# 10.4.1 Render - Camera - Introduction
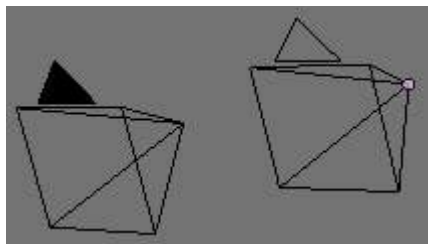
# Camera

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# Introduction

A *Camera* is an object that provides a means of rendering images from Blender. It defines which portions of a scene is visible in the rendered image. By default a scene contains one camera. However, A scene can contain more than one camera, but only one of them will be used at a time. So you will only need to add a new camera if you are making cuts between them. See *Animating Cameras*.

# Changing the Active Camera

| Reference |
| --- |
| Mode: *Object* mode |
| Hotkey: `Ctrl-Numpad0` |

Active camera (left one).

The *active* camera is the camera that is currently being used for rendering and camera view (`Numpad0`).

Select the camera you would like to make active and press `Ctrl-Numpad0` (by doing so, you also switch the view to camera view). In order to render, each scene **must** have an active camera.

The active camera can also be set in the *Scene* context of the *Properties Editor*

The camera with the solid triangle on top is the active camera.

| Warning |
| --- |
| The active camera, as well as the layers, can be specific to a given view, or global (locked) to the whole scene - see *Local Camera*. |

# Camera Settings

| Reference |
| --- |
| Mode: Object mode<br>Editor: Properties<br>Context: Object Data |

Cameras are invisible in renders, so they don't have any material or texture settings. However, they do have *Object* and *Editing* setting panels available which are displayed when a camera is the selected (active!) object.

## Lens

The camera lens options control the way 3D objects are represented in a 2D image. See *Camera Lens* for details.

## Camera
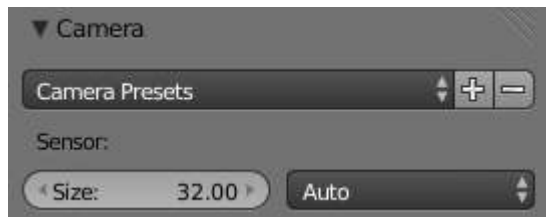


Camera Presets panel.

**Sensor size**

This setting is an alternative way to control the focal-length, it's useful to match the camera in Blender to a physical camera & lens combination, e.g. for *motion tracking*.

## Depth of Field



Camera Depth of Field Panel

Real world cameras transmit light through a lens that bends and focuses it onto the sensor. Because of this, objects that are a certain distance away are in focus, but objects in front and behind that are blurred.

The area in focus is called the *focal point* and can be set using either an exact value, or by using the distance between the camera and a chosen object:

**Focus Object**
Choose an object which will determine the focal point. Linking an object will deactivate the distance parameter. Typically this is used to give precise control over the position of the focal point, and also allows it to be animated or constrained to another object.

**Distance**

Sets the distance to the focal point when no *Focus Object* is specified. If *Limits* are enabled, a yellow cross is shown on the camera line of sight at this distance.

> **Hint**
>
> Hover the mouse over the *Distance* property and press E to use a special *Depth Picker*. Then click on a point in the 3D View to sample the distance from that point to the camera.

**High Quality**
In order for the viewport to offer an accurate representation of depth of field, like a render, you must enable High Quality. Without it, you may notice a difference in shading.

**Viewport F-stop**
Controls the real-time focal blur effect used during sequencer or OpenGL rendering and, when enabled, camera views in the 3D viewport. The amount of blur depends on this setting, along with Focal Length and Sensor Size. Smaller Viewport F-stop values result in more blur.
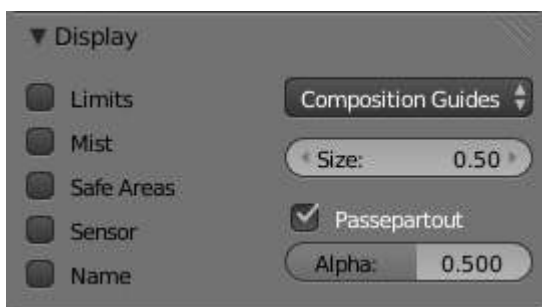
**Blades**
Add a number of polygonal *blades* to the blur effect, in order to achieve a a *bokeh effect* in the viewport. To enable this feature, the blades must be set to at least 3 (3 sides, triangle)
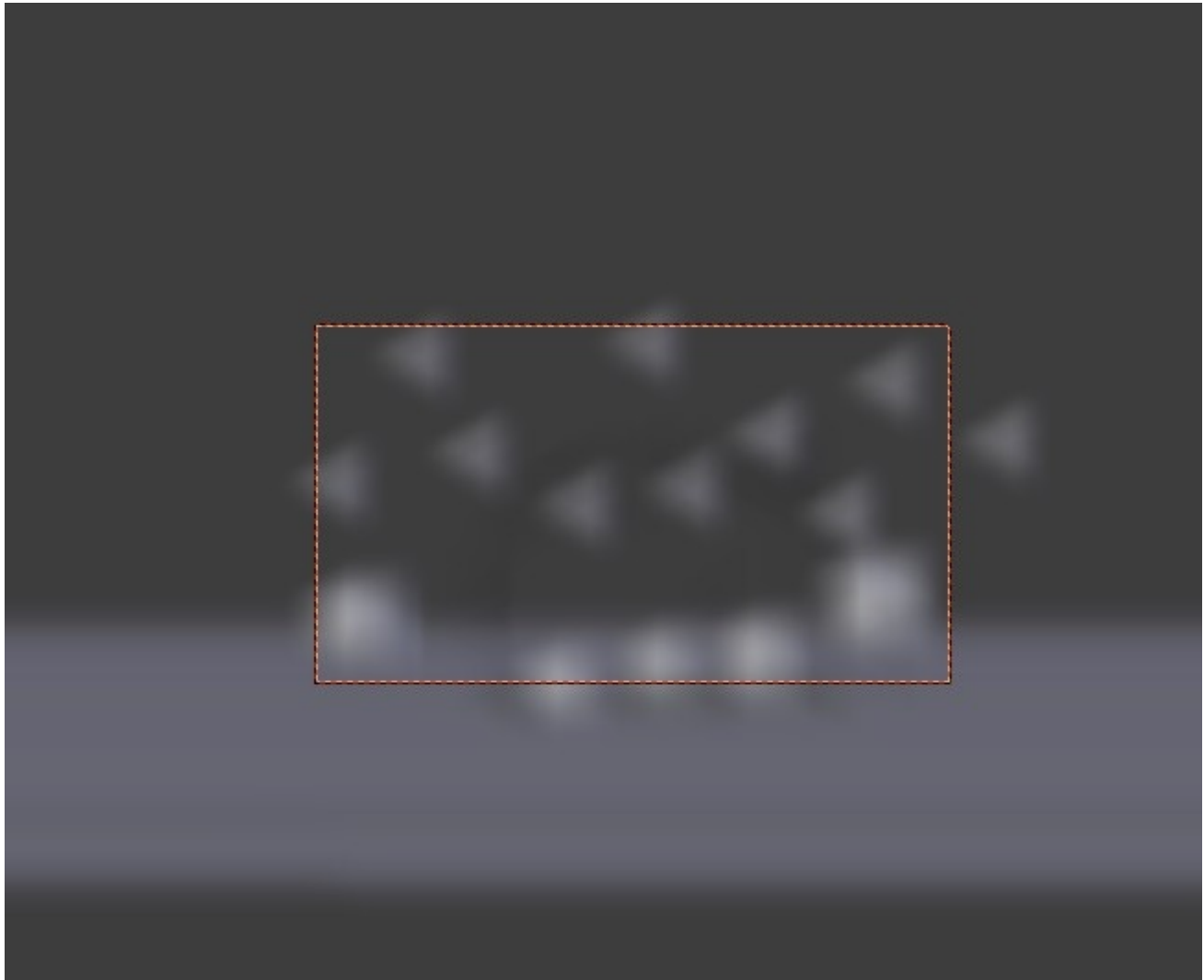
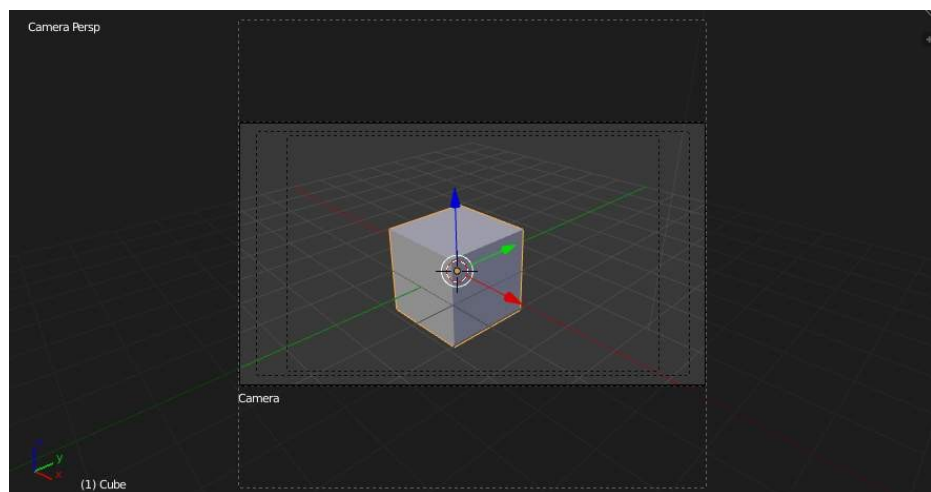The viewport bokeh effect with the blades set to 3

## Display



Camera Display panel

**Limits**
Shows a line which indicates *Start* and *End Clipping* values.
**Mist**
Toggles viewing of the mist limits on and off. The limits are shown as two connected white dots on the camera line of sight. The mist limits and other options are set in the *World* panel, in the *Mist section*.

Camera view displaying safe areas, sensor and name

**Sensor**

Displays a dotted frame in camera view.

**Name**

Toggle name display on and off in camera view.

**Size**

Size of the camera icon in the 3D view. This setting has no effect on the render output of a camera, and is only a cosmetic setting. The camera icon can also be scaled using the standard Scale S transform key.

**Passepartout, Alpha**

This mode darkens the area outside of the camera's field of view, based on the *Alpha* setting.

## Composition Guides

*Composition Guides* are available from the drop-down menu, which can help when framing a shot. There are 8 types of guides available:

**Center**

Adds lines dividing the frame in half vertically and horizontally.

**Center Diagonal**

Adds lines connecting opposite corners.

**Thirds**

Adds lines dividing the frame in thirds vertically and horizontally.

**Golden**

Divides the width and height into Golden proportions (About 0.618 of the size from all sides of the frame).

**Golden Triangle A**

Draws a diagonal line from the lower-left to upper-right corners, then adds perpendicular lines that pass through the top left and bottom right corners.

**Golden Triangle B**

Same as A, but with the opposite corners.

**Harmonious Triangle A**

Draws a diagonal line from the lower-left to upper-right corners, then lines from the top left and bottom right corners to 0.618 the lengths of the opposite side.
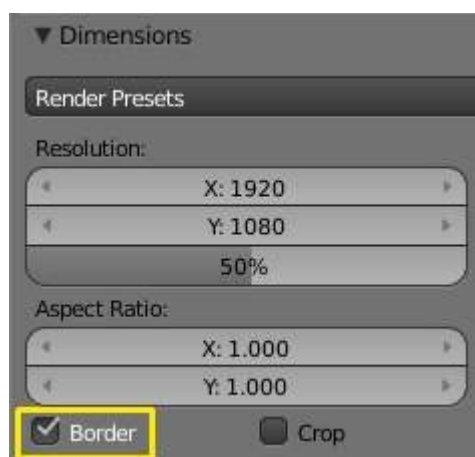
**Harmonious Triangle B**

Same as A, but with the opposite corners.

### *Safe Areas*

When this is enabled, extra dotted frames are drawn when in camera view, delimiting the area considered as "safe" for important elements. *More information about them in the safe areas section*.

# Render Border

| Reference |
|---|
| Mode: All modes<br>Menu: View ‣ Render Border<br>Hotkey: `Ctrl-B` |



Render Border toggle

While in camera view, you can define a subregion to render by drawing out a rectangle within the cameras frame. Your renders will now be limited to the part of scene visible within the render border. This can be very useful for reducing render times for quick previews on an area of interest.

The border can be disabled by disabling the *Border* option in the *Dimensions* panel of the *Render* context or by activating the option again and selecting *Render Border* larger than the camera view.

| Note |
|---|
| Anti-Aliasing and blur options with borders |
| Note that when Render Borders are activated, Full Sampling Anti-Aliasing will be disabled while Sampled Motion Blur will become available. |
| *Read more about Anti-Aliasing Read more about Motion Blur* |
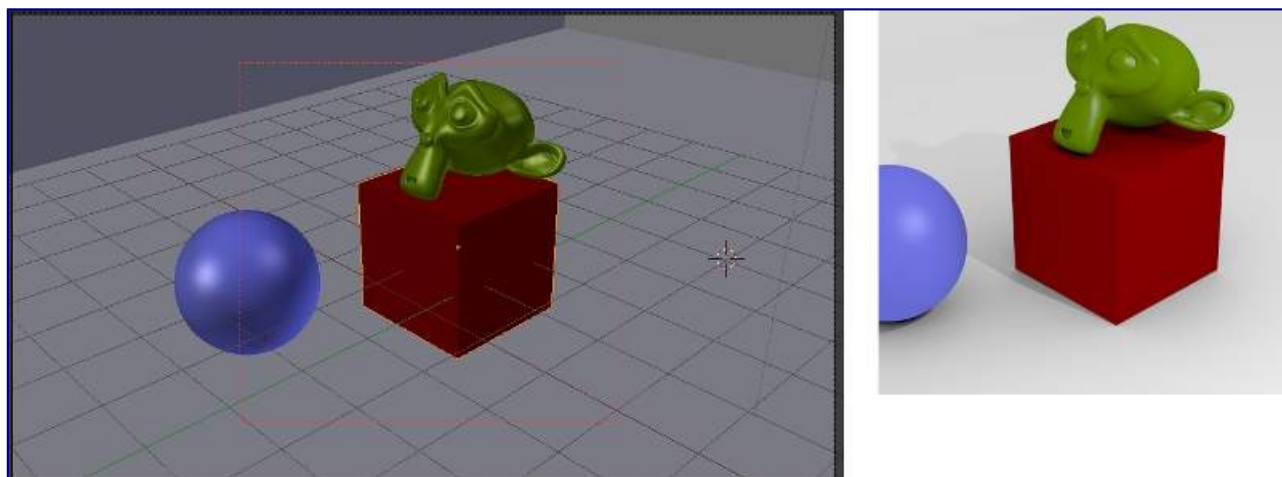
Render border and associated render.