Cameras and Framing

Introduction to understanding and using cameras.
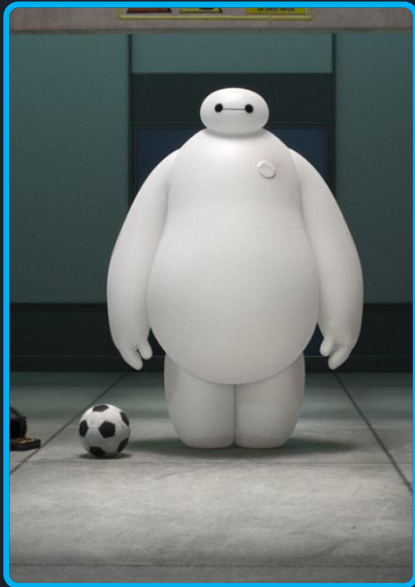
Cameras and Framing|Contents

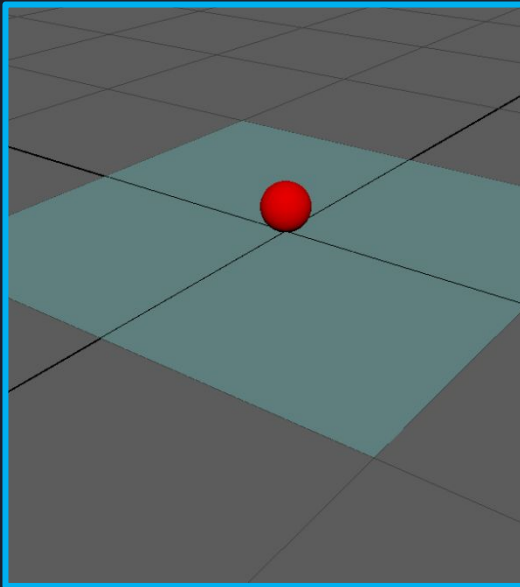This lesson will cover the following:

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Cinematography|What is it?

This is not just simply about placing and moving a camera.

This is about framing and editing shots which help:

- Visually tell a story.
- Express a point of view
- Create rhythm
- Add tension
- Add atmosphere

Animation can be made or broken by quality of cinematography.

Good cinematography can emphasise the mood of a shot, heighten the emotion of a shot.

Makes the shot visually appealing and frame the focus for the audience.

Cinematography|What is it?

Cinematography is a key aspect of the visual storytelling process.

This can be a complex discipline on it's own, so this lesson will start off with a few main areas and points to consider.

The main aspects to begin to develop include:

- composition
- language of shots
- camera moves

The approach to these elements are established within traditional disciplines such as painting, photography.

Combine these with further analysing your favourite films, to see how the shot has been made visually appealing.
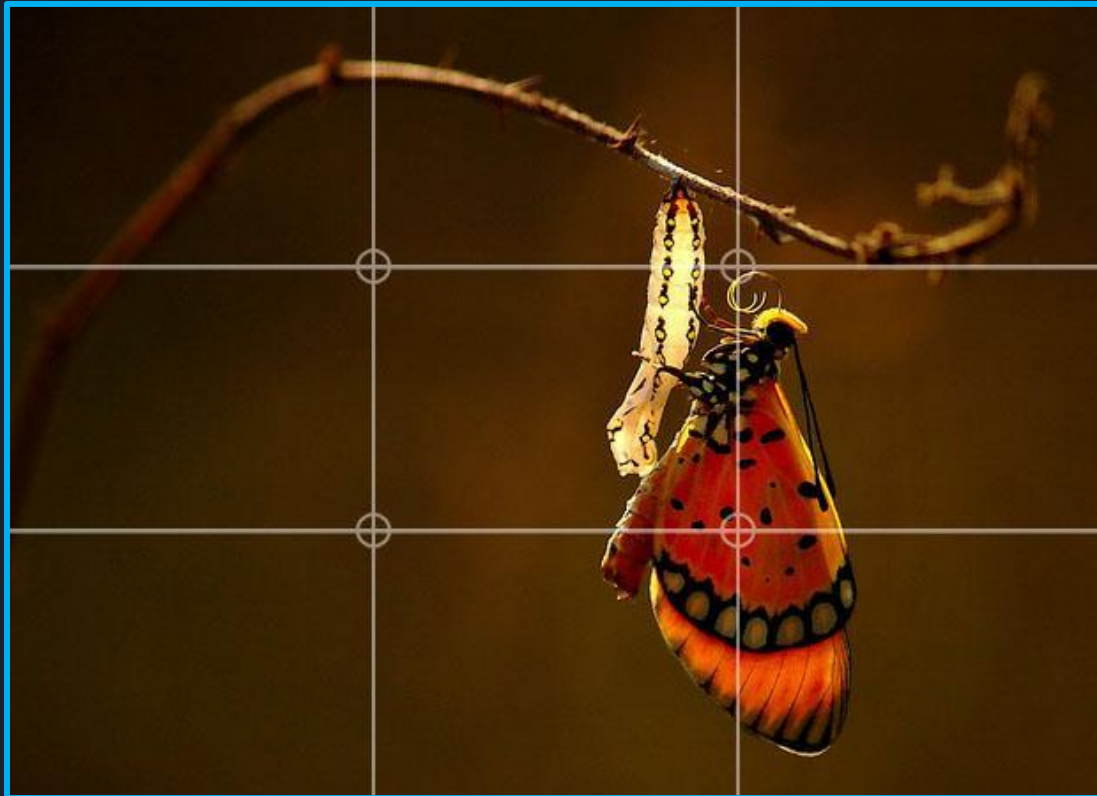
Composition|Rules

Cinematography encompasses so many areas that combine to tell the story.

Almost every aspect has been defined by rules and principles.

Rule of thirds|Interesting composition

This is by far the most common principle for improving composition.

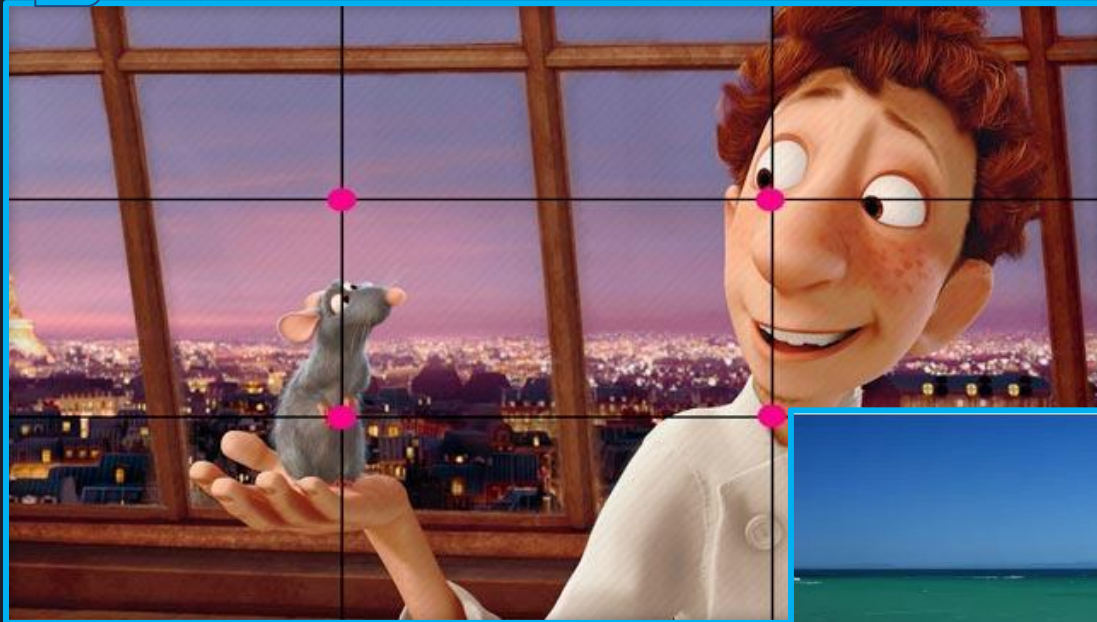It is the basis for well balanced and interesting focal points in your shots.

Not only that the play with empty "negative" space can be a compositional element to use.

Not following this won't mean your shots become uninteresting or visually unappealing.

Studies have shown the viewers eyes go naturally to the intersection points rather than the centre of the image.

Rule of thirds|Intersection points
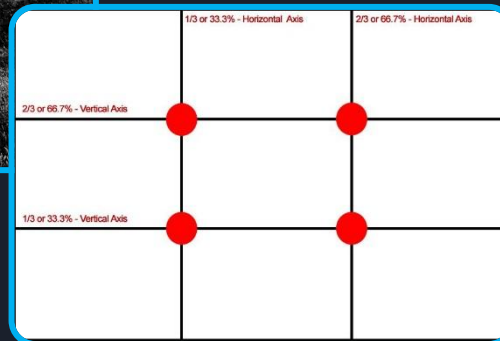
1

2

This can be quite flexible in approach.

When working with the rule of thirds as a basis for your shot, you can take advantage of the intersections or the horizontal and vertical lines.

Not all elements need to be brought into play at once to make your compositions work.

1. Vertical lines are used here as well as Remy's eye being close to the top right intersection

2. You can take advantage of the horizontal elements only.

Rule of thirds|Experiment

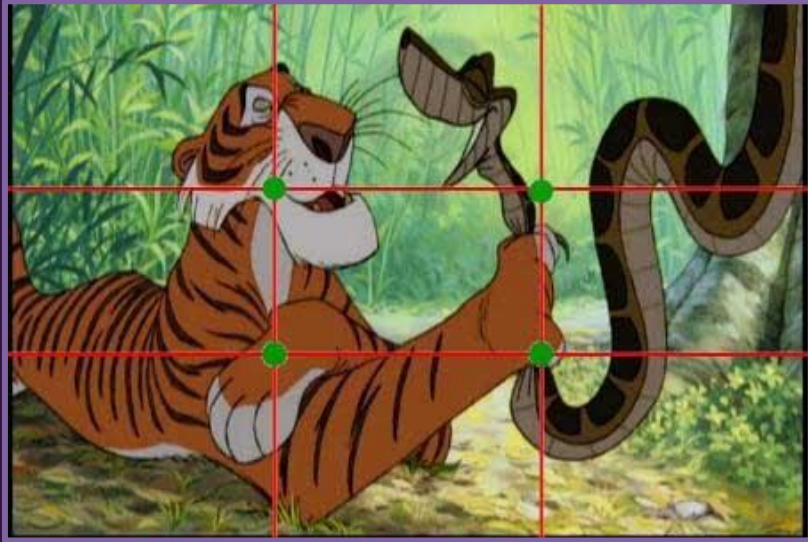The most important points to consider are:

1. What are the most important points of interest for this shot?

2. Where am I placing them?

Rather than blindly follow the rules.
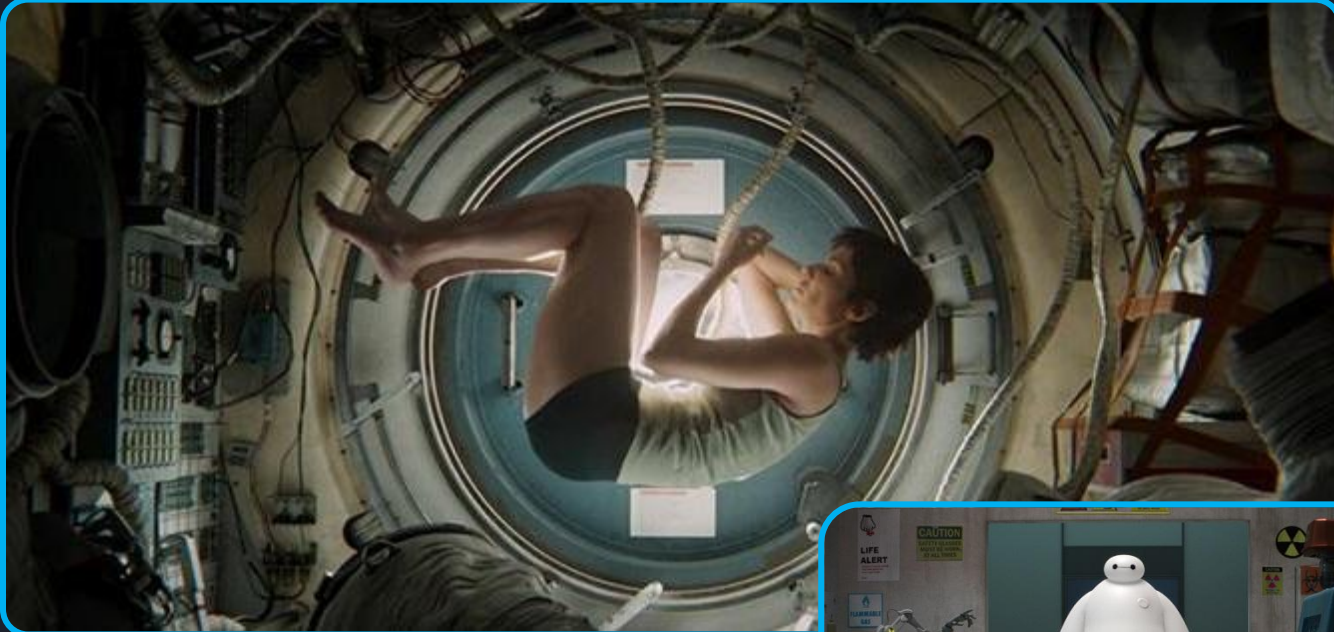
Experiment with where you position these focal points and see how it affects the shot and or it's narrative.

1/3 or 33.3% - Horizontal Axis   2/3 or 66.7% - Horizontal Axis

2/3 or 66.7% - Vertical Axis

1/3 or 33.3% - Vertical Axis

Exercise|Rule of thirds

Find a shot from an animated film that is visually appealing and follows the rule of thirds.

Rule of thirds|Breaking the rules

Although the rule of thirds does work really well to help define visually appealing composition, there are times when breaking the rules works really well too.

Placing your subject dead centre can produce powerful and confronting images.

Both these images are breaking the rule of thirds but are still visually appealing.

Use of perspective in the Big Hero 6 image can also add a sense of dynamic depth to the shot.

It can also suggest, order, predictability, etc.

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Exercise|Break the rules

Find a shot from an animated film that is visually appealing and breaks the rule of thirds.
Why does it work?

Composition extra|To consider

Along with considering the rule of thirds, there are other key elements which will help you develop visually appealing composition.

Developing your skills in creating good shots will be a constant learning curve of working out what works well and not so well.

This lesson is intended to open up the basics as the start of your journey.

It is not anywhere near exhaustive and there are many other factors which will lead to better cinematography.

Keep experimenting and getting feedback!

Composition extra|Balance

Good composition is not always about the balance between how you frame interesting subject matter.

It can also consider the use of negative space and how you balance the size relationships.

Often the smallest element in the scene can have the most impact if surrounded by lots of negative space.

It is not always about filling your frame.

Composition extra | Negative space

Negative space is a concept used in art and design for centuries.

It is the areas surrounding your subject matter.

If negative space is well considered, it can really enhance the composition and prevent visual clutter.

It can be visually striking and can often take on quite abstract or graphic qualities.

Even though the negative space can take up alot of the composition, it can still appear balanced with the subject matter.

Both in balance with each other.

Exercise|Negative space

Find a photo or shot from a film that takes advantage of negative space
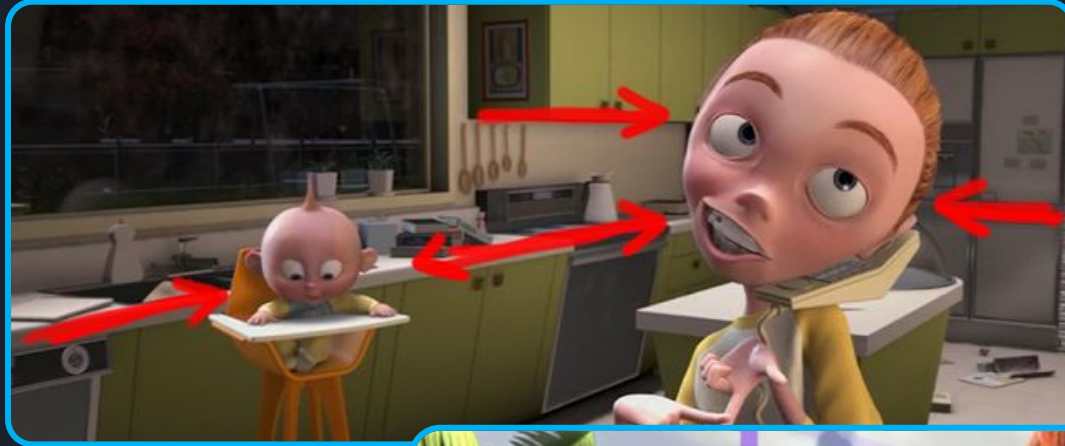
Composition extra|Leading lines

Our eye is naturally drawn along lines in composition.

This can be an extremely powerful way to frame your animation and direct the viewer.

You can really guide the viewer through the image and take them on a journey through the frame.

As in this shot from How to train your dragon, the viewer is lead to the very intimate moment between the two characters.

Composition extra|Leading lines

The way a shot is framed can really lead the viewer towards the centre of focus even though it may not be centre of screen.

Background elements and the way characters are posed can really accentuate what you want the viewer to focus on.

Exercise|Leading lines

Find a photo or shot from a film or trailer that takes advantage of leading lines to direct the viewer.

Shot Language|Camera placement

Choosing the right shot will bring about different compositions but it will also communicate the narrative and emotion differently.

The following detailed shots are standard technical terms that are pivotal to communicating effectively with others in screen based industries.

It is important to understand these shots and their uses.

The frame of reference is the human form however, they also work for non-human subjects as well.

Shot Language|Animation analysis

We will look at a short film called Borrowed Time.

Directed by Andrew Coats & Lou Hamou-Lhadj.

This short film uses a full range of camera shots which can express different emotions to the viewer.

Let's have a look at these established cameras and where it is best placed to use them and why.

Analysing films will help give context when practicing with cameras and shots.

Shot Language | Wide Shot

This is a shot from a good distance away.

Shows the scene and the environment and context for the sequence.

This is often used as the establishing shot which is the opening shot.

Used to show the audience where the scene is taking place and often sets the mood for what is to come.

Can often give audience a feeling of disassociation with the characters or a sense of spying.

Shot Language | Long Shot (Full Shot)

In the long shot, the subject takes up the full frame.

In this case, the main character's feet are almost at the bottom of frame and his head is almost at the top.

Obviously the subject doesn't take up the whole width and height of the frame, since this is as close as we can get without losing any part of him.

Used to show body language and emotion. Can detail action quite well with a long shot.
Subtle face expressions are lost.

Allows editing into close ups and medium shots quite nicely.

Shot Language|Medium (Mid) Shot

It can capture the actor's gestures, body language and facial expressions.

This is an approximation of how you would see a person "in the flesh" if you were having a casual conversation. You wouldn't be paying any attention to their lower body, so that part of the picture is unnecessary.

Used when the subject is speaking without too much emotion or intense concentration.

As well as being a comfortable, emotionally neutral shot, the mid shot allows room for hand gestures and a bit of movement.

Shot Language|Medium Close Up Shot

This shot is often the half way between the mid shot and the closeup shot.

It does feature the face of the subject but will feature the shoulders too, so it gets close but not uncomfortably close.

This shot gives the feeling the audience can be close enough with the subject to have a conversation with them.

Shot Language | Close Up Shot

In the closeup shot, a certain feature or part of the subject takes up most of the frame.

A close up of a person usually means a close up of their face.

A close-up of a person emphasizes their emotional state. It brings us into an intimate relationship with the subjects.

A close-up exaggerates facial expressions which convey emotion.

The viewer is drawn into the subject's personal space and shares their feelings.

Shot Language|Extreme close Up Shot

The extreme close-up shot is traditionally used in film to allow the viewer to enter the character's intimate space.

It can reveal certain characteristics and emotions that would otherwise go unnoticed from afar.

At such an extreme intimate proximity, every subtle expression, muscle movement, facial characteristic, reflection and detail becomes that much more apparent.

It emphasizes the dramatic importance of the scene, making it stand out and draws attention to an important detail.

Exercise|Shot analysis

Analyse an animated short.

Screen grab the variety of standard camera shots used to convey the story.

Briefly describe why the shot was used in this context.

Shot Language|Additional elements

Often used in combination with other framing types, these shots are pretty self explanatory.

1. One shot - 1 subject in the frame.

2. Two Shot - 2 subjects in frame. Often seen in dialogue

3. Three Shot - 3 subjects in the scene

When you get more than 3 it is often referred to as a group shot.

Shot Language|Low angle

Camera is down looking up at the character.

This is often used for a hero shot and gives a sense of importance, superiority or threatening nature to the character.

In this scene the low angle really emphasises the scenario and the power relationship between the two characters.

Shot Language|Low angle

A classic example of the low angle shot.

Camera very close to the floor really exaggerates perspective.

Really gives a sense that the character has power and strength and can be a typical hero shot.

This combined with the other character in the shot gives a contrast of height and dynamic composition.

Shot Language|High angle

Camera placed high looking down at the character.

Can emphasis the feeling of feeling vulnerable and give a sense of loneliness or helplessness to the character.

Shows weakness a sense of being powerless or alienation.

The High angle is perfect in this shot as it really shows the predicament the character is in.

Not only physically but emotionally too.

A large aspect of cinematography is to drive the emotion further to the audience.

Shot Language | Over the shoulder

Very much used in dialogue shots and when characters are talking to each other.

Camera is placed from just behind one character while they are listening to the other character speaking.

In conversation, often the camera will alternate between over the shoulder for each character as they talk and listen.

This can often be edited with a Mid shot to frame both characters in context.

Shot Language|POV

Camera is positioned from a particular character's point of view.

It puts the audience in the character's position but remember they cannot see the character so there will be a certain sense of dissociation if a POV is held too long.

Often used in a lot of horror films.

For a brief moment in time the audience gets to feel what the character is going through.

Shot Language|Combinations

This shot uses a low, long shot.

As this is part of a chase sequence, the camera close to the floor gives a heightened sense of speed.

You will also see that being low, we are in amongst the rocks on the ground, which anticipates the danger to come.

The long shot provides the full action without needing to come in to show emotions.

It also provides context of the characters and the environment.

Camera work is always as efficient as possible while showing the full narrative and emotion to the audience.

Camera Moves|Intro to basics

As we progress through, and build on our basic camera skills, we will notice that cameras are not always static.

This next section briefly outlines some core camera moves which we can build on and integrate.

It is also useful to understand the terminology when storyboarding or building on or shots.

Camera movement can be subtle and dramatic but above all else needs to be considered.

Never make the camera work distracting, always think where it can enhance narrative and emotion.

Camera Moves | Pan shot

The pan shot is where teh camera is turned to follow the action.

The camera still remains at a fixed position as seen in the clip left.

Although a pan is typically horizontal, it can also be vertical or diagonal and used to great effect.

Pan shots can take in more of the scenery while the subject matter is almost centre to the composition.

Camera Moves|Tracking (dolly)

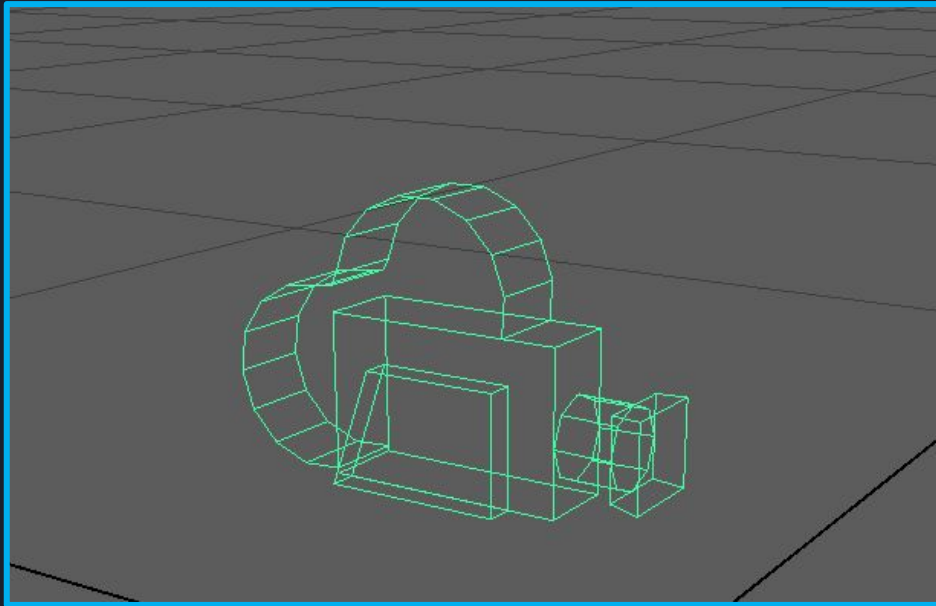Visualise the camera on a platform with wheels (dolly) and this defines the movement.

More rigid terminology refers to dolly shots as push ins and pull outs, where as a tracking shot is the lateral or sideways.

More recently tracking shots are using steadicams to get more dynamic and complex movement.

The tracking shot is moving the camera through space and gives the sensation that the audience is on a journey with it.

Getting closer to the action as a heightened tension. Movement can be varied to achieve different result.

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Maya Cameras|Important factors

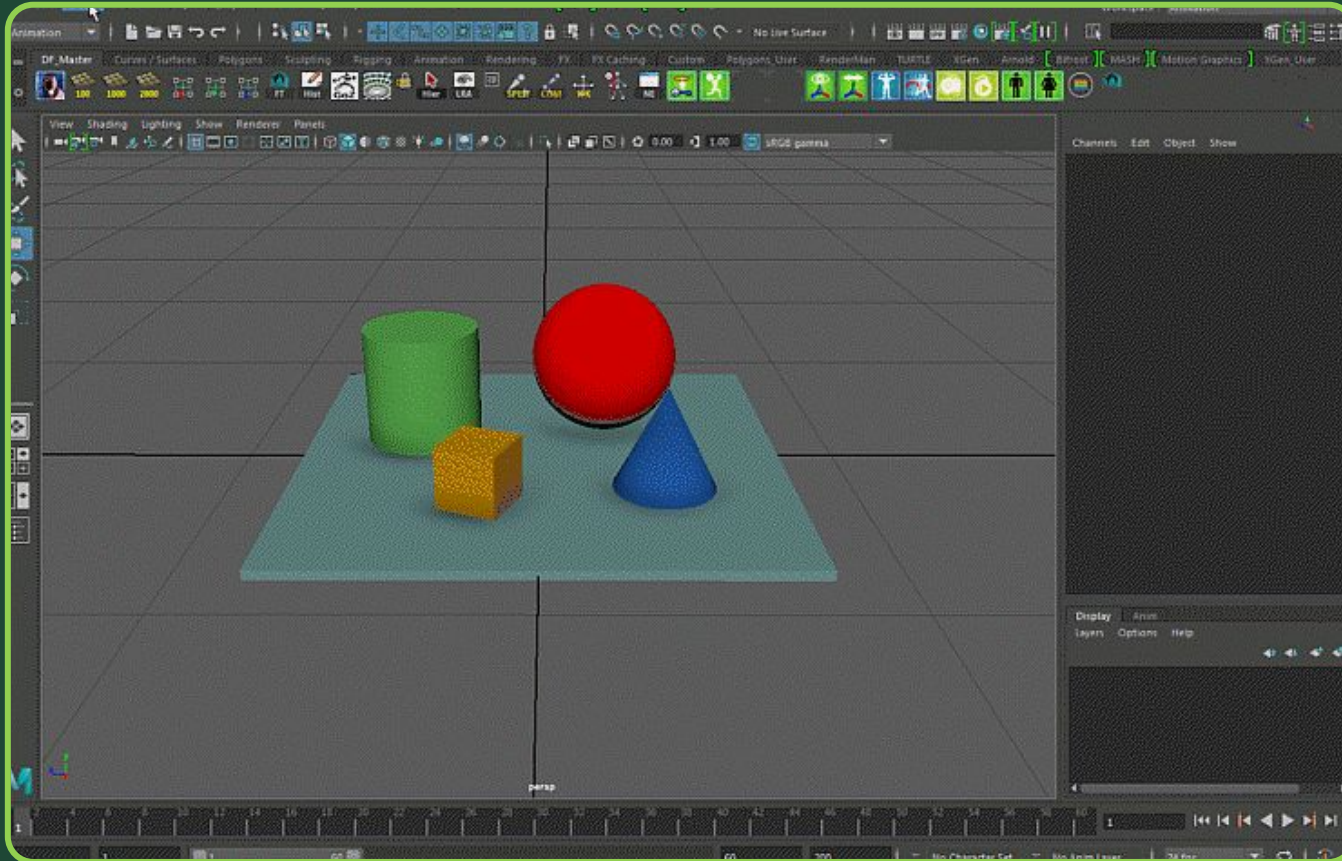When working with cameras within Maya it is important that you consider them as real world cameras.

The more realistic and natural your camera movement and framing, then the better your shots will be.

AVOID crazy movements, long winding, twisting shots that just wouldn't be possible in the real world.

Maya is a great previz tool for films, and the cameras can be set up using real world focal lengths and movement.

This makes it almost identical what maya sees to what real world cameras will capture.

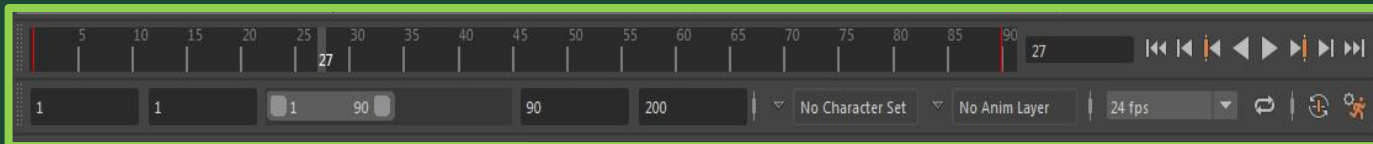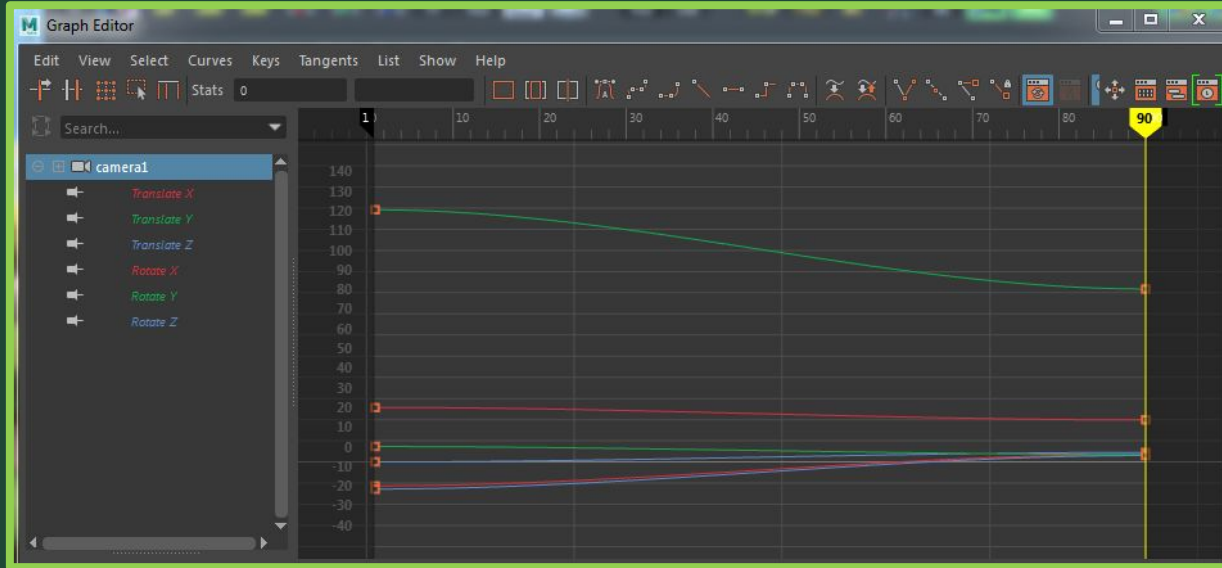| camera1	
Translate X	0
Translate Y	1.559
Translate Z	0
Rotate X	0
Rotate Y	0
Rotate Z	0
Scale X	1
Scale Y	1
Scale Z	1
Visibility	on
SHAPES	
cameraShape1	
Horizontal Film Aperture	1.417
Vertical Film Aperture	0.945
Focal Length	35
Lens Squeeze Ratio	1
F Stop	5.6
Focus Distance	5
Shutter Angle	144
Center Of Interest	5
Locator Scale	1
Ai Enable DOF	off
Motion Blur Override	Use Glo...

Camera|Basic manipulation

Use available viewports to see the camera view and other views.

1. Create standard camera

2. Translate and rotate into position

3. Change to camera in main viewport

4. Tear off viewport copy

5. Refine camera through translation and rotations in perspective view

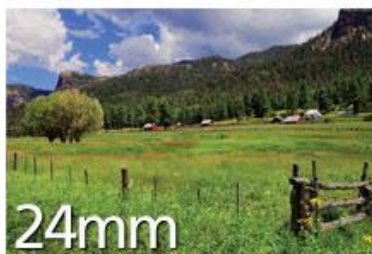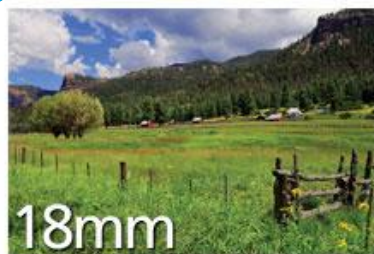6. Or use camera controls and ALT from within camera view.

Camera|Animation

Cameras can be treated like any other object we animate in Maya.

1. You can set the keys in exactly the same way.

2. Use graph editor to control the timing and spacing, ease ins and outs.

3. Move the camera using translate and rotate.

4. Move the keys around using dope sheet or time line.

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Focal Length|Understanding basics

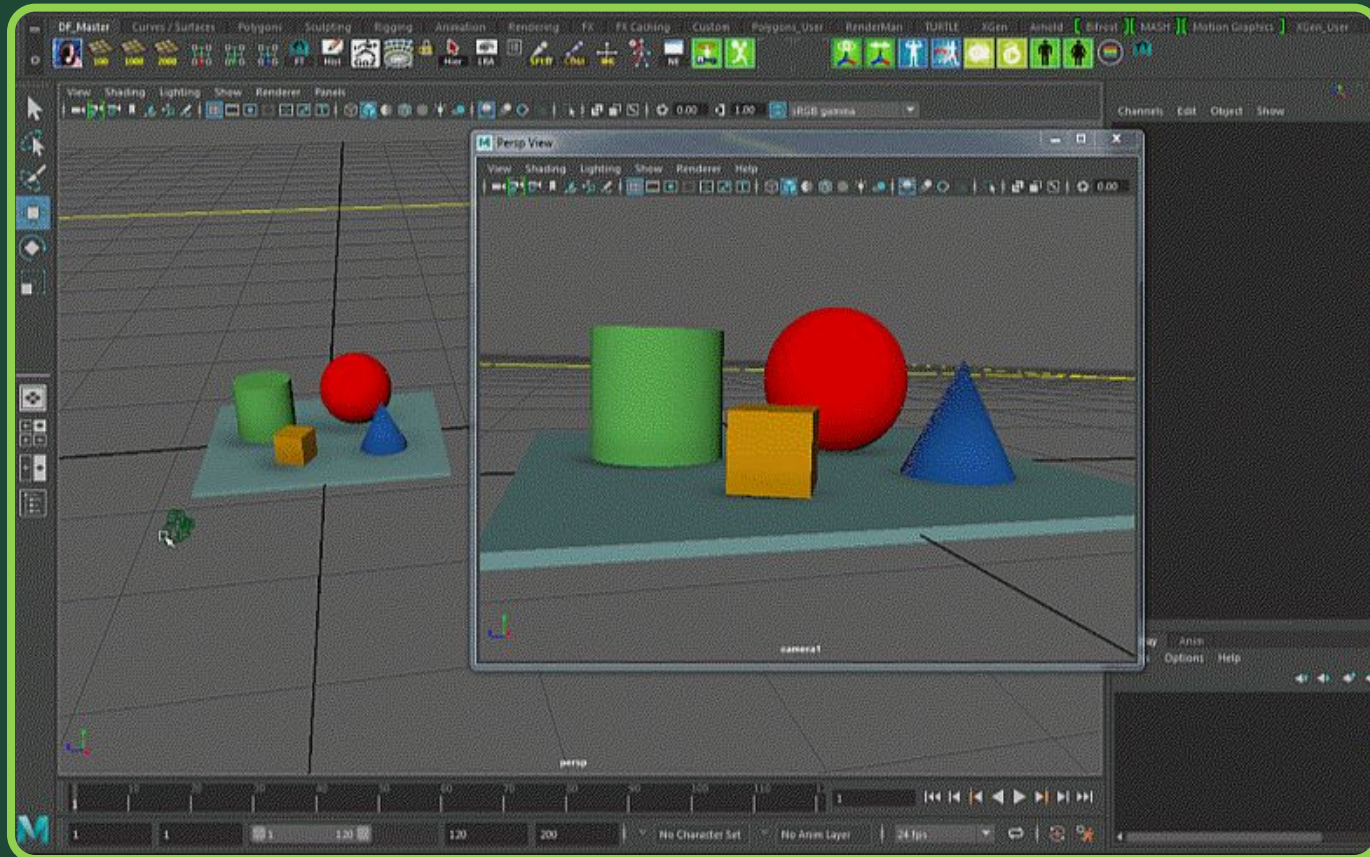Besides translation and rotation, you can change the focal length of the camera.

There is alot of knowledge around focal length as it is heavily based around real world cameras and photography.

As you can see the lower the focal length the more exaggerated the perspective becomes.

This is more easily defined as a wide angle shot.

A higher focal length will really flatten out the perspective. Often used more in portrait photography as it will not distort the subject.

Camera|Focal length

Select the camera and go to the attribute editor

1. Focal length will be under the Shape menu. Default is 35mm

2. Experiment with setting different value focal lengths and move the camera to frame your shot.
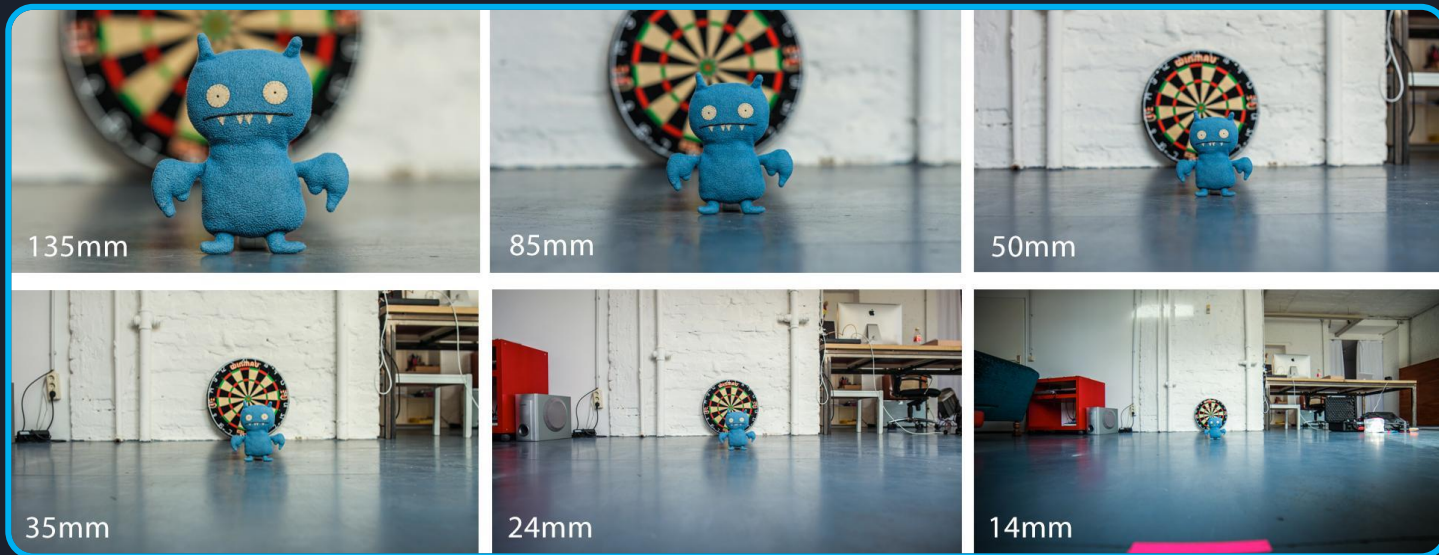
As a guide, standard focal lengths can be:
Fish eye lenses
- 18mm
- 24mm

Standard lenses
- 35mm
- 50mm
- 85mm
- 120mm

Focal Length|Understanding basics

135mm   85mm   50mm

35mm   24mm   14mm

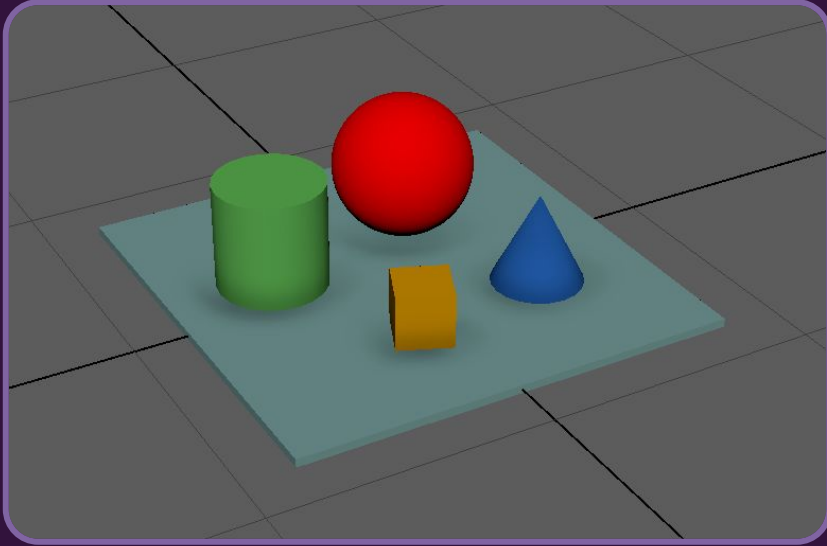Do your research with focal length and stay with common values.

On a film project the previz animators had to stay with the focal length used for the actual shoot - 50, 85, 120

As with all camera work, the more considered you are the more natural your results will be.

Combine experimentation while constantly researching and analysing cameras used within films, animated shorts, cinematics etc..

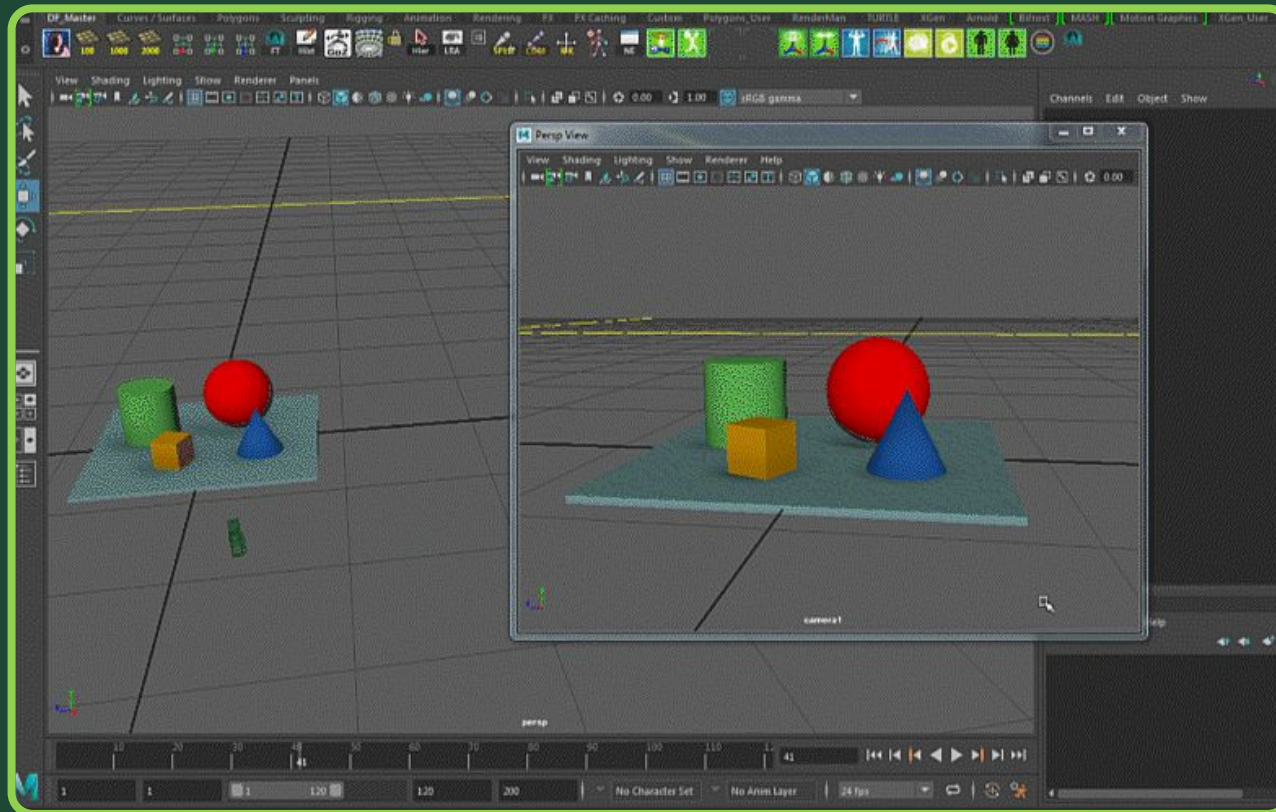Cinematography is a craft in itself and requires alot of practice.

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Exercise|Focal length

Frame the same shot using the following focal lengths.
18, 35, 50, 80

Take a screen grab and compare perspective and framing.

Camera|Gate mask and safe frame

To make sure you are considering composition in your shots, you need to work to the right aspect ratio with your camera.

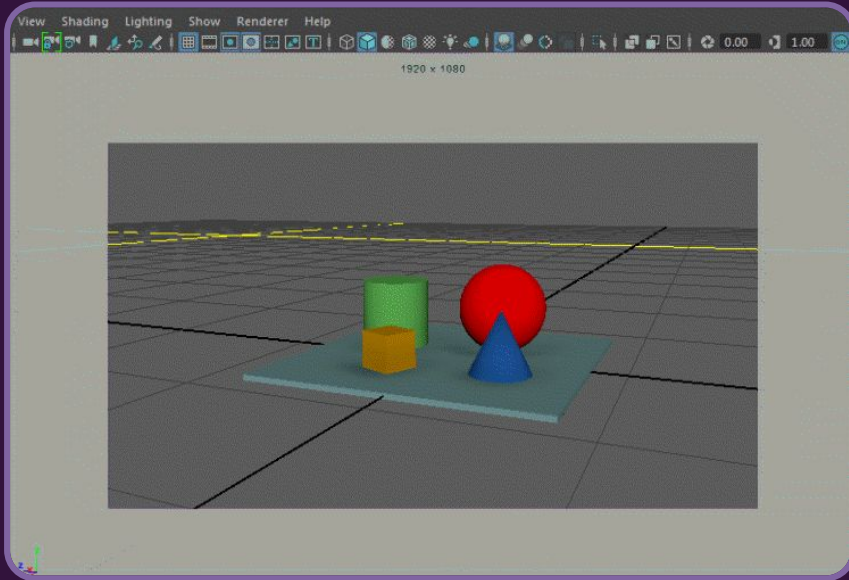1. Turn on gate mask icon

2. Turn on safe frame icon

This will show you the area the camera will render based on your render settings.

3. Go to render settings

4. Change the image size to HD_1080

the camera viewport will now mask out any area outside the HD 16:9 image ratio.

This is now much easier to establish composition

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Exercise|Basic camera work

Using the scene of primitives, animate the camera as an establishing shot.

Use translation and rotation, bring the camera closer over time.

Finesse timing and curves