons/Lesson14/Finished\_Projects folder.
4. Name the project **Lesson14\_Timewarp.aep**, and then click Save.
5. Click New Composition From Footage in the Composition panel. Then navigate to the Lessons/Lesson14/Assets folder on your hard disk, select the Group\_Approach.mov, and click Import or Open.

After Effects creates a new composition named for the source file, and displays it in the Composition and Timeline panels.



6. Choose File > Save to save your work.

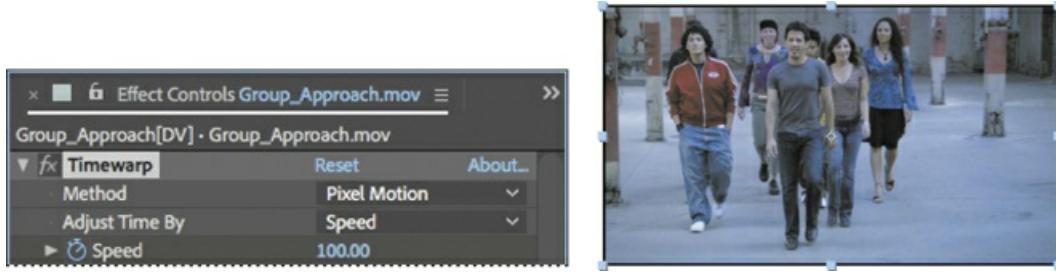
## Using Timewarp

In the source footage, a group of young people approaches the camera at a steady pace. At around 2 seconds, the director would like the motion to begin to slow down to 10%, and then ramp back up to full speed at 7:00.

1. With the Group\_Approach layer selected in the Timeline panel, choose Effect > Time > Timewarp.
2. In the Timewarp area of the Effect Controls panel, make sure Pixel Motion is selected in the Method menu and Speed is selected in the Adjust Time By menu.

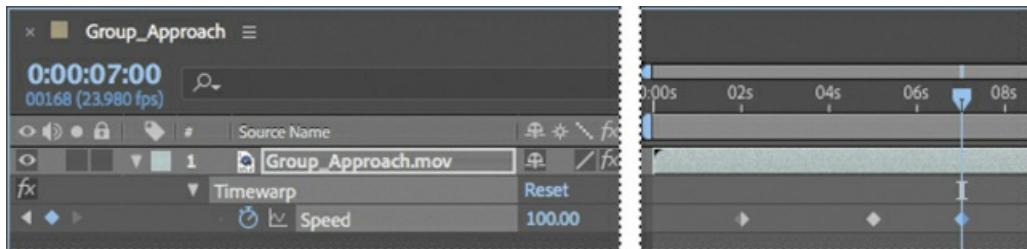
With Pixel Motion selected, Timewarp creates new frames by analyzing the pixel movement in nearby frames and creating motion vectors. The Speed option controls the time adjustment by percentage rather than by a specific frame.

3. Go to 2:00.
4. In the Effect Controls panel, set the Speed to **100**, and click the stopwatch (⌚) to set a keyframe.



This tells Timewarp to keep the speed of the clip at 100% until the 2-second mark.

5. With the Group\_Approach layer selected in the Timeline panel, press the U key to see the animated Timewarp Speed property.
6. Go to 5:00, and set the Speed to **10**. After Effects adds a keyframe.
7. Go to 7:00, and set the Speed to **100**. After Effects adds a keyframe.



8. Press the Home key or move the current-time indicator to the beginning of the time ruler, and then watch a preview of the effect.

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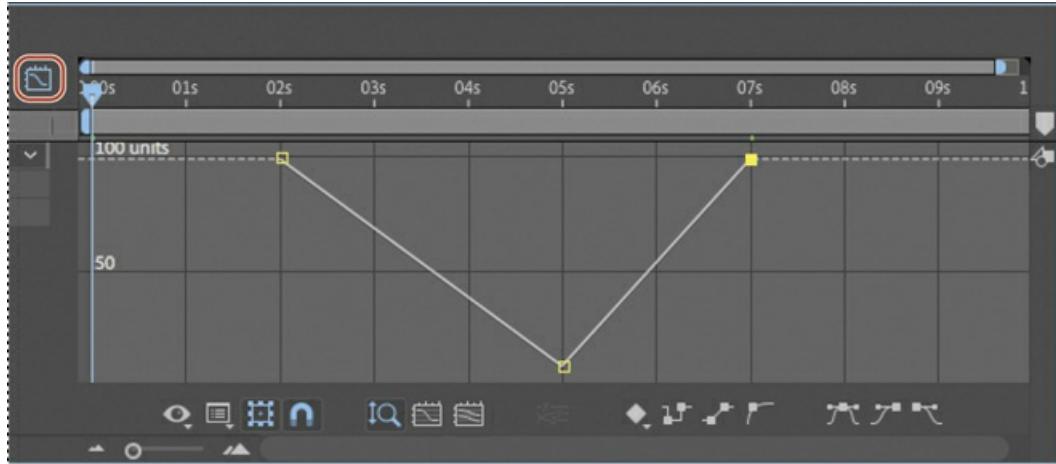
### Note

Be patient. The first time through, After Effects is caching information in RAM. second time it plays, playback will be more accurate.

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The speed adjustments are rather abrupt—not the smooth, slow-motion curve you would expect to see in a professional effect. This is because the keyframes are linear instead of curved. You'll fix that next.

9. Press the spacebar to stop playback when you're ready.
10. Click the Graph Editor button in the Timeline panel to display the Graph Editor instead of the layer bars. Make sure the Speed property name for the Group\_Approach layer is selected. The Graph Editor displays its graph.



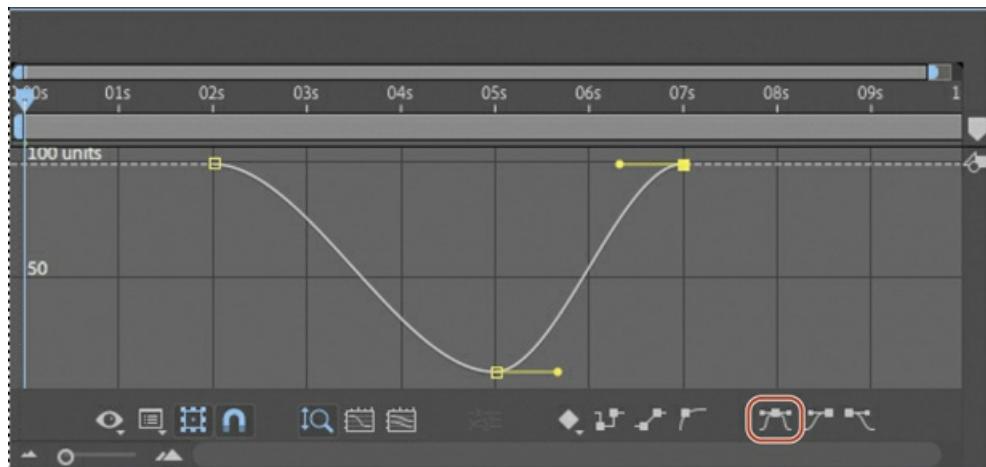
- 11.** Click to select the first Speed keyframe (at 2:00), and then click the Easy Ease icon () at the bottom of the Graph Editor.

#### ► Tip

Close columns in the Timeline panel to see more icons in the Graph Editor. You can also apply an Easy Ease adjustment by pressing the F9 key.

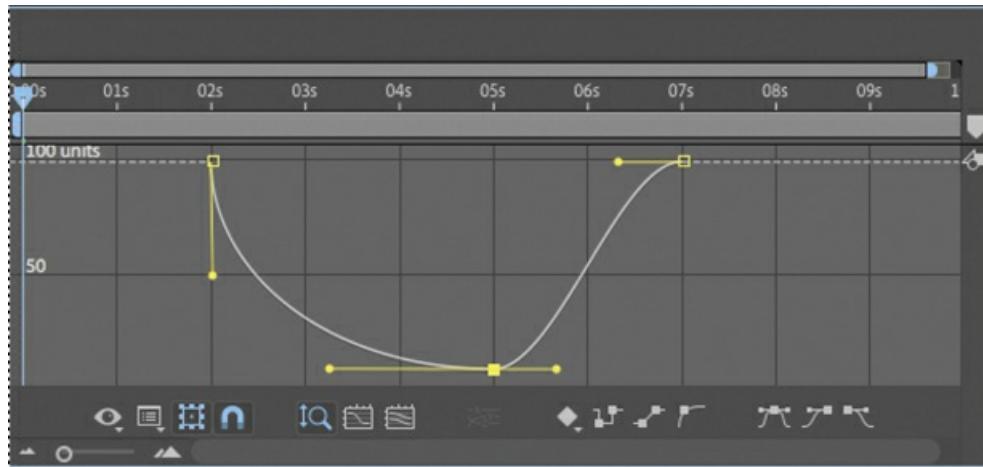
This adjusts the influence into and out of the keyframe to smooth out sudden changes.

- 12.** Repeat step 11 for the other two Speed keyframes in the motion graph, at 5:00 and 7:00.



The motion graph is now smoother, but you can tweak it even more by dragging the Bezier handles.

- 13.** Using the Bezier handles for the keyframes at 2:00 and 5:00, adjust the curve so that it resembles the following image.



### ● Note

If you need a refresher on using Bezier handles, see [Lesson 7, “Working with Masks.”](#)

- 14.** Preview the movie again. This time, the slow-motion Timewarp effect looks professional.
- 15.** Choose File > Save to save the project, and then choose File > Close Project.

You've now experimented with some of the advanced features in After Effects, including motion stabilization, motion tracking, particle systems, and the Timewarp effect. To render and export any or all of the projects you completed in this lesson, see [Lesson 15, “Rendering and Outputting,”](#) for instructions.

### Review questions

- 1** What is Warp Stabilizer VFX, and when do you need to use it?
- 2** Why might drifting occur when you're tracking an image?
- 3** What is the birth rate in a particle effect?
- 4** What does the Timewarp effect do?

### Review answers

- 1** Shooting footage using a handheld camera typically results in shaky shots. Unless this look is intentional, you will want to stabilize the shots to eliminate unwanted motion. Warp Stabilizer VFX in After Effects analyzes the movement and rotation of the target layer, and then makes adjustments to it. When played back, the motion appears smooth, because the layer itself moves incrementally to offset the unwanted motion. You can change the way Warp Stabilizer VFX crops, scales, and performs other adjustments by modifying settings for the effect.
- 2** Drifting occurs when the feature region loses the feature that's being tracked. As an image moves in a shot, the lighting, surrounding objects, and angle of the object can change, making a once-distinct feature unidentifiable at the subpixel level. Even with careful planning and practice, the feature region often drifts away from the desired feature. Readjusting the feature

and search regions, changing the tracking options, and trying again are all standard procedures in digital tracking.

- 3 The birth rate in a particle effect determines how often new particles are created.
- 4 The Timewarp effect gives you precise control over a wide range of parameters to change the playback speed of a layer, including interpolation methods, motion blur, and source cropping to eliminate unwanted artifacts.

# 15 Rendering and Outputting

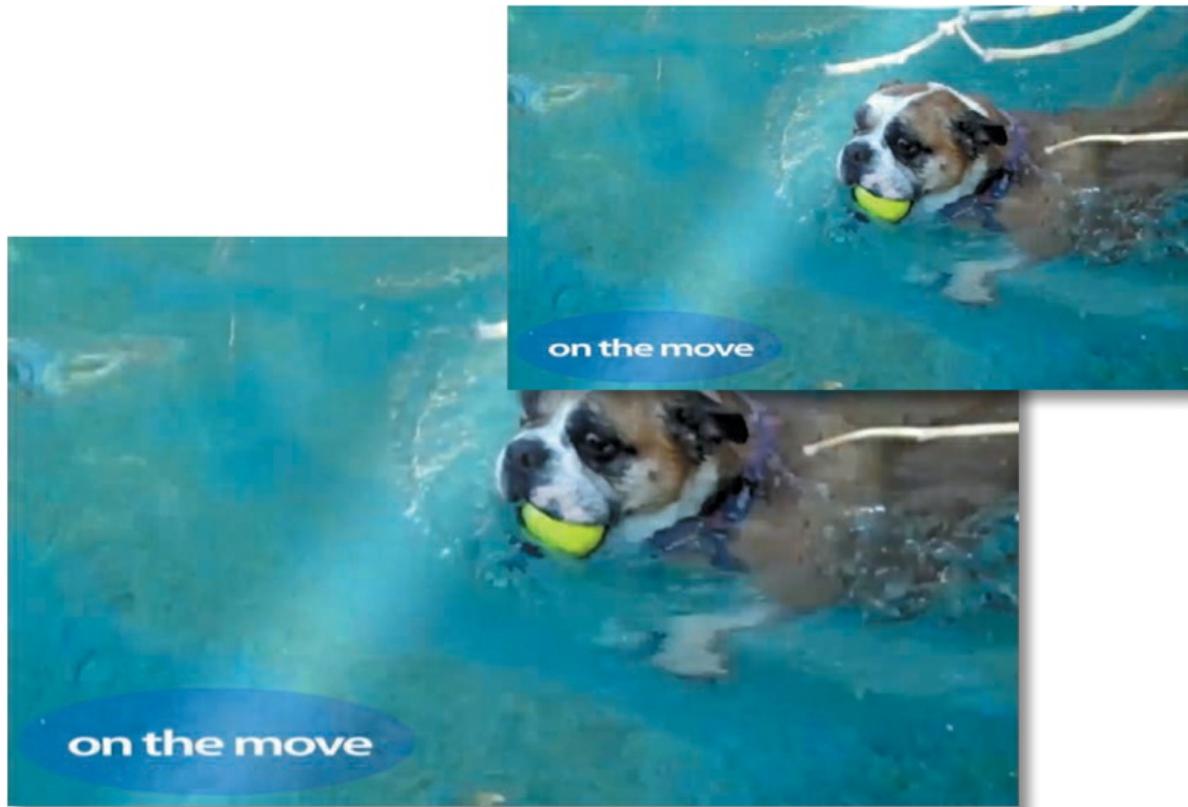
## Lesson overview

In this lesson, you'll learn how to do the following:

- Output movies using the Render Queue.
- Create templates for the Render Queue.
- Output movies using Adobe Media Encoder.
- Select the appropriate compressor for your delivery format.
- Use pixel aspect ratio correction.
- Produce a test version of a composition.
- Create custom encoding presets in Adobe Media Encoder.
- Render and output a web version of the final composition.



The total amount of time required to complete this lesson depends in part on the speed of your processor and the amount of RAM available for rendering. The amount of hands-on time required is less than an hour. Download the project files for this lesson, following the instructions in the Getting Started section under “[Accessing the lesson files and Web Edition](#),” if you haven’t already done so. As you work on this lesson, you’ll preserve the start files. If you need to restore the start files, download them from your Account page.



## WEB

### PROJECT: OUTPUTTING YOUR PROJECT FOR MULTIPLE USES

#### BROADCAST

The success of any project depends on your ability to deliver it in the format you need, whether it's for the web or broadcast output. Using Adobe After Effects and Adobe Media Encoder, you can render and export a final composition in a variety of formats and resolutions.

#### Getting started

This lesson continues from the point at which many of the preceding lessons end: when you're ready to output the final composition. In order to produce several versions of the animation for this lesson, you'll explore options available within the Render Queue panel and Adobe Media Encoder. For this lesson, we provide you with a starting project file that is essentially the final composition from [Lesson 1](#) of this book.

1. Make sure the following files are in the Lessons/Lesson15 folder on your hard disk, or download them from your Account page at [www.peachpit.com](http://www.peachpit.com) now:
  - In the Assets folder: movement.mp3, swimming\_dog.mp4, title.psd
  - In the Start\_Project\_File folder: Lesson15\_Start.aep
  - In the Sample\_Movies folder: Lesson15\_Draft\_RQ.avi, Lesson15\_Draft\_RQ.mov, Lesson15\_Final\_Web.mp4, Lesson15\_HD-test\_1080p.mp4, Lesson15\_Lowres\_YouTube.mp4
2. Open and play the sample movies for [Lesson 15](#), which represent different final versions of

the movie—rendered with different quality settings—that you created in [Lesson 1](#). (If you’re using Windows, watch the Lesson15\_Draft\_RQ.avi movie, and if you’re using macOS, watch the Lesson15\_Draft\_RQ.mov movie.) When you’re done viewing the sample movies, quit Windows Movies & TV or QuickTime Player. You may delete the sample movies from your hard disk if you have limited storage space.

As always, when you begin the lesson, restore the default application settings for After Effects. See “[Restoring default preferences](#)” on page [3](#).

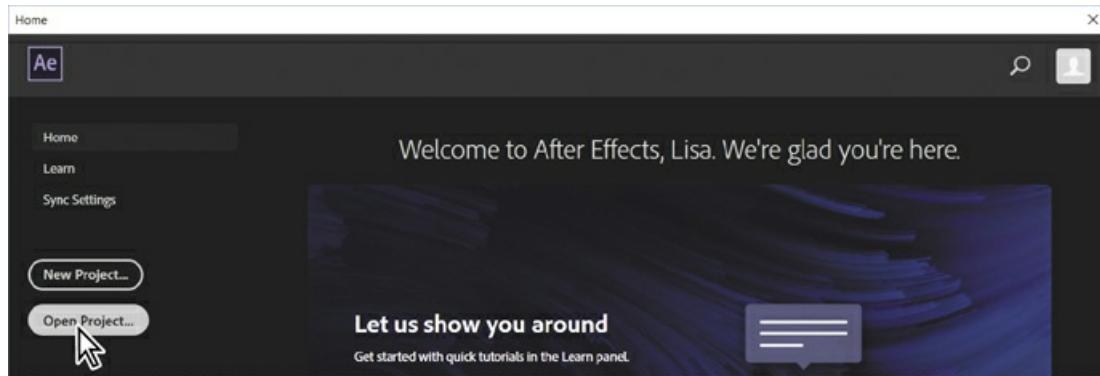
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### ● Note

The Lesson15\_HD\_test\_1080p.mp4 file includes only the first three seconds of the movie.

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3. Start After Effects, and then immediately hold down Ctrl+Alt+Shift (Windows) or Command+Option+Shift (macOS). When prompted, click OK to delete your preferences.
4. Click Open Project in the Home window.



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### ● Note

If you receive an error message about missing layer dependencies (Arial Narrow Regular), click OK.

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5. Navigate to the Lessons/Lesson15/Start\_Project\_File folder, select the Lesson15\_Start.aep file, and click Open.
6. Choose File > Save As > Save As.
7. In the Save As dialog box, navigate to the Lessons/Lesson15/Finished\_Project folder.
8. Name the project **Lesson15\_Finished.aep**, and then click Save.

## About rendering and output

Rendering a composition creates the frames of a movie from all the layers, settings, effects, and

other information that makes up the model for that image. After Effects renders content every time it creates a preview, but this lesson focuses on the rendering process that occurs when you've completed your composition and are ready to share your movie. You can generate a final movie file using the Render Queue panel in After Effects or Adobe Media Encoder. (The Render Queue uses an embedded version of Adobe Media Encoder to encode most movie formats, but doesn't include all the features of the separate application.)

When you use the Render Queue to create your final output, there are two steps to the process: After Effects renders the composition and then encodes the rendered frames into output files. In the Render Queue, the first step is governed by the render settings you've selected, and the second by the selected output module.

Adobe recommends that you use Adobe Media Encoder to create a high-quality movie file that is compressed for the web, DVD, or Blu-ray disc.

## Exporting using the Render Queue

You can export a movie using the Render Queue at any stage in the process—whether you're creating a sample for a client to review, producing a low-res version to check the timing, or ready to create a final high-resolution movie. The settings you choose for each purpose are different, but the process is the same.

You'll export a draft version of the On the Move movie using the Render Queue.

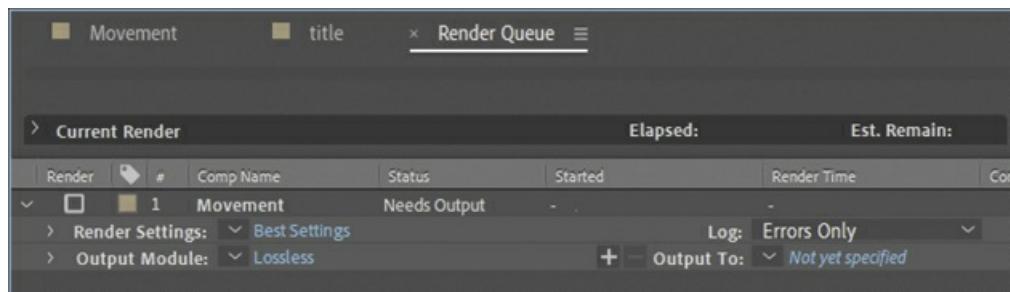
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### ► Tip

Alternatively, you can drag the composition from the Project panel onto the Render Queue panel.

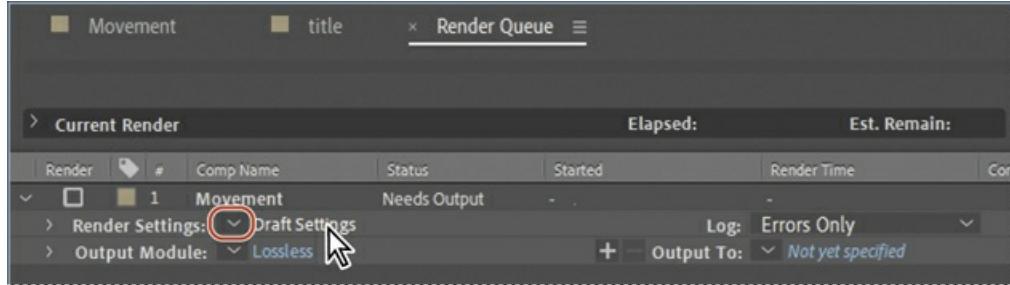
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1. Select the Movement composition in the Project panel, and choose Composition > Add To Render Queue.



After Effects opens the Render Queue panel. The Movement composition is in the queue. Note the default settings in the Render Settings and Output Module pop-up menus; by default, After Effects produces a full-size high-quality movie. You'll change the settings to create a low-resolution test file that will render quickly.

2. Click the arrow to the right of Render Settings, and choose Draft Settings. Then, click the blue words “Draft Settings.”

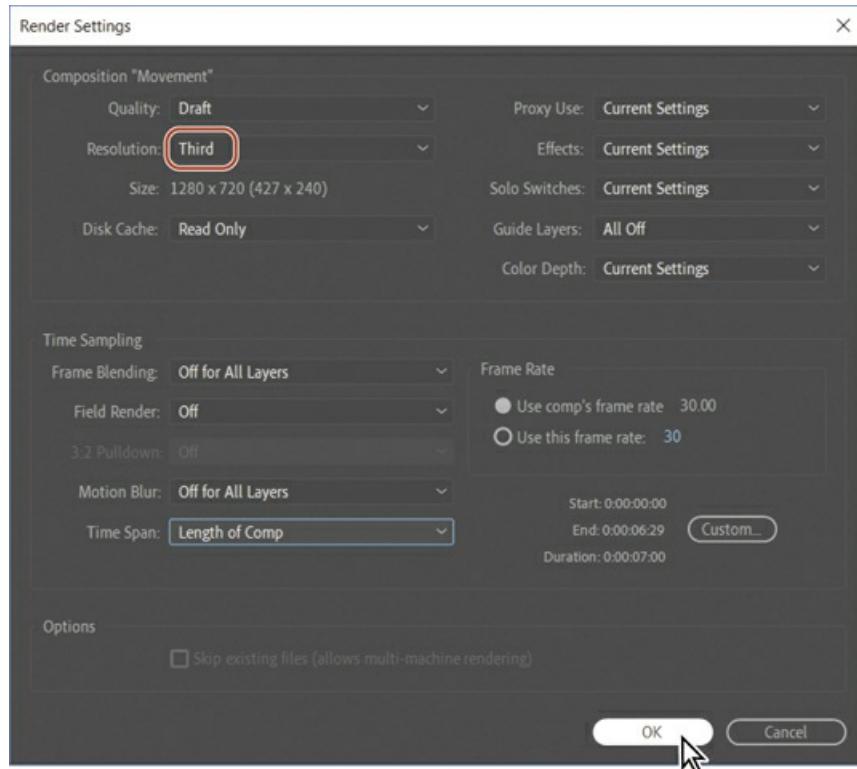


After Effects opens the Render Settings dialog box. You'll use most of the settings preselected in the Draft Settings template, but you'll reduce the resolution and ensure the entire composition is rendered.

- In the Render Settings dialog box, choose Third for Resolution.

When you choose Third, After Effects renders one-ninth of the pixels in the composition: one-third of the rows and one-third of the columns.

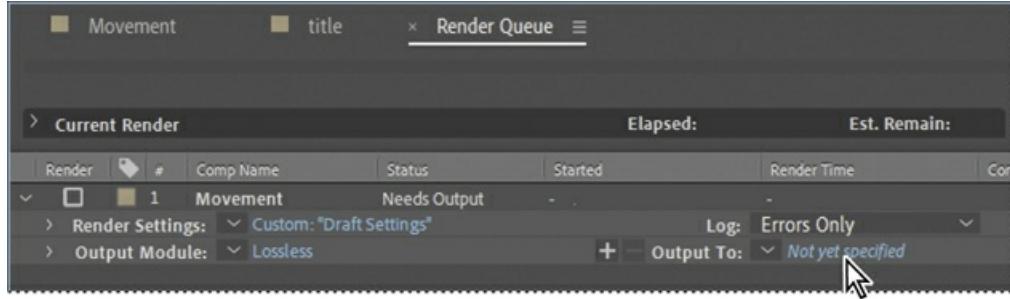
- In the Time Sampling area, choose Length of Comp for Time Span.
- Click OK to close the Render Settings dialog box.



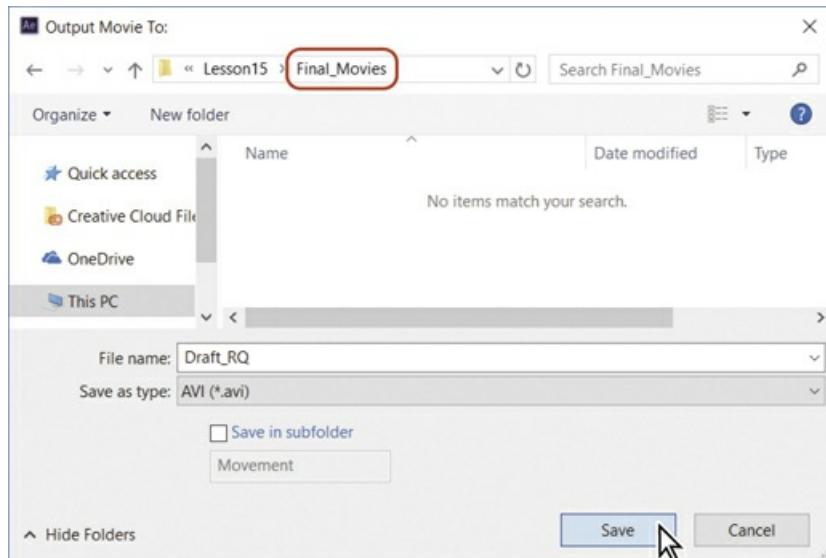
- Choose Lossless from the Output Module pop-up menu, if it's not already selected.

You can make changes to the Output Module settings by clicking the blue text next to Output Module. For now, you'll accept the default settings.

- Click the blue words next to Output To.



8. In the Output Movie To dialog box, locate the Lessons/Lesson15 folder, and create a new folder called **Final\_Movies**:
  - In Windows, click New Folder, and then type the name for the folder.
  - In macOS, click the New Folder button, name the folder, and click Create.
9. Open the Final\_Movies folder, if it's not already open.
10. Name the file **Draft\_RQ.avi** (Windows) or **Draft\_RQ.mov** (macOS), and then click Save to return to the Render Queue panel.



11. Click the Render button in the Render Queue panel.

Panel View	Status	Elapsed Time	Estimated Remaining Time	Control Buttons
Top Panel	Queued	-	-	Render (highlighted)
Bottom Panel	Rendering	5 Seconds	0:00:06.22 (203)	Stop   Pause   Render

After Effects renders the movie. If there were additional movies—or the same movie with

different settings—in the queue, After Effects would render those, too.

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### ● Note

You do not need to render a movie multiple times to export it to multiple formats with the same render settings. You can export multiple versions of the same rendered movie by adding output modules to a render item in the Render Queue panel.

---

12. Navigate to the Lessons/Lesson15/Final\_Movies folder, and then double-click your movie to preview it.

If you need to make any final changes to the movie, reopen the composition and make those adjustments now. Remember to save your work when you finish, and then output the test movie again using the appropriate settings. After examining the test movie and making any necessary changes, you'll proceed with outputting the movie for full-resolution broadcast.

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### ► Tip

It's easy to create an animated GIF from just about any short movie. Just add the composition to the Adobe Media Encoder queue, and choose Animated GIF for the format.

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## Preparing movies for mobile devices

You can create movies in After Effects for playback on mobile devices, such as tablets and smartphones. To render your movie, add the composition to the Adobe Media Encoder encoding queue, and choose an appropriate device-specific encoding preset.

For the best results, consider the limitations of mobile devices as you shoot footage and work with After Effects. For a small screen size, pay careful attention to lighting, and use a lower frame rate. See After Effects Help for more tips.

## Creating templates for the Render Queue

When you output a composition, you can select individual render and output-module settings. However, you can also use templates to apply settings quickly. Templates are presets that streamline the setup process when you render items for the same type of delivery format. After you define templates, they appear in the Render Queue panel on the appropriate pop-up menu (Render Settings or Output Module). Then, when you're ready to render a composition, you can simply select the appropriate template for the delivery format that your job requires, and the

template applies all the settings.

## Creating a render-settings template

You can create render-settings templates for different circumstances. For example, you could create templates for rendering draft copies for review, high-res versions, or different frame rates.

To create a render-settings template, choose **Edit > Templates > Render Settings**. In the **Settings** area of the **Render Settings Template** dialog box, click **New** to create a new template. Then select the appropriate settings for the template. For **Settings Name**, type a name that describes the template's purpose or use (for example, `Test_lowres`). Click **OK** when you've made the changes.

Render-settings templates you've saved are available on the **Render Settings** pop-up menu in the **Render Queue** panel.

## Creating templates for output modules

You can use a similar process to create a template for output-module settings. Each output-module template includes unique combinations of settings appropriate for a specific type of output.

To create a template, choose **Edit > Templates > Output Module** to open the **Output Module Templates** dialog box. In the **Settings** area, click **New** to create a new template. Then select the appropriate settings for the template. Name the template to indicate the output it will generate, and click **OK** to close the dialog box.

Output-module templates you've saved are available on the **Output Module** pop-up menu in the **Render Queue** panel.

## Rendering movies with Adobe Media Encoder

Your movie is ready for final output. Adobe Media Encoder, which is installed when you install After Effects, has the widest selection of codecs available for different delivery formats, including popular video services such as YouTube.

---

### ● Note

If Adobe Media Encoder is not currently installed on your system, install it from Creative Cloud.

---

## Rendering a broadcast-quality movie

First, you'll select settings to render your movie in a quality suitable for broadcast.

---

### ► Tip

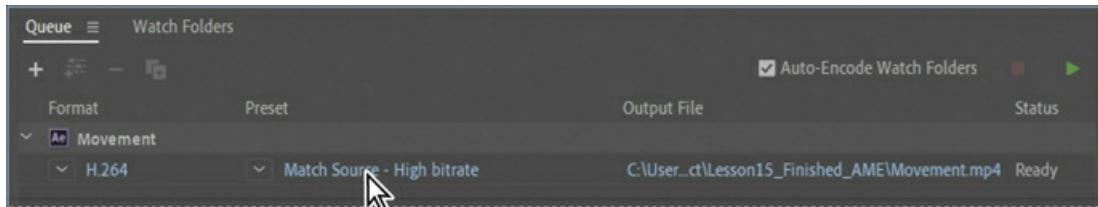
You can also drag a composition into the Render Queue panel, and click Queue in AME to add it to the Adobe Media Encoder queue.

---

1. In the Project panel, select the Movement composition, and choose Composition > Add To Adobe Media Encoder Queue.

After Effects opens Adobe Media Encoder and adds your composition with default render settings. Your default settings may vary from ours.

2. Click the blue link in the Preset column.



Adobe Media Encoder connects to the Dynamic Link server, which may take a few moments.

---

### ► Tip

If you don't need to change anything else in the Export Settings dialog box, you can change the preset using the Preset pop-up menu in the Queue panel.

---

3. When the Export Settings dialog box appears, choose H.264 from the Format menu, and then choose High Quality 1080p HD from the Preset menu.



Rendering the full movie with the High Quality 1080p HD preset may take several minutes. You'll change the settings to render only the first three seconds of the movie so that you can preview the quality. You can change the range rendered using the time ruler at the bottom of the Export Settings dialog box.

## About compression

Compression is essential to reduce the size of movies so that they can be stored, transmitted,

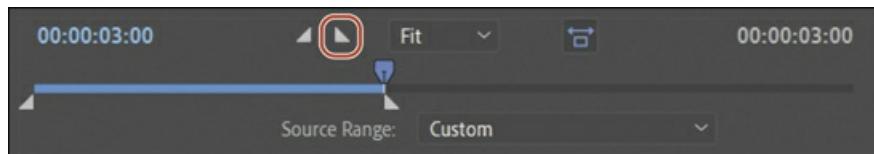
and played back effectively. When exporting or rendering a movie file for playback on a specific type of device at a certain bandwidth, you choose a compressor/decompressor (also known as an encoder/decoder), or *codec*, to compress the information and generate a file that is readable by that type of device at that bandwidth.

A wide range of codecs is available; no single codec is the best for all situations. For example, the best codec for compressing cartoon animation is generally not efficient for compressing live-action video. When compressing a movie file, you can fine-tune it for the best quality playback on a computer, a video playback device, the web, or from a DVD player. Depending on which encoder you use, you may be able to reduce the size of compressed files by removing artifacts that interfere with compression, such as random camera motion and excessive film grain.

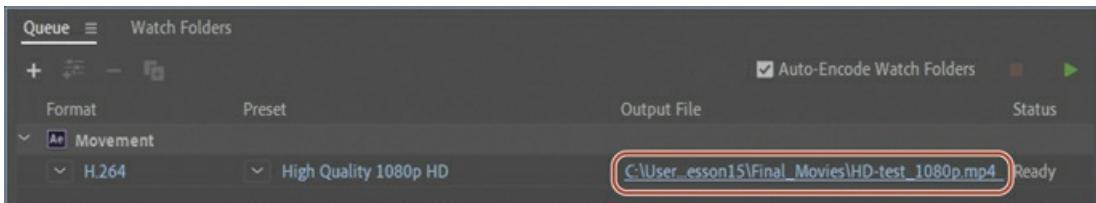
The codec you use must be available to your entire audience. For instance, if you use a hardware codec on a capture card, your audience must have the same capture card installed, or a software codec that emulates it.

For more information about compression and codecs, see After Effects Help.

5. Move the current-time indicator to 3:00, and then click the Set Out Point button (▶) to the left of the Select Zoom Level pop-up menu.



5. Click OK to close the Export Settings dialog box.
6. Click the blue link in the Output File column. Name the movie **HD-test\_1080p.mp4**, and specify the Lessons/Lesson15/Final\_Movies folder. Then click Save or OK.



You're ready to output this movie, but you'll set up a few additional movie options in the queue before you render it.

## Adding another encoding preset to the queue

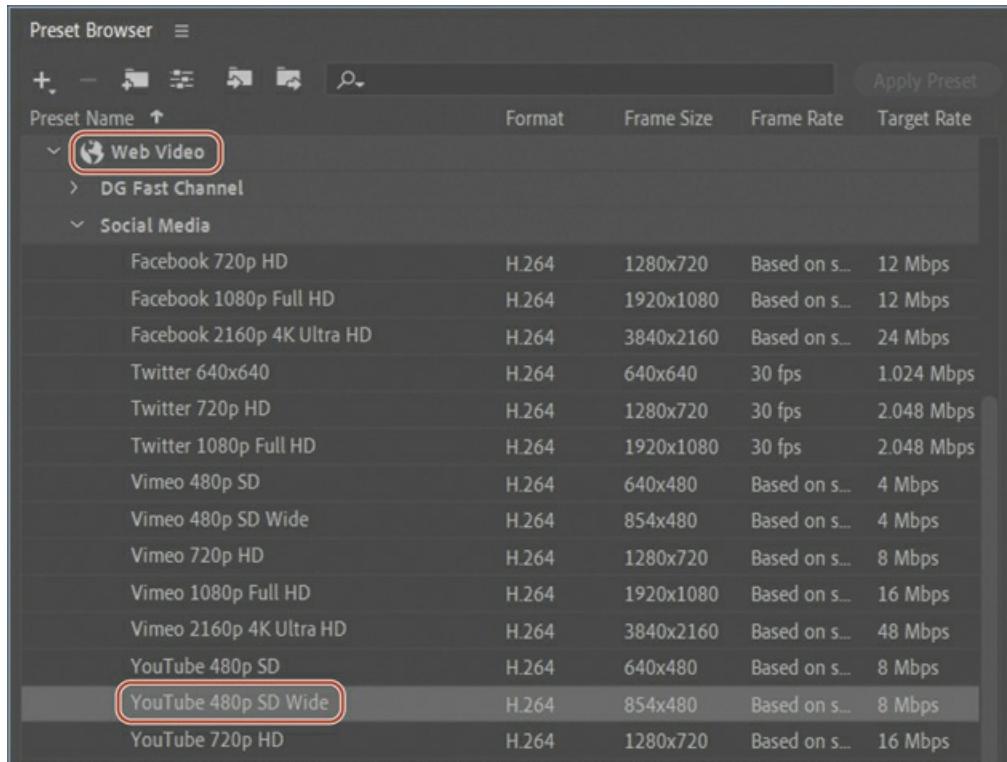
Adobe Media Encoder comes with dozens of built-in presets suitable for output for traditional broadcast, mobile devices, and the web. You'll output a version of your composition ready for posting to YouTube.

---

**Tip**

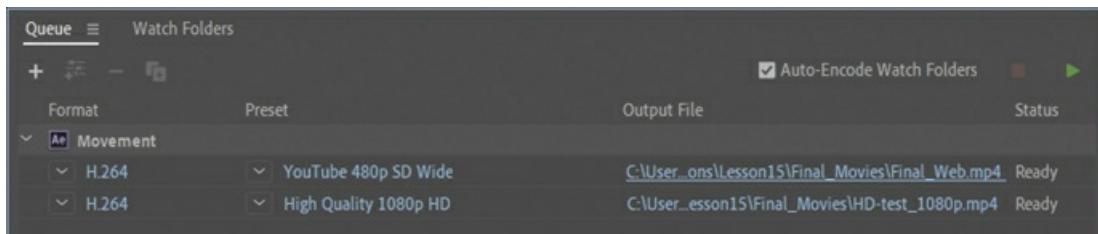
If you render files frequently, consider setting up a “watch folder.” When you place a file in the watch folder, Adobe Media Encoder automatically encodes it using the settings you’ve specified in the Watch Folders panel.

1. In the Preset Browser panel, navigate to Web Video > Social Media > YouTube 480p SD Wide.



2. Drag the YouTube 480p SD Wide preset onto the Movement composition in the Queue panel.

Adobe Media Encoder adds another output item to the queue.



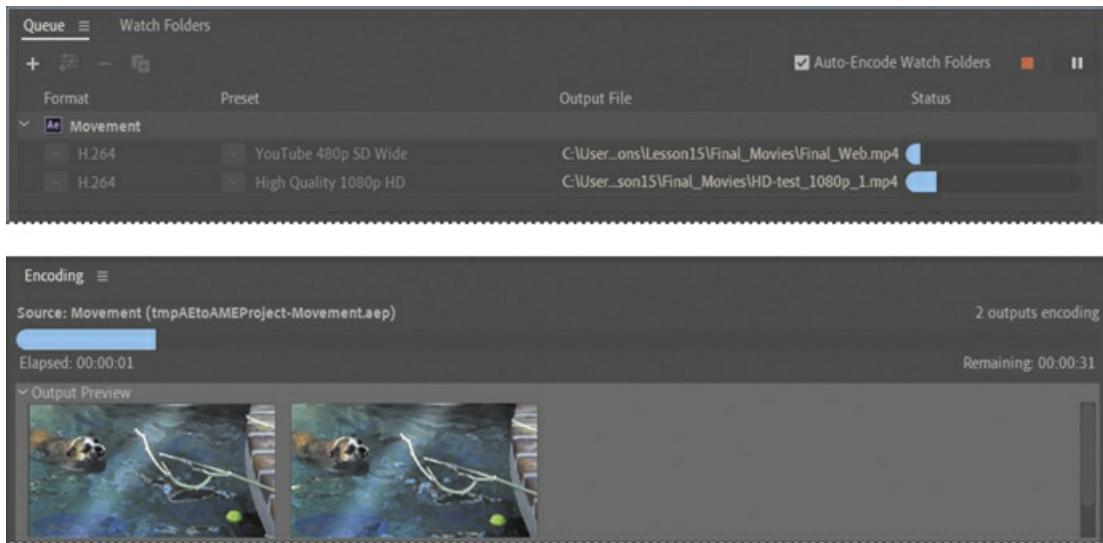
3. Click the blue link in the Output File column for the item you just added. Then name the file **Final\_Web.mp4**, specify the Lessons/Lesson15/Final\_Movies folder, and click Save or OK.

## Rendering movies

You’ve set up two versions of your movie in the queue. Now you’ll render and view them.

Rendering is resource-intensive, and it can take a while, depending on your system, the complexity and length of the composition, and the settings you use.

1. Click the green Start Queue button (▶) in the upper right corner of the Queue panel.



Depending on your system, this may take a while.

Adobe Media Encoder encodes the movies in the queue simultaneously, displaying a status bar and reporting the estimated time remaining.

2. When Adobe Media Encoder has finished, navigate to the Final\_Movies folder in the Finder or Explorer, and double-click your files to play them.

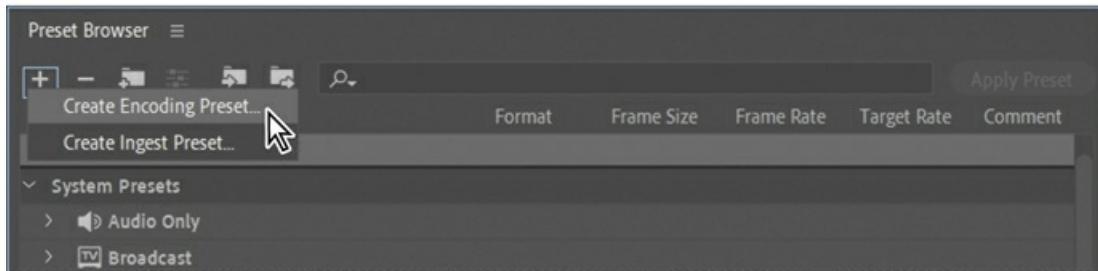
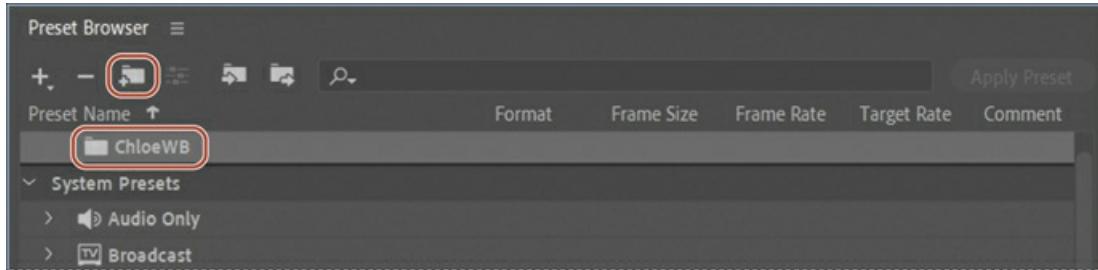
#### ► Tip

If you forget where you saved your encoded movies, click the blue link in the Output File column next to the finished movie. Adobe Media Encoder opens a window to show you where your files were saved.

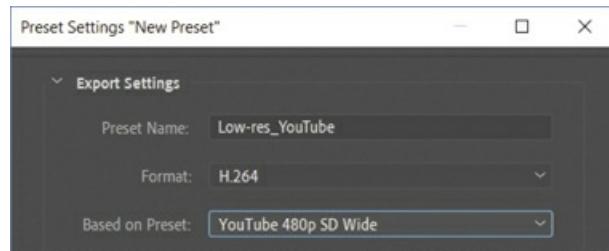
## Creating custom presets for Adobe Media Encoder

In most cases, one of the default Adobe Media Encoder presets will be appropriate for your project. However, you can create your own encoding presets if you have specialized needs. In this case, you'll create a preset that renders a lower-resolution file for YouTube more quickly than the one you just encoded.

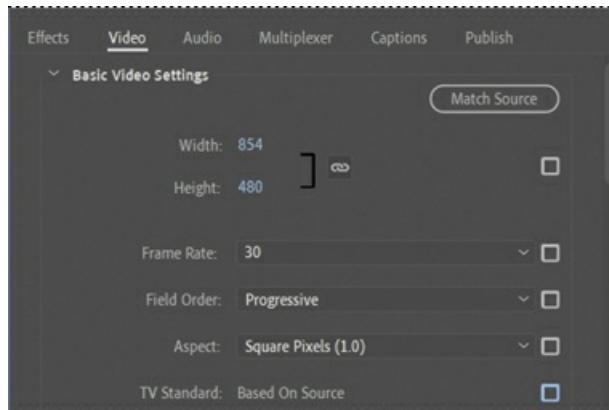
1. Click the Create New Preset Group button (+) at the top of the Preset Browser panel, and give the group a unique name, such as your name.
2. Click the Create New Preset button (+), and choose Create Encoding Preset.



3. Do the following in the Preset Settings dialog box:
  - Name the preset **Low-res\_Youtube**.
  - Make sure H.264 is chosen from the Format menu.
  - Choose YouTube 480p SD Wide from the Based On Preset menu.



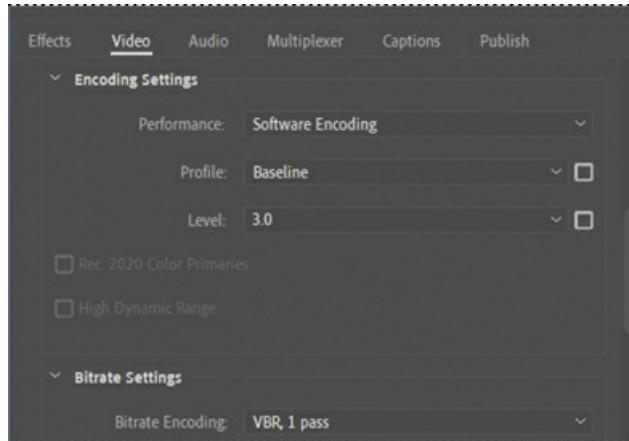
- Select the Video tab, if it's not already selected.
- For Frame Rate, deselect Based On Source.



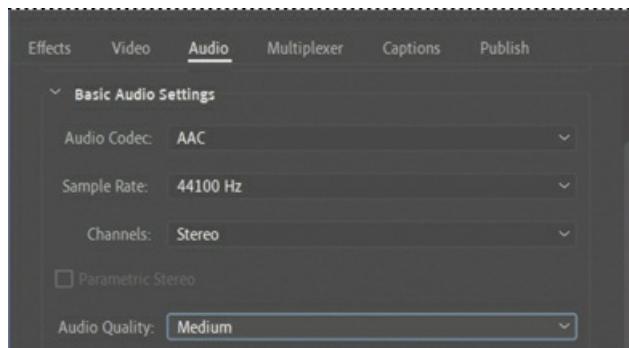
- Choose Baseline from the Profile menu. (You may need to scroll down to see it and

the following options.)

- Choose 3.0 from the Level menu.
- Make sure VBR, 1 Pass is chosen from the Bitrate Encoding menu.



- Click the Audio tab, and choose 44100 Hz from the Sample Rate menu and Medium from the Audio Quality menu.



4. Click OK to close the Preset Settings dialog box.
5. Drag the Low-res\_YouTube preset onto the Movement composition in the Queue panel.
6. Click the blue link in the Output File column. Then name the file **Lowres\_YouTube**, specify the Lessons/Lesson15/Final\_Movies folder, and click Save or OK.
7. Click the Start Queue button (▶).

With the settings in your new preset, the movie encodes more quickly. However, the quality isn't as high.

8. When Adobe Media Encoder has finished, navigate to the Final\_Movies folder in Explorer or the Finder, and double-click the Lowres\_YouTube movie to view it.

You have created both a web version and a broadcast version of the final composition.

## Preparing a movie for broadcast output

The project you're rendering in this lesson is already high-resolution and appropriate for

broadcast output. However, you may need to adjust other compositions for your intended delivery format.

To change the composition size, create a new composition with the appropriate settings for your final format. Then drag the project composition into the new composition.

If you converted the composition from a square pixel aspect ratio to a nonsquare pixel aspect ratio, which is used in broadcasting, items in the Composition panel may appear wider than before. To view the video accurately, enable *pixel aspect ratio correction*. Pixel aspect ratio correction squeezes the view of the composition slightly to display the image as it will appear on a video monitor. By default, this feature is turned off, but you can easily turn it on by clicking the Toggle Pixel Aspect Ratio Correction button at the bottom of the Composition panel. The quality of the pixel aspect ratio correction for previews is affected by the Zoom Quality preference in the Previews category of the Preferences dialog box.

Congratulations! You have completed all the lessons in *Adobe After Effects CC Classroom in a Book (2019 Release)*.

While this book is intended to give you a good foundation for working with After Effects, it can't cover everything. To continue learning about After Effects, check out the resources described in the Getting Started section at the beginning of the book.

### Review questions

- 1 What is compression, and what are some things you should consider when compressing files?
- 2 How can you output a movie using Adobe Media Encoder?
- 3 Name two types of templates you can create for use in the Render Queue panel, and explain when and why to use them.

### Review answers

- 1 Compression is essential to reduce the size of movies so that they can be stored, transmitted, and played back effectively. When exporting or rendering a movie file for playback on a specific type of device at a certain bandwidth, you choose a compressor/decompressor, or codec, to compress the information and generate a file readable by that type of device at that bandwidth. A wide range of codecs is available; no single codec is the best for all situations. For example, the best codec for compressing cartoon animation is generally not efficient for compressing live-action video. When compressing a movie file, you can fine-tune it for the best quality playback on a computer, a video playback device, the web, or from a DVD player. Depending on which encoder you use, you may be able to reduce the size of compressed files by removing artifacts that interfere with compression, such as random camera motion and excessive film grain.
- 2 To output a movie using Adobe Media Encoder, select the composition in the Project panel in After Effects, and then choose Composition > Add To Adobe Media Encoder Queue. In Adobe Media Encoder, select an encoding preset and any other settings, name the output file, and click the Start Queue button.
- 3 In After Effects, you can create templates for both render settings and output-module settings.

These templates are presets that you can use to streamline the setup process when you render items for the same type of delivery format. After you define these templates, they appear in the Render Queue panel on the appropriate pop-up menu (Render Settings or Output Module). Then, when you're ready to render a job, you can simply select the template that is appropriate for the delivery format that your job requires, and the template applies all the settings.

# Appendix: General keyboard shortcuts

Result	Windows	macOS
Select all	Ctrl+A	Command+A
Deselect all	F2 or Ctrl+Shift+A	F2 or Command+Shift+A
Rename selected layer, composition, folder, effect, group, or mask	Enter on main keyboard	Return on main keyboard
Open selected layer, composition, or footage item	Enter on numeric keypad	Enter on numeric keypad
Move selected layers, masks, effects, or render items down (back) or up (forward) in stacking order	Ctrl+Alt+Down Arrow or Ctrl+Alt+Up Arrow	Command+Option+Down Arrow or Command+Option+Up Arrow
Move selected layers, masks, effects, or render items to bottom (back) or top (front) of stacking order	Ctrl+Alt+Shift+Down Arrow or Ctrl+Alt+Shift+Up Arrow	Command+Option+Shift+Down Arrow or Command+Option+Shift+Up Arrow
Extend selection to next item in Project panel, Render Queue panel, or Effect Controls panel	Shift+Down Arrow	Shift+Down Arrow
Extend selection to previous item in Project panel, Render Queue panel, or Effect Controls panel	Shift+Up Arrow	Shift+Up Arrow
Duplicate selected layers, masks, effects, text selectors, animators, puppet meshes, shapes, render items, output modules, or compositions	Ctrl+D	Command+D
Quit	Ctrl+Q	Command+Q
Undo	Ctrl+Z	Command+Z
Redo	Ctrl+Shift+Z	Command+Shift+Z

Purge All Memory	Ctrl+Alt+/- (on numeric keypad)	Command+Option+/- (on numeric keypad)
Interrupt running a script	Esc	Esc

# Appendix: Customizing keyboard shortcuts

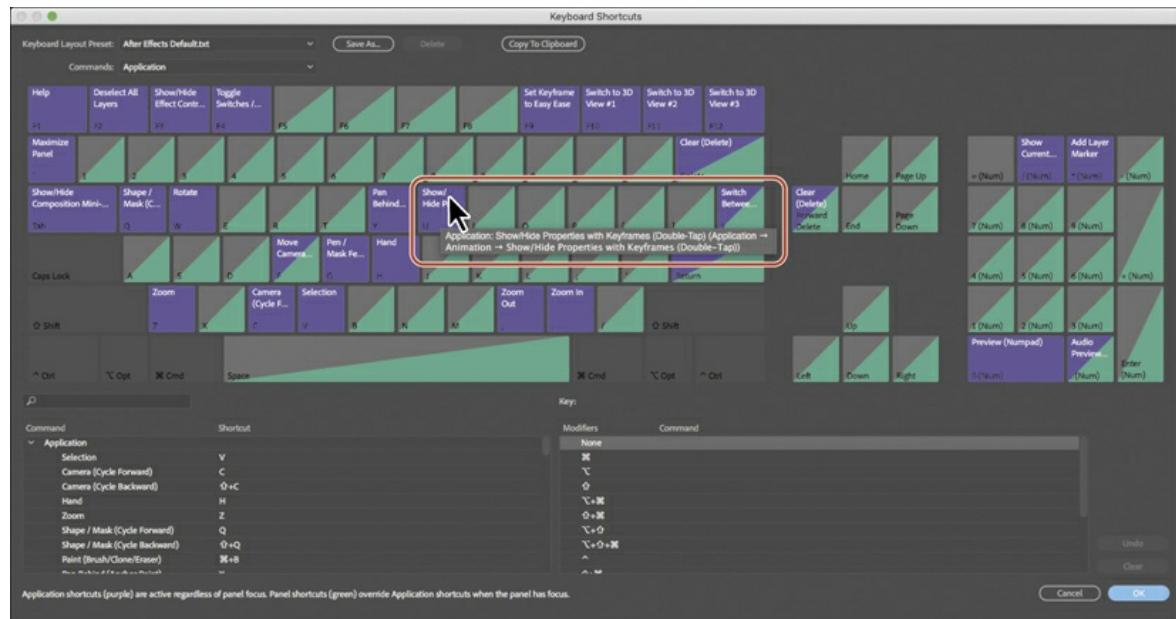
After Effects includes a visual keyboard shortcut editor, similar to the one in Adobe Premiere Pro CC and Audition CC. To open the editor, choose Edit > Keyboard Shortcuts.

You can edit keyboard shortcuts for almost any command, but the following keys are reserved and cannot be reassigned: A, AA, E, EE, F, FF, L, LL, M, MM, P, PP, R, RR, S, SS, T, TT, U, UU.

## Viewing shortcut key assignments

You can see which keys have been assigned and which are available for assignment:

- To see the full command name for a shortcut, hover over a key in the keyboard layout.



- To see which keys require a modifier, press the modifier key on your keyboard.
- To see the commands assigned to a key, select the key on the keyboard layout.

Keys are color-coded to indicate whether they access application-wide or panel-specific shortcuts: Application-wide shortcuts are shaded in purple; panel-specific shortcuts are shaded in green. Keys shaded in both purple and green have both panel and application commands assigned to them.

## Editing a shortcut

To edit a shortcut, do the following:

- From the Commands menu, choose Application or a panel name.
- Select a command from the list at the bottom of the Keyboard Shortcuts dialog box.

3. Click the X to clear the shortcut key next to the command name, and then type the new shortcut. Select any modifiers from the list on the right. Or drag the command name onto a key.

After Effects displays a warning if you've selected a key that cannot be reassigned, or if the shortcut may cause a conflict.

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# Production Notes

*Adobe After Effects CC Classroom in a Book (2019 release)* was created electronically using Adobe InDesign CC (2018 release). Art was produced using Adobe InDesign, Adobe Illustrator, and Adobe Photoshop.

References to company names in the lessons are for demonstration purposes only and are not intended to refer to any actual organization or person.

## Typefaces used

Adobe Myriad Pro and Adobe Warnock Pro as well as other Adobe typefaces are used throughout the lessons. For more information about OpenType and Adobe fonts, visit [www.adobe.com/type/opentype](http://www.adobe.com/type/opentype).

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## Special Thanks

We offer our sincere thanks to Victoria Nece for her support and help with this project. We couldn't have done it without you!



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ISBN: 9780135298657

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