The **Navigation gizmo** - in the top right of the *3D Viewport* - contains several elements which we can use to perform various tasks such as change viewpoint, zoom in and out, and switch between perspective and orthographic view.
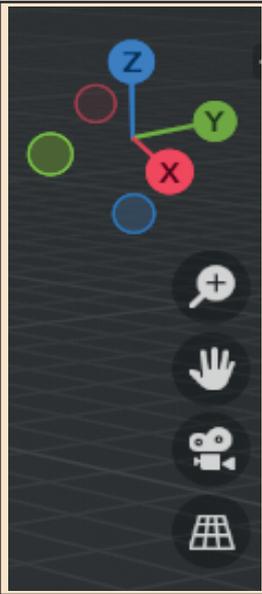
The first of these elements shows the orientation of the **World Axes** relative to the current viewpoint. Labels are displayed in the positive end circles and in the duller, negative ends only when the mouse pointer moves over them.

Axis directions (negative ends)

Axis directions (positive ends)
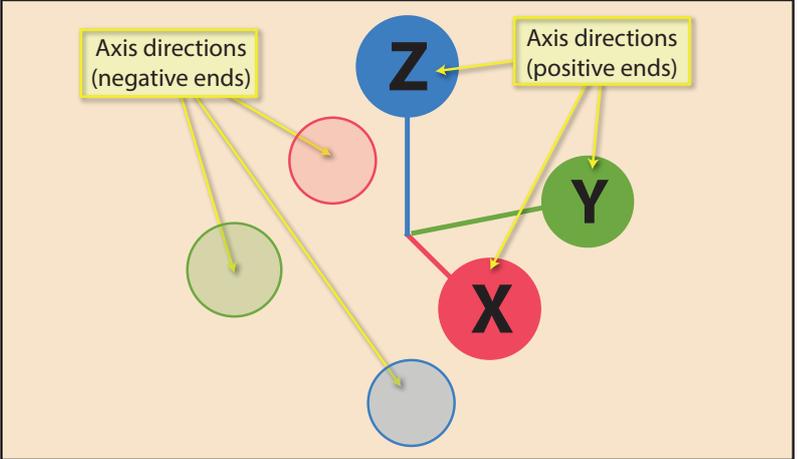
Clicking on one of the circles will jump the viewpoint in the *3D viewport* to a named direction (**Front**, **Back**, **Left**, **Right**, **Top**, or **Bottom**). The direction depends on which circle is clicked. The current viewpoint (and other details) appear at the top-left.

Right Orthographic
(1) Collection | Cube
Meters

Current viewpoint

Jumping to a named viewpoint always changes the projection method to *Orthographic*
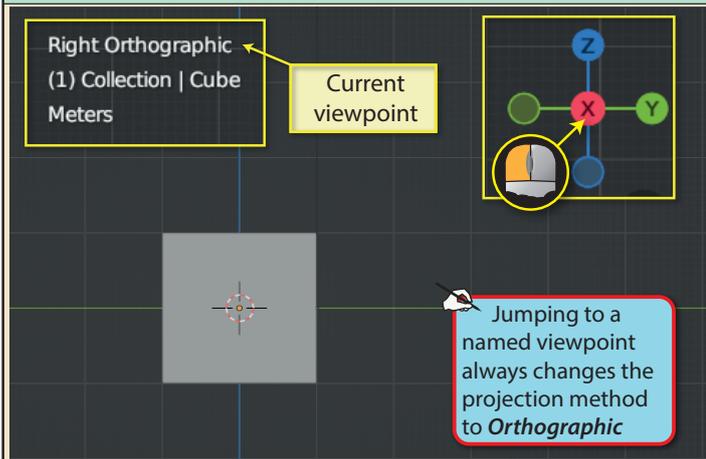
Clicking on the same circle as before (**X**) changes the view by 180°. In this case, to the *Left view*. Of course, in the case of a cube, there's not much difference!

Left Orthographic
(1) Collection | Cube
Meters

Changed viewpoint
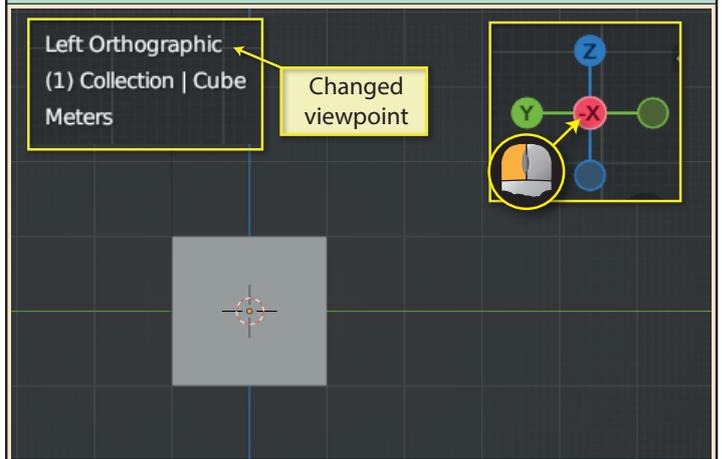
If the mouse pointer is moved into the dark area between the coloured circles, a new, large grey circle will appear.

Grey circle appears
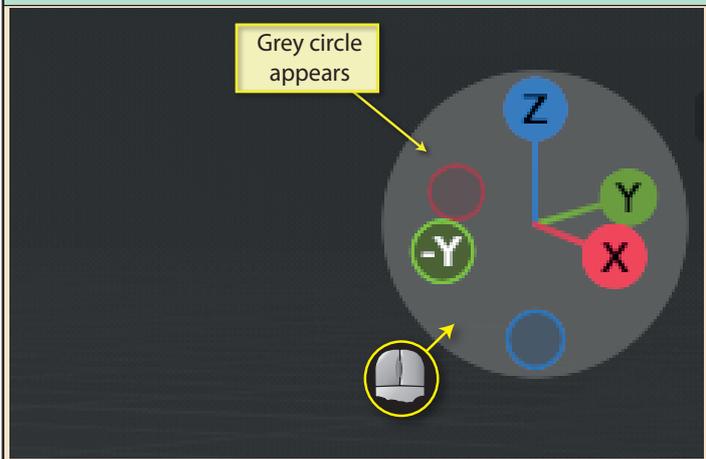
Starting a mouse drag within the grey circle allows freestyle circular movement of the viewpoint about the centre of the screen.

This type of viewpoint movement is know as **orbiting**

The start and end views in the *3D Viewport* are superimposed on each other in this image
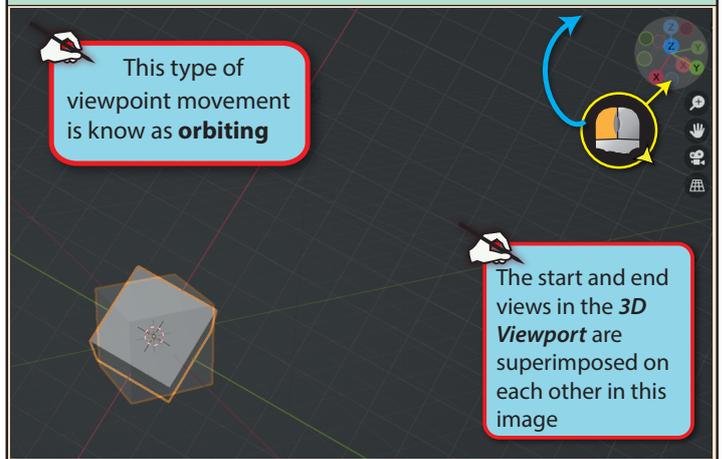
The **Zoom icon** is the next element of the *Navigation Gizmo*. Dragging the mouse up in this area will zoom in on the scene. Dragging down will zoom out.

Zoom In

Zoom Out
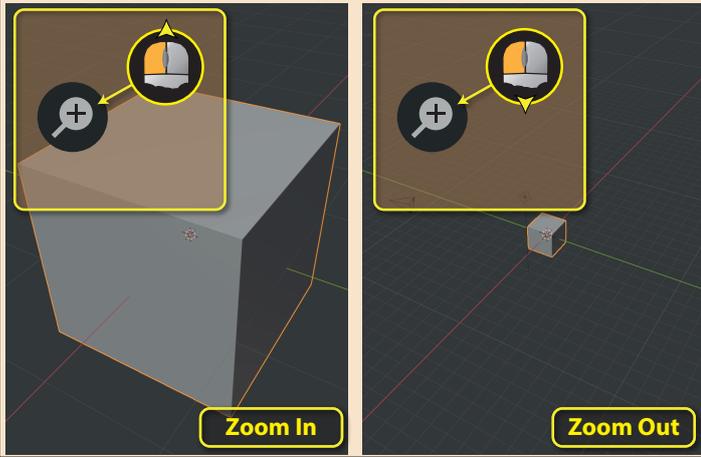
However, be aware that if we zoom in too far, faces nearest the viewing camera may disappear from view. In the example below most of the cube's faces are no longer visible within the *3D Viewport* and we have moved inside the Cube.

Only two of the cube's faces remain visible
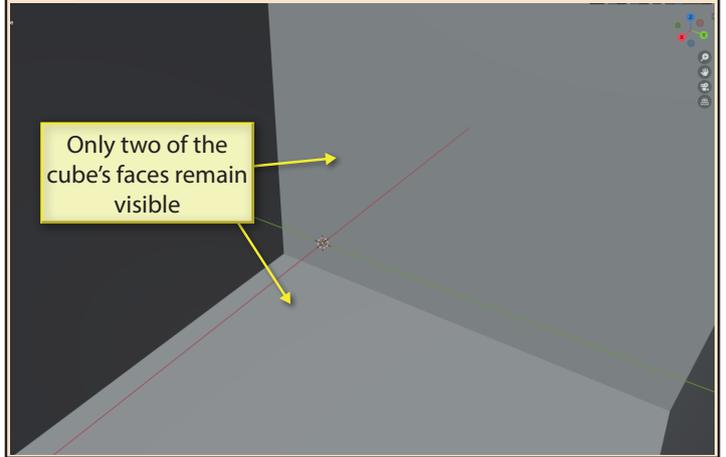
By first placing the mouse pointer over the **Move icon** then dragging in the left or right direction allows us to move our viewpoint to the side.

Start and end positions are superimposed
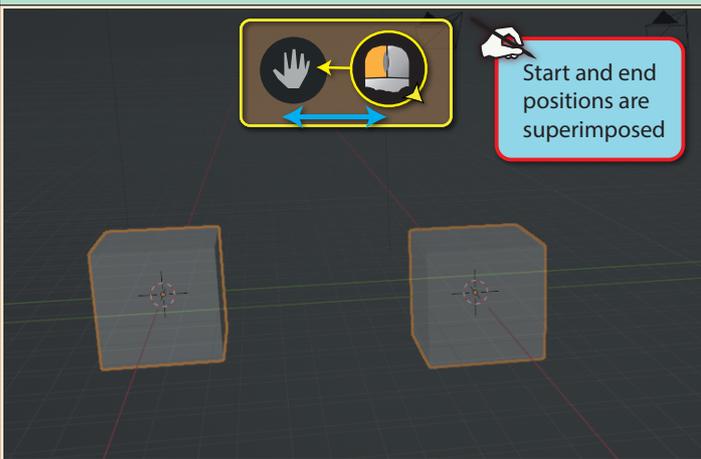
Dragging vertically moves our viewpoint up or down.

Start and end positions are superimposed
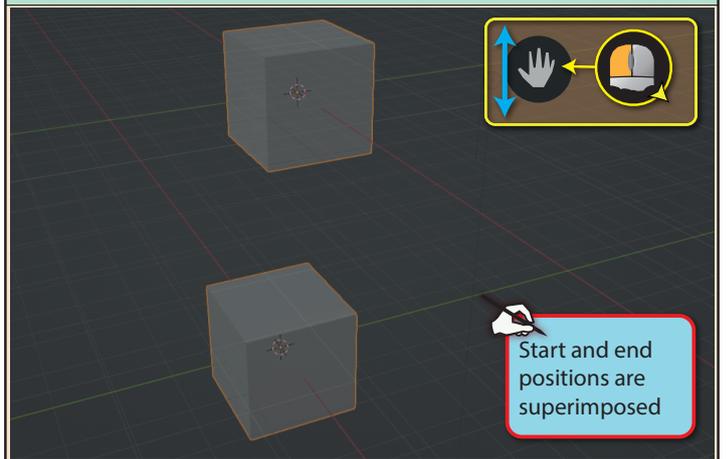
The **Camera View icon** allows us to toggle between the view from the camera object (which is used when rendering the final image) and the normal (user's) viewpoint. To activate this option, click on the icon.

Only the area in the brighter box appears in the final render

User View

Camera View

Click to switch between user and render views
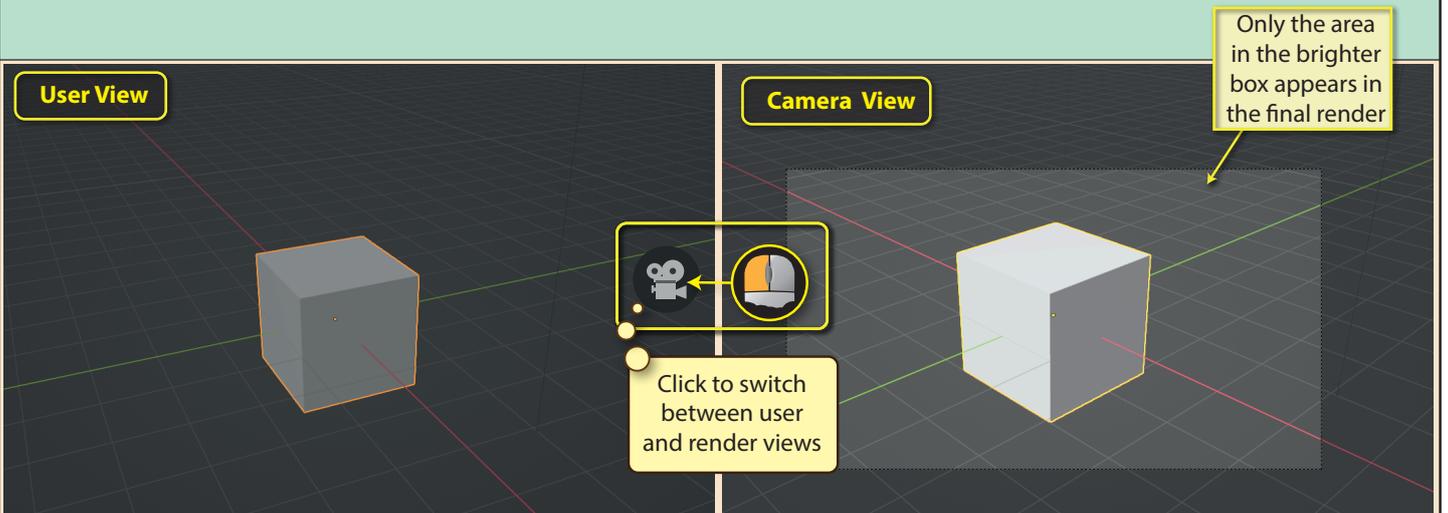
The **Projection icon** allows us to toggle between **perspective view** (where items further away appear smaller)...

...and **orthographic view** where equally sized items are of identical size irrespective of their distance (although your brain may be fooled into thinking ones further away are larger).

User Perspective
(1) Collection | Cube

All the cubes are the same size

User Orthographic
(1) Collection | Cube

Switching to a named viewpoint such as *Right*, *Front* or *Top* causes the projection to change to *Orthographic*. The render camera view switches to *Perspective*.
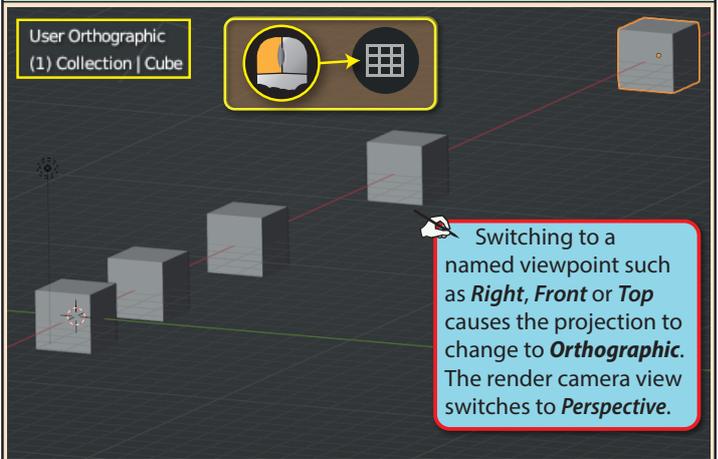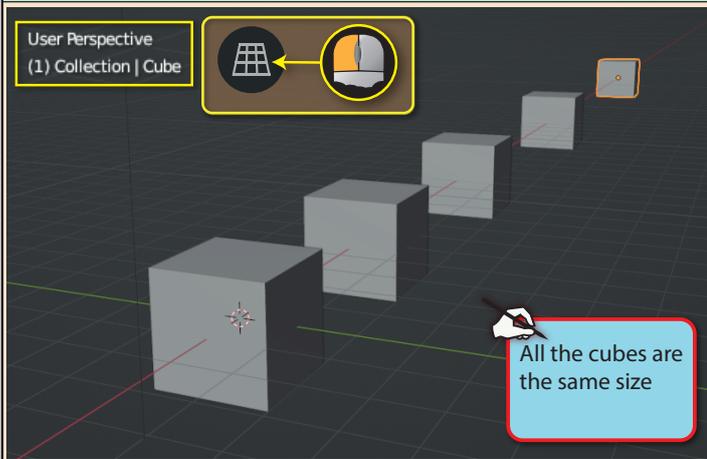
We've already seen that the *Navigation Gizmo* allows us to easily move to a new viewpoint as well as zoom and switch between perspective and orthographic views.

But Blender offers multiple ways of performing these tasks, many of which are quicker and simpler than using the *Navigation Gizmo*.

It should be pointed out, before we start, that life will be a lot easier if we are using a full-sized keyboard which includes a separate numeric keypad section (**numpad**). Also having a three-button mouse (the middle button being a scrollwheel) would be useful.

3-button mouse with wheel

Numeric Keypad
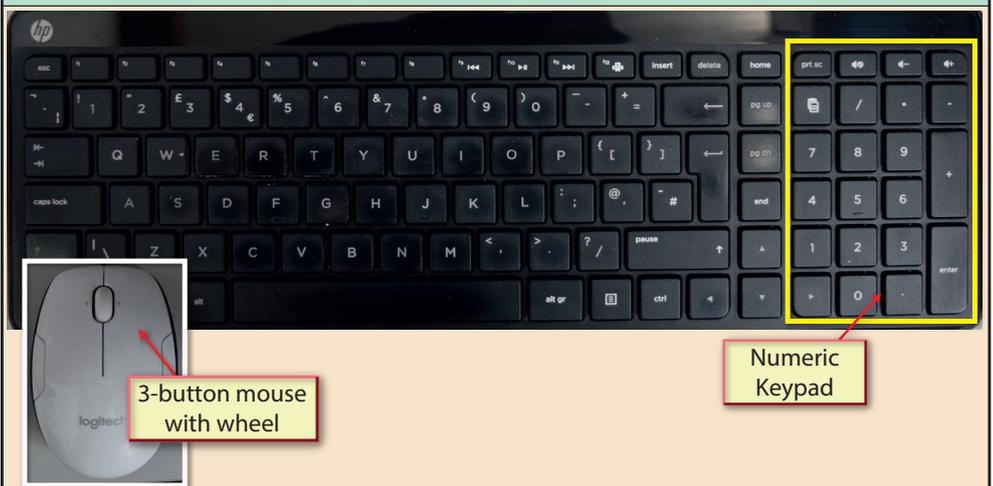
We can emulate the existence of the numpad and three button mouse if necessary by first selecting *Edit> Preference* from the main menu...

File   Edit   Render   Window   Help

Undo History...
Repeat Last   Shift R
Repeat History...
Adjust Last Operation...   F9
Menu Search...   F3
Rename Active Item...   F2
Batch Rename...   Ctrl F2
☑ Lock Ob
⚙ Preferences...
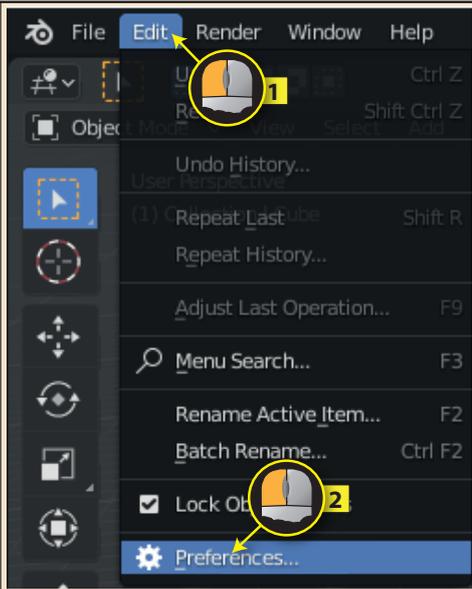
...to produce the *Blender Preferences* window. then clicking on **Input** on the left and then checking boxes **Emulate Numpad** and **Emulate 3 Button Mouse**.

Uses standard numeric keys in place of Numpad

Blender Preferences

Interface
Themes
Viewport
Lights
Editing
Input
Navigation
Keymap
System
Save & Load
File Paths

▼ Keyboard
☑ Emulate Numpad
☐ Default to Advanced Numeric Input

▼ Mouse
☑ Emulate 3 Button Mouse
☑ Continuous Grab
☑ Rel

Emulate middle mouse button using *Alt*+left mouse button

k Speed
hreshold   px
hreshold   10 px
hreshold   30 px
Motion Threshold 2 px

▼ Tablet
Tablet API   Automatic
Max Threshold   1.000
Softness   0.00

▶ NDOF

We've already seen how the **Navigation Gizmo** can be used to change our viewpoint by dragging the mouse within the grey circle.
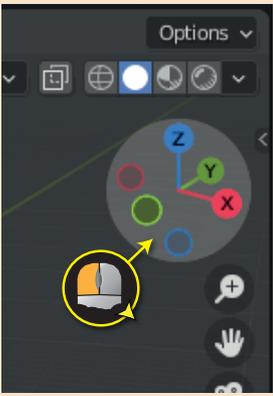
But the simplest way to achieve the same effect is to hold down the **middle mouse button** (or **Alt**+ left mouse button if you are using emulation) and drag the mouse anywhere in the *3D Viewport*.
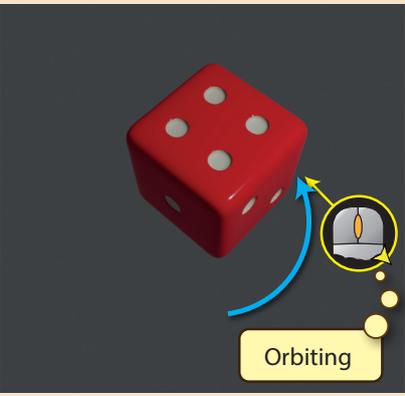
Orbiting

Another way of orbiting is to use keys on the numpad. Pressing **4** or **6** rotates the view about the user's *z*-axis (in opposite directions) while **2** or **8** rotate it about the *x*-axis. Also, **Shift + 4** or **6** rotates about the *y*-axis. Each keypress rotates the view by 15°.

4 / **6** Rotate about z-axis

2 / **8** Rotate about x-axis

Shift **+**

4 / **6** Rotate about y-axis
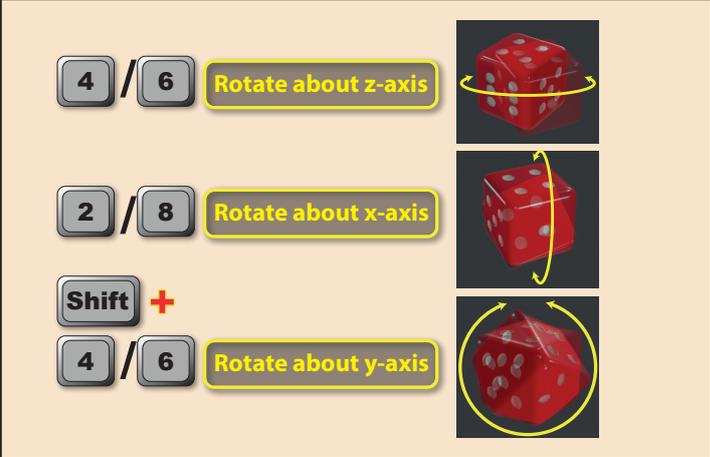
Orbiting is always around the centre of the screen. This can cause problems if the object we want to orbit is not at the screen's centre. For example, if we start in the position shown below...
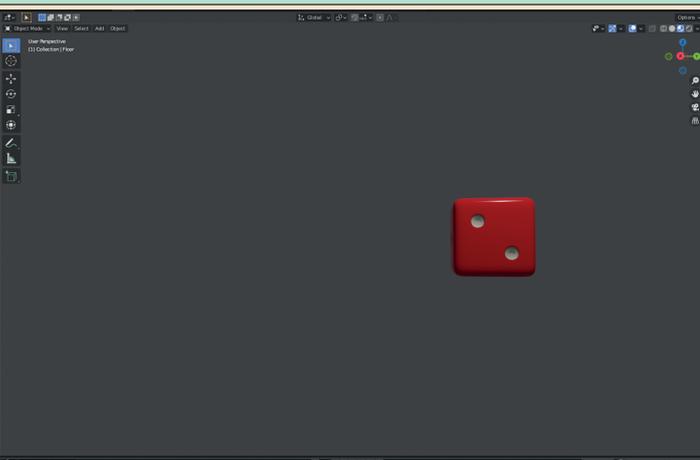
... and orbit using the middle mouse button, we get the rotation shown below with the die apparently circling the centre of the screen (remember, it's our viewpoint that is changing, not the position of the die).
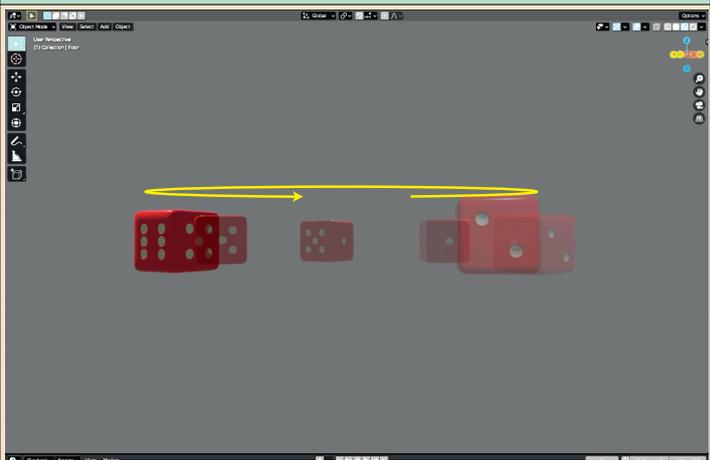
To avoid this effect, we start by selecting the object we want to orbit (in this case, the die) and then press the period (full stop) key on the numpad. This moves our viewpoint so that the die is centred on the screen (and usually zooms in on it too).

Die now at the centre of our viewpoint

We can zoom out if necessary (drag on the *Magnify icon*) and then orbit in the usual way (dragging on the middle mouse button).

Adjust magnification

Orbit
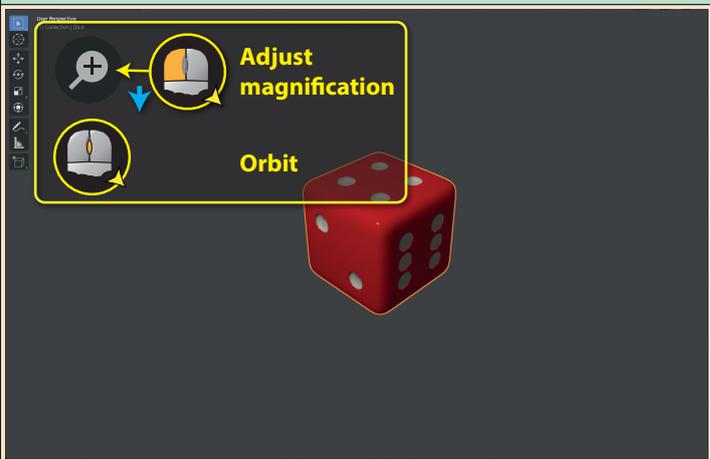
The numpad's **9** key rotates the view by 180° about the viewer's *z*-axis.

Before	**9**	After

Viewpoint rotated by 180°
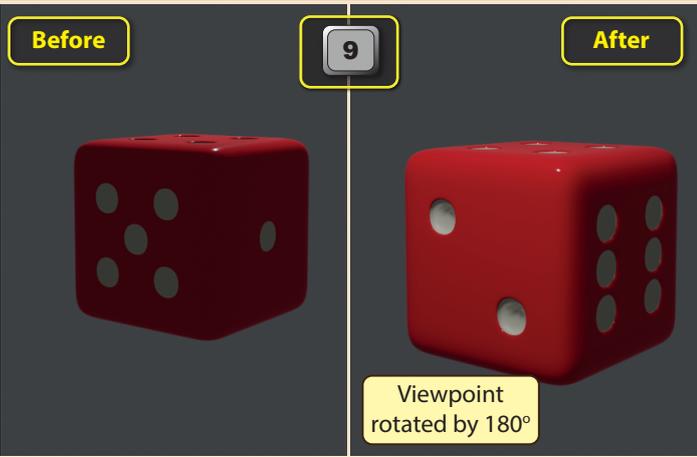
Named viewpoints such as *Front*, *Left* and *Top* can be accessed by pressing the appropriate key on the numpad or in combination with the **Ctrl** key (as shown here).

		Front View
Ctrl +	1	Back View
	3	Left View
Ctrl +	3	Right View
	7	Top View
Ctrl +	7	Bottom View
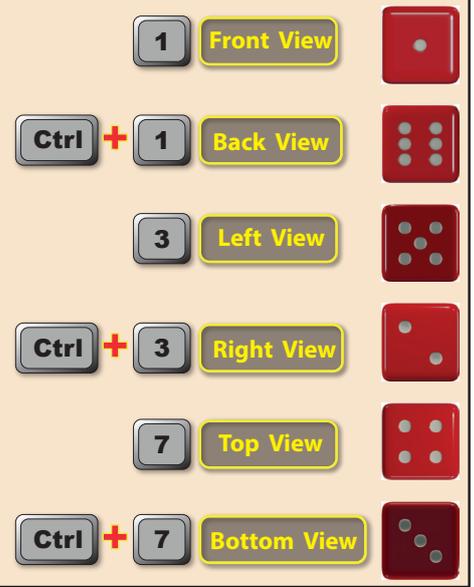
Since pressing **9** rotates the viewpoint by 180°, it is a useful alternative way of toggling between named viewpoints such as *Front* and *Back*.

Before (Front)	**9**	After (Back)
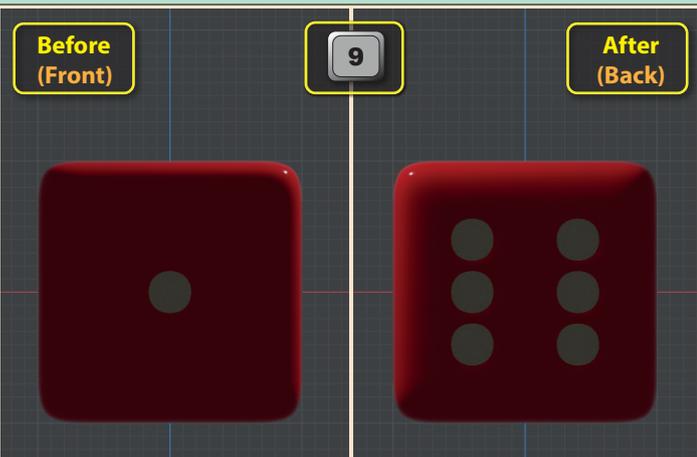
We can jump to a view of the whole scene by pressing the **Home** key.
(In the "before" and "after" images below, only the right side of the **3D Viewport** is shown.)

Home

Before | After
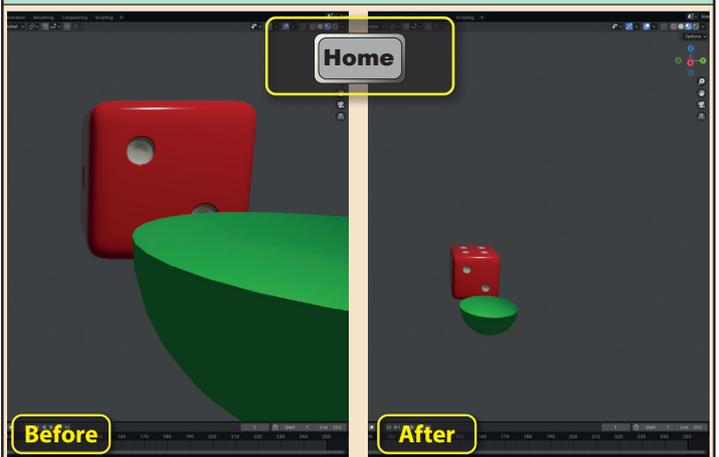
The other icons in the **Navigation Gizmo** also have numpad or mouse movement equivalents.

	Zoom	Panning	Camera	Projection
Gizmo	🔍➕	✋	🎥	▦
Mouse		Shift + (pan) → Pan left/right up/down		
Numpad	**+** Zoom in **−** Zoom out	Ctrl + 4 Left Ctrl + 6 Right Ctrl + 8 Up Ctrl + 2 Down	0 Toggle View/ Render Camera	5 Toggle Perspective/ Orthographic

A little used zoom option allows us to draw a box around the area to be zoomed into. Pressing **Shift+B** sets up the box drawing, dragging and releasing the left mouse button defines the size of the box and Blender then zooms into that area.
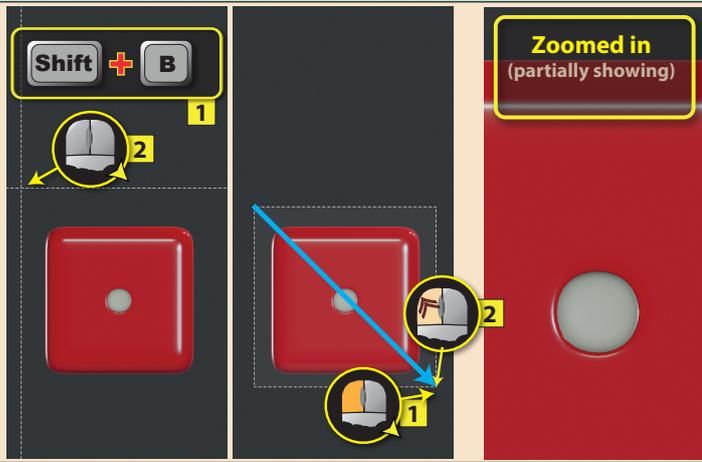
All methods of zoom that we've looked at so far limit the amount of zoom available. But a final zoom option in Blender is the equivalent of moving the viewpoint camera itself closer or further away from the subject. This method (known as **dolly zoom**) requires us to hold down **Shift+Ctrl** while dragging with the middle mouse button.

Shift + B

1

2

Zoomed in
(partially showing)

2

1

Shift + Ctrl +

Moving in too far will make the view pass through the object
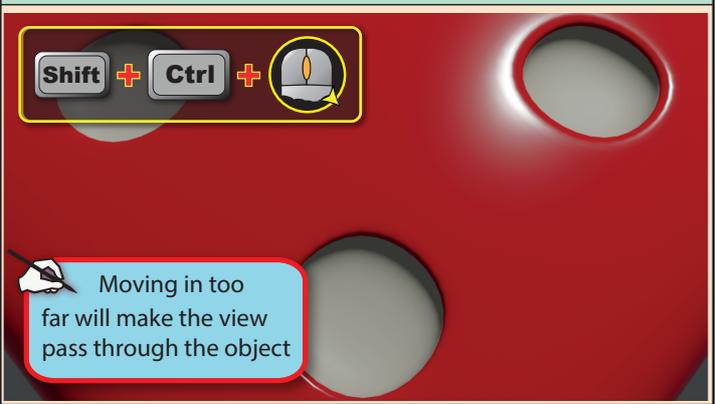
Later, when we start to create and edit scenes, it can be helpful to be able to see an object from several viewpoints at the same time. We can achieve this by pressing **Ctrl+Alt+Q** which splits the viewport into four equally sized view windows. Three of the windows show the named viewpoints, *Top*, *Right* and *Front* while the fourth retains the user's current viewpoint.

Each of these view windows acts as an independent viewpoint. When we move the mouse pointer into a specific window we can adjust that view in any way we wish such as zooming, panning or switching to another named viewpoint.

To merge the four views back to a single image in the viewport, we need only press the same key combination, **Ctrl+Alt+Q**.

Ctrl + Alt + Q **Toggle four viewpoints**

Top

User

Front

Right
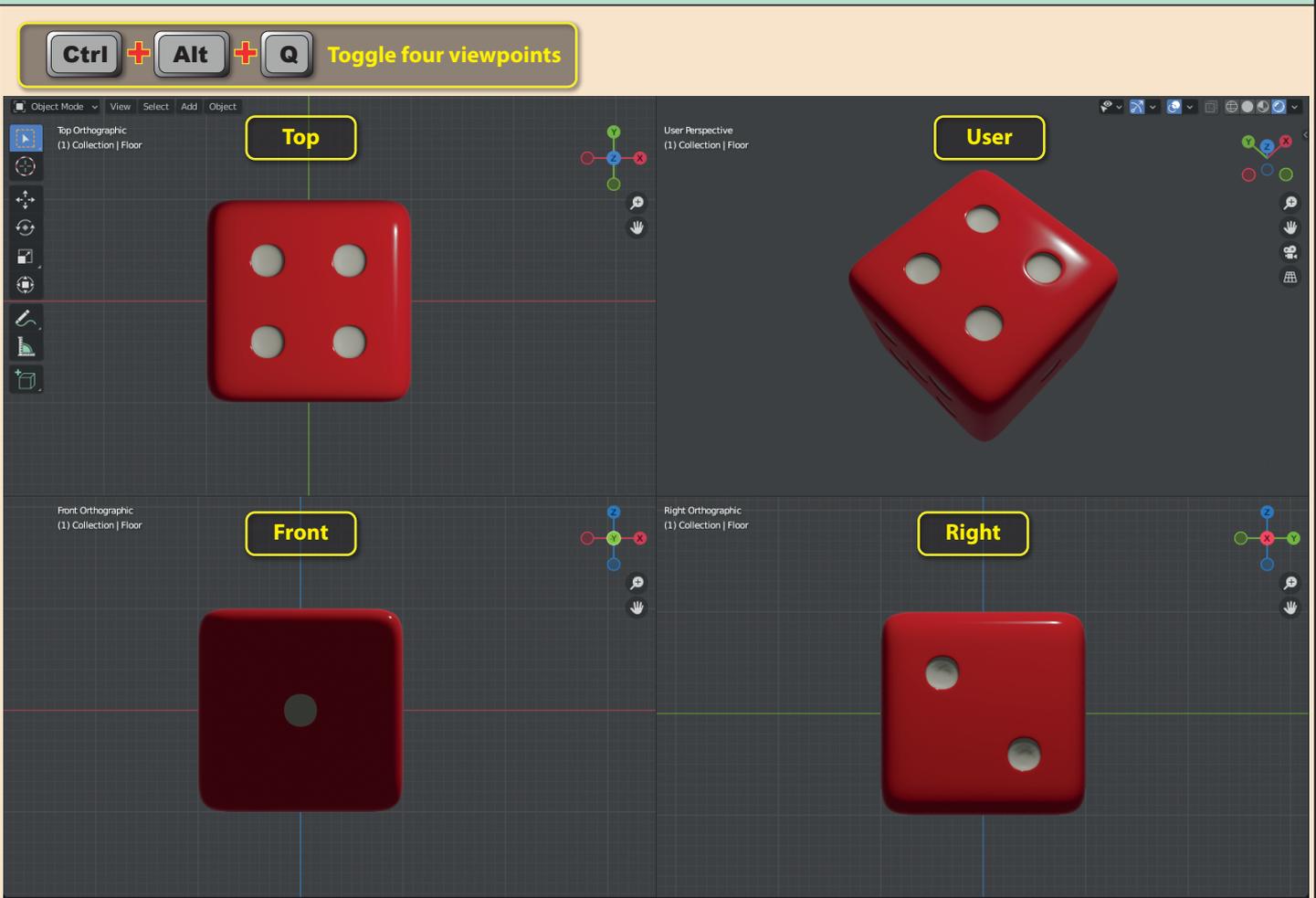
In large, complex scenes such as a cityscape, the methods we have seen so far for changing the viewpoint may not work as well as we would like.

An alternative approach is to allow the viewpoint changes to use the same techniques as we see in a typical first-person shooter (FPS) game.

This approach allows us to "walk" through our scene with any zooming, panning or orbiting happening relative to our current position within the scene.

To access **Walk Navigation** we need to select *View>Navigation>Walk Navigation* from the main menu.

View

Navigation
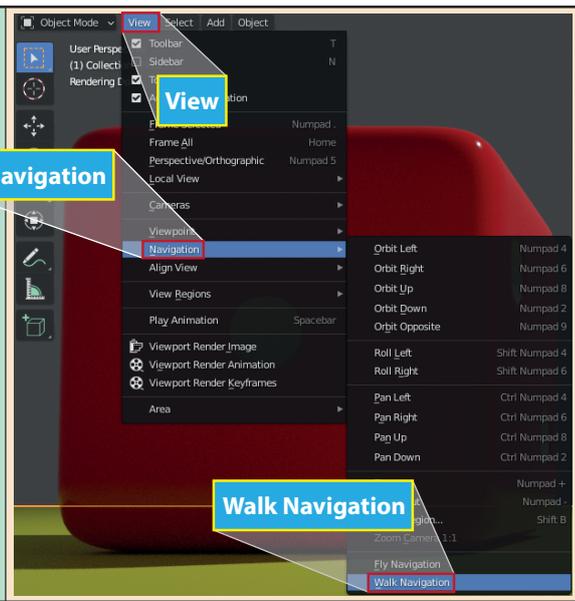
Walk Navigation

Once in "walk" mode, moving the mouse pointer (no button presses) allows us to look around while the keys **W, S, A, D, E**, **Q** and the arrow keys control navigation.

E and **Q** only work when gravity is off (see below).

Pressing **Esc** will exit "walk" mode.

▲ / W — Move forward

▼ / S — Move backward

◀ / A — Sidestep left

▶ / D — Sidestep right

E — Move up

Q — Move down

🖱 Look around

When we switch to walk mode we'll also notice that the mouse cursor changes to the typical crosshairs of a FPS game.

Pressing the left mouse button returns us to normal navigation.

Crosshairs
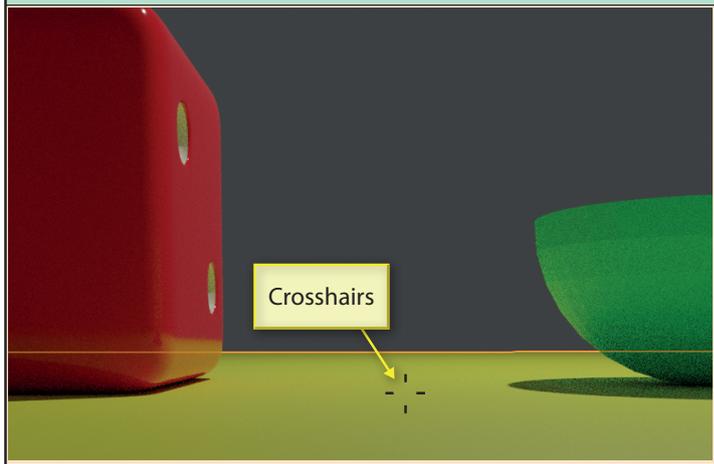
Holding down the **Shift** key while pressing one of the navigation buttons will speed up the movement.
Holding down **Alt** while navigating will slow down movement.
To permamently change the speed, scroll the mouse wheel or use the numpad's + or - keys.

Temporarily Increase Speed

Shift + { W , S , A , D , E , Q }

Temporarily Decrease Speed

Alt + { W , S , A , D , E , Q }

Permanent Speed Change

Increase
🖱 / +

Decrease
🖱 / -

While in "walk" mode, pressing the **Tab** key will introduce the effect of gravity causing the user's view to fall until a solid surface is encountered. Pressing **Tab** again will remove the gravity effect.

View (no gravity)

Tab

Viewpoint has fallen to plane

View (gravity)

The **Q** and **E** keys have no effect when gravity is on.

Blender Basics: Starting Blender