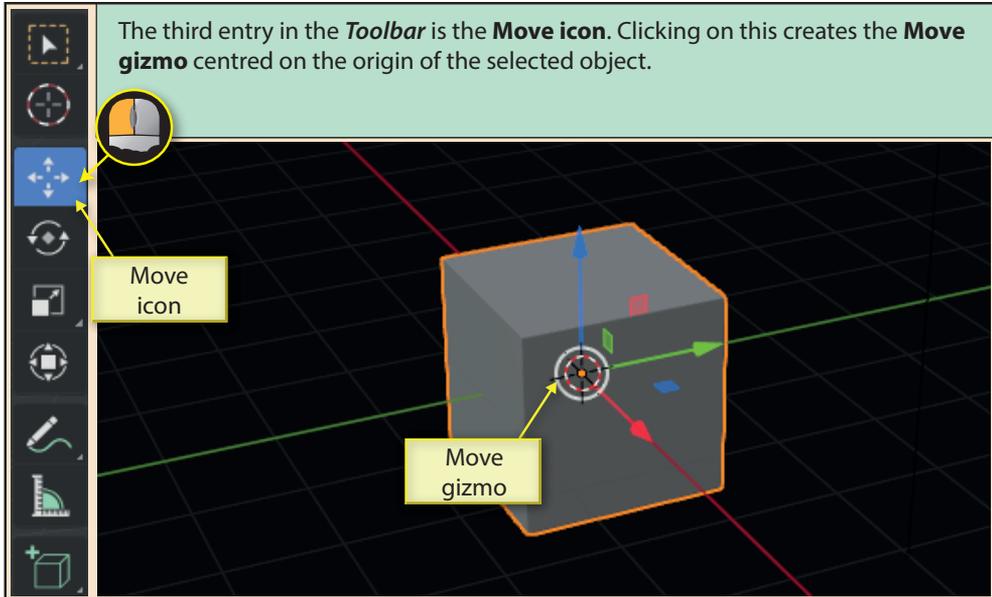When an object is first created, it is positioned to have its origin at the location of the 3D cursor.

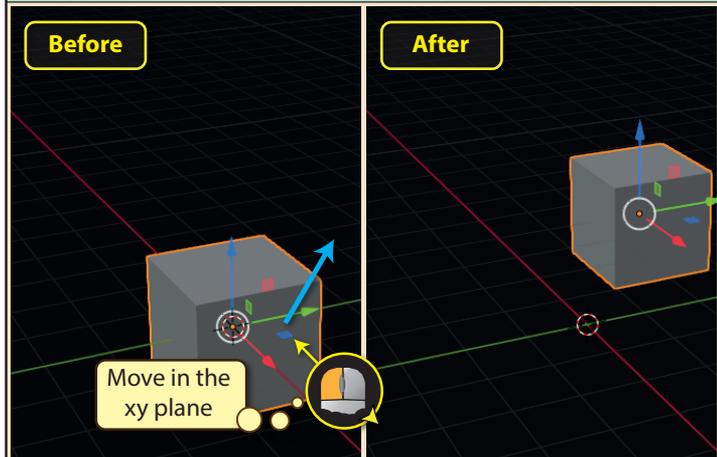However, there are several options available which allow us to move that object to a new position.

The third entry in the *Toolbar* is the **Move icon**. Clicking on this creates the **Move gizmo** centred on the origin of the selected object.

Move icon

Move gizmo

Dragging on one of the coloured lines of the *Move gizmo* moves the object along the corresponding axis. For example, dragging on the red line moves the object along the x-axis.
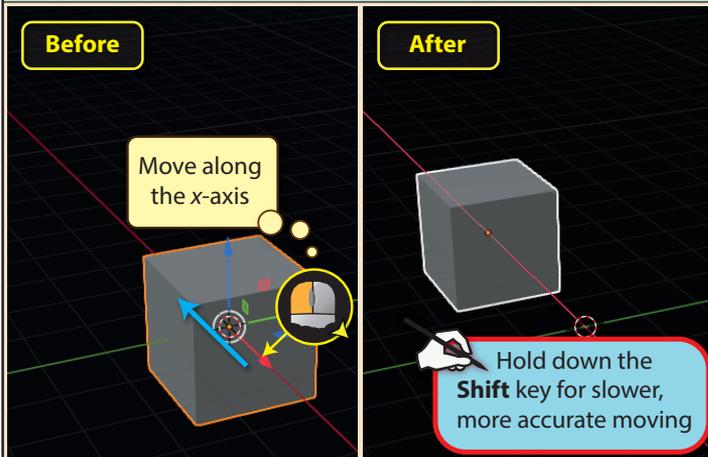
Dragging on one of the discreet coloured rectangles moves the object in all but that direction (e.g. dragging on the blue square would allow movement of the object in the x and y directions only).

Before

After

Move along the *x*-axis

Hold down the **Shift** key for slower, more accurate moving

Before

After

Move in the xy plane

Holding down the **Shift** key while dragging on a line has the same effect as dragging on a square. This time there is no movement in the direction corresponding to the line's colour.

Movement in the Y and Z directions only

Shift +

Dragging on red line
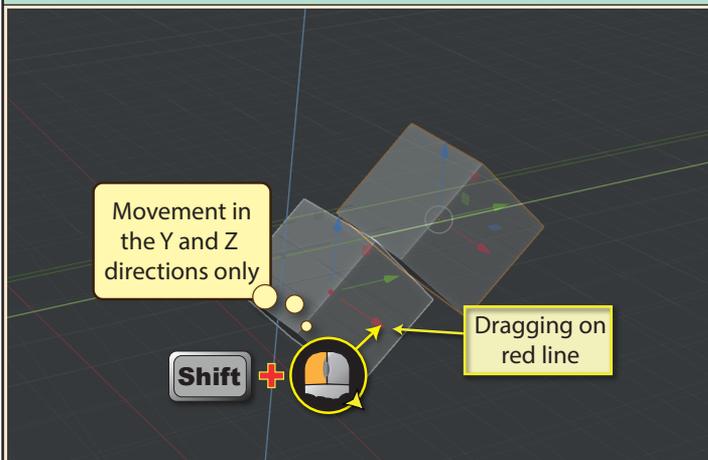
If an object has been rotated so that its Global and Local axes are no longer aligned, then the axes set displayed will depend on the setting in the *Transform Orientation* field at displayed at the top-middle of the 3D Viewport.
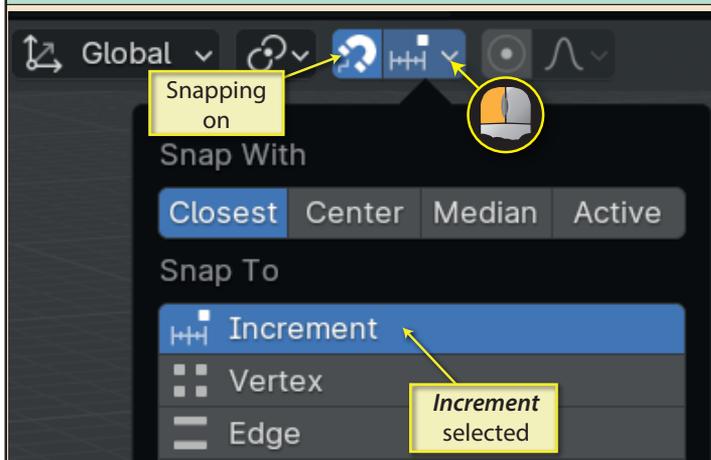
Transform Orientation ∨
Local

Transform Orientation ∨
View

Changing axis alignment
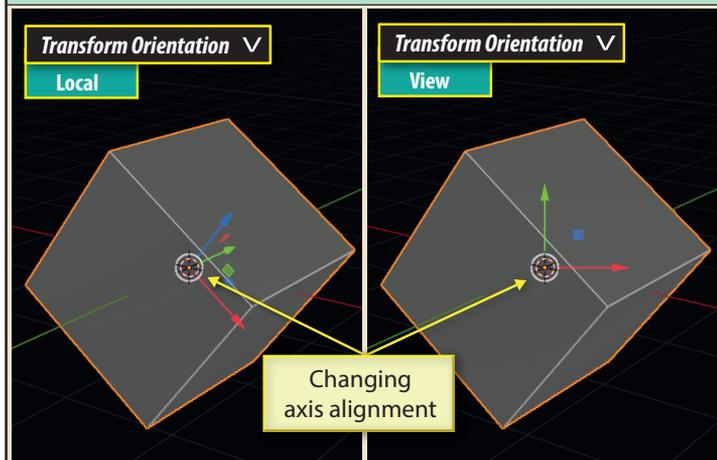
When we drag on one of the lines, we'll see the distance the object has moved and the axes set being used in the top-left of the 3D Viewport.

D: 0.06304 m (0.06304 m) local

Distance moved
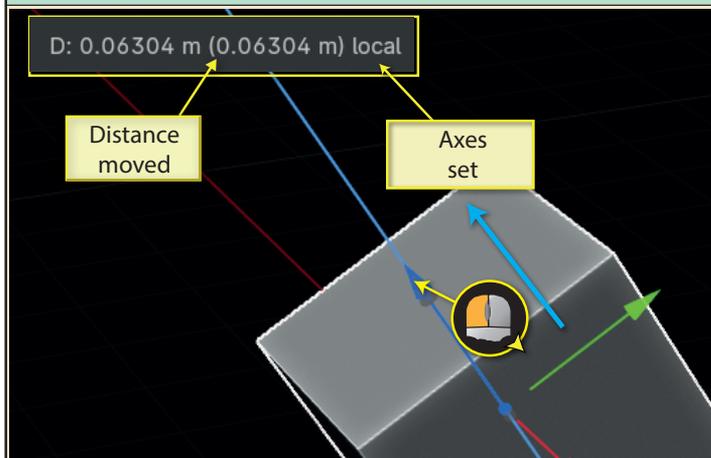
Axes set

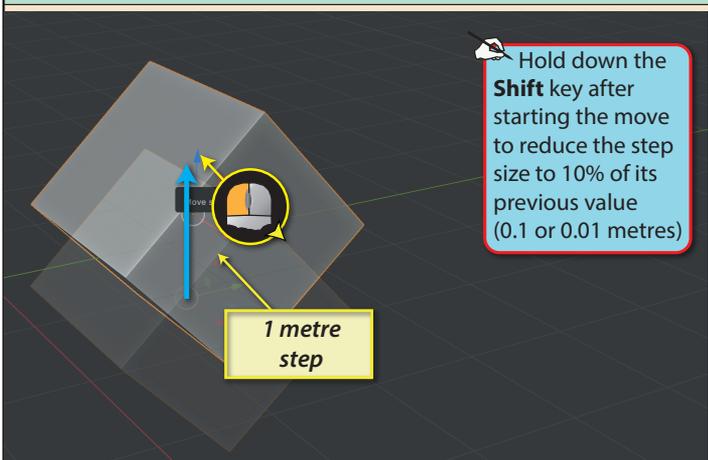Dragging within the gizmo's white circle allows movement in all three directions but the distanced moved display no longer specifies the axes set.

Dx: -1.249 m   Dy: -2.456 m   Dz: 0.3011 m (2.771 m)

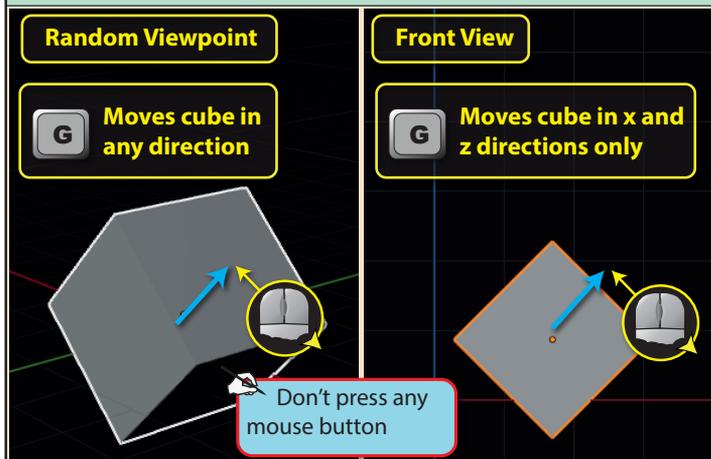Dragging with white circle

No axes set given
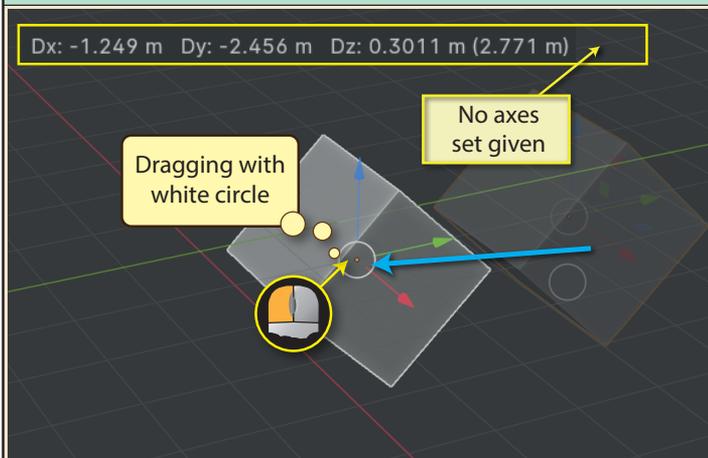
If snapping is switched on, or we hold down the **Ctrl** key while moving an object (remember, this switches on snapping for the current operation only) then, assuming the default *Snap To Increment* is selected...

Global

Snapping on

Snap With

Closest   Center   Median   Active

Snap To

Increment

Vertex

Edge

Increment selected

...movement will be in steps of 1 metre or 0.1 metres depending on the grid size shown in the 3D Viewport.

Hold down the **Shift** key after starting the move to reduce the step size to 10% of its previous value (0.1 or 0.01 metres)

1 metre step

The simplest keyboard shortcut used to move selected object(s) is the **G** (Grab) key which allows movement in any direction. Note that if a named viewpoint (*Front, Right,* etc.) is being used, movement is restricted to the two directions shown on the screen.

Random Viewpoint

G **Moves cube in any direction**

Front View

G **Moves cube in x and z directions only**

Don't press any mouse button

An alternative way of restricting movement to two dimensions is to press **Shift** and the letter representing the direction to be omitted. For example, **G Shift X** would resttrict movement to the Y and Z directions only.

G ➡ Shift ➕ X **Move in Y and Z directions only**
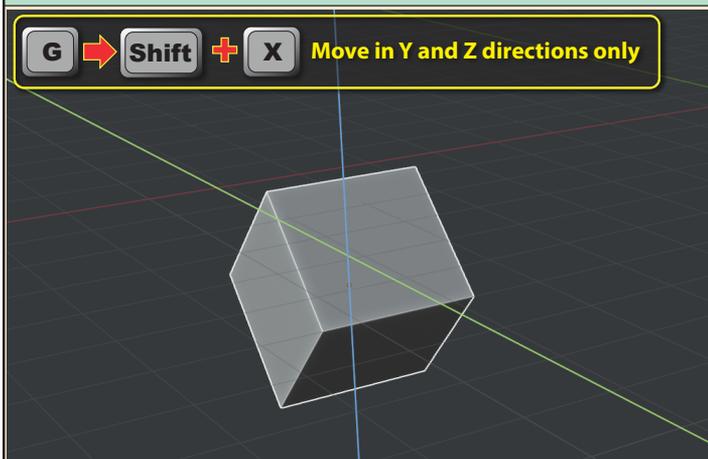
To restrict movement to a single axis, press **G** then the middle mouse button. This will display the three axes of the axes set currently selected in the **Transform Orientation** field.

*Transform Orientation* ∨
Global

G 1
2

Axes displayed
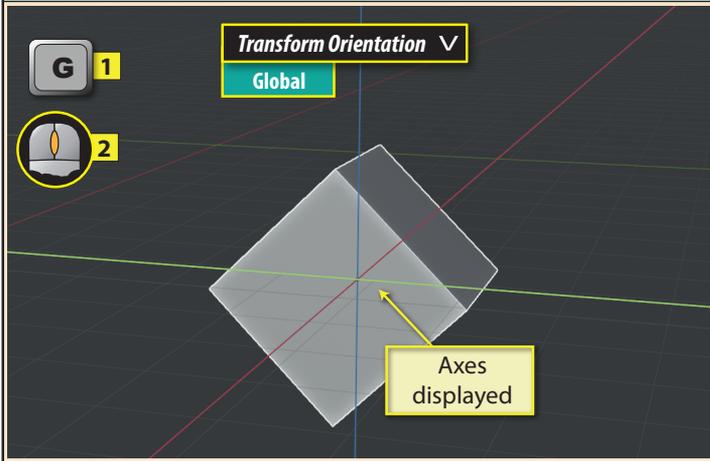
Continuing to hold down the middle mouse button while dragging will move the object along the axis nearest to the newly-formed broken line that acts as a directional guide.


Movement along x-axis

Guideline
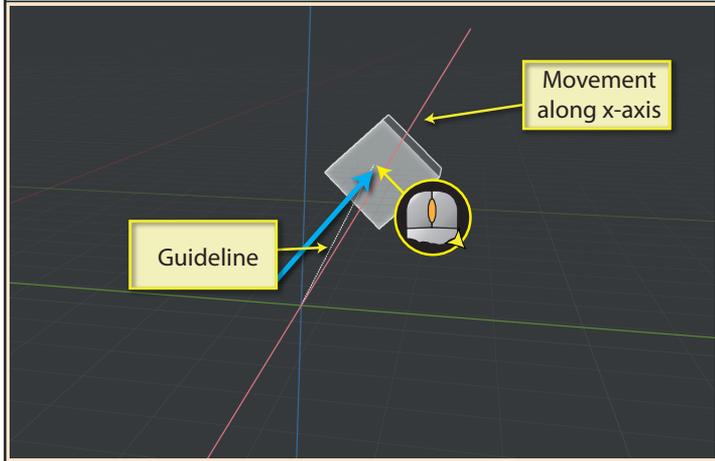
The object will continue to move along the selected axis until the left mouse button is pressed (or the right mouse button to cancel the move). Move operations can also be completed by pressing **Enter** (complete move) or **Esc** (abort move).

1
2a 2b

Finalise move

Abort move
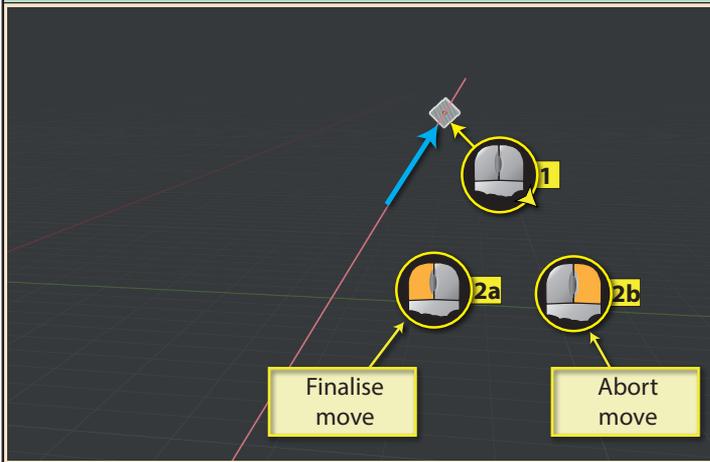
Another aid to help with precise movement is to split the 3D Viewport into 4 separate views using the keys **Ctrl Alt Q**. We can then work in any of the four quadrants. Pressing the same key combination returns us to a single view.

Top View
User View
Front View
Right View
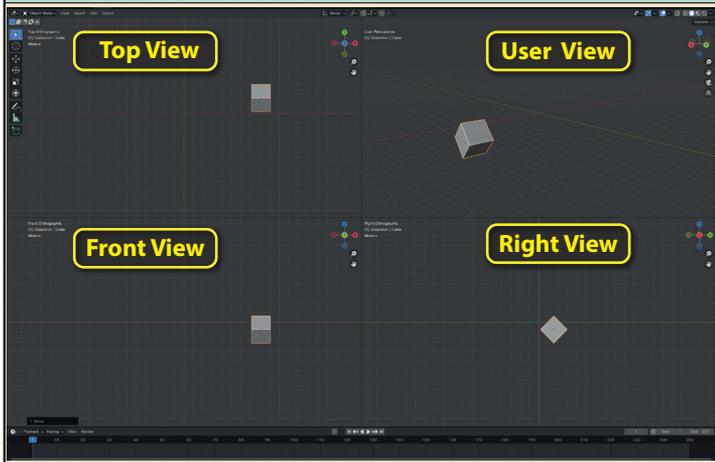
If we need to change viewpoint during a move operation, we can do this by holding down the **Alt** key and dragging with the middle mouse button. Release the mouse button and then the **Alt** key to return to the move operation.

G Initiate Move
Move object
Alt ➕ Shift viewpoint
Return to Move
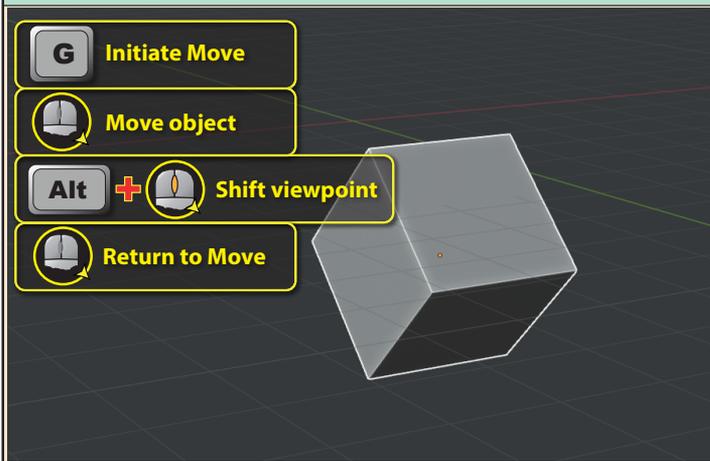
There are also keyboard shortcuts available when moving an object. These options are shown here. The first set of options moves the object along the set of axes currently selected in *Transform Orientation* attribute.

For example, pressing **G** then **Z** would restrict movement to the *z*-axis.

G ➡ **X** Move along *x*-axis

G ➡ **Y** Move along *y*-axis

G ➡ **Z** Move along *z*-axis

To move along the global axes when the *Transform Orientation* attribute shows some other value, then the axis letter needs to be pressed twice. For example, **GYY** will restrict movement to the Global *y*-axis.

G ➡ **X** ➡ **X**   **Move along Global *x*-axis**

G ➡ **Y** ➡ **Y**   **Move along Global *y*-axis**

G ➡ **Z** ➡ **Z**   **Move along Global *z*-axis**

If the Transform Orientation is set Global , then the double axis letter initiates movement along the Local axis.

We an axis letter (or double letter) is used, we can also specify a distance to be moved from the keyboard. The distance can come before or after the axis letter. For negative values the minus can be placed anywhere after the **G**.

G ➡ **Y** ➡ **8** ➡ **Enter**

G ➡ **8** ➡ **Y** ➡ **Enter**

G ➡ **Y** ➡ **-** ➡ **8** ➡ **Enter**

G ➡ **Y** ➡ **8** ➡ **-** ➡ **Enter**

G ➡ **-** ➡ **Y** ➡ **8** ➡ **Enter**

The minus key can be pressed more than once. Each press reverses the direction of the move.
An axis letter can be entered more than once. It's the last letter to be entered that determines the direction of the move.
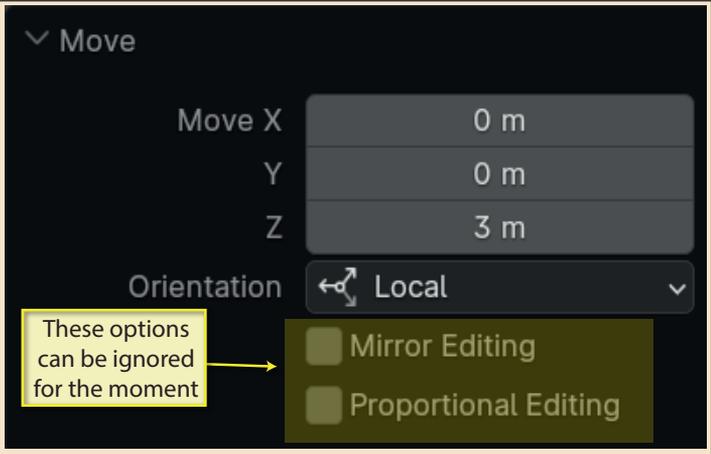
G ➡ **-** ➡ **Y** ➡ **8** ➡ **-** ➡ **Enter**

Causes move to be towards the postive end of the y-axis

G ➡ **Y** ➡ **8** ➡ **X** ➡ **Enter**
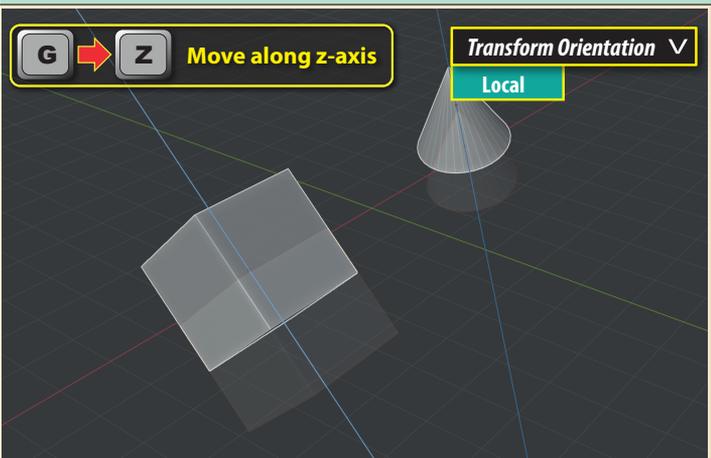
Causes move to be along the x-axis

When a *Move* operation is completed, the *Last Op panel* will show details of the move. We can enter new values here to change the attributes of the move. In the example below, coordinates are measured using the local axes.

⌄ Move

Move X   0 m
      Y   0 m
      Z   3 m
Orientation   ↤ Local   ⌄

These options can be ignored for the moment

☐ Mirror Editing
☐ Proportional Editing

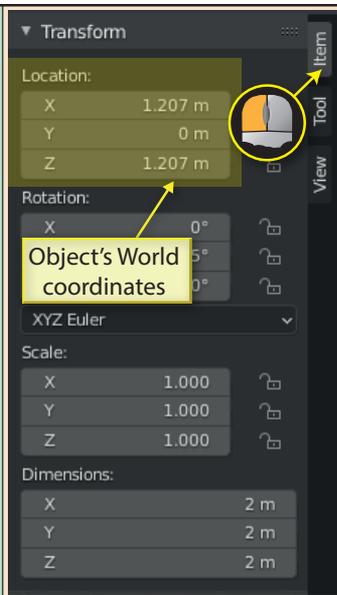If we have selected more than one object, then all objects move in the same direction when using the Global axes...

G ➡ **Z**   Move along z-axis

Transform Orientation ⌄
Global
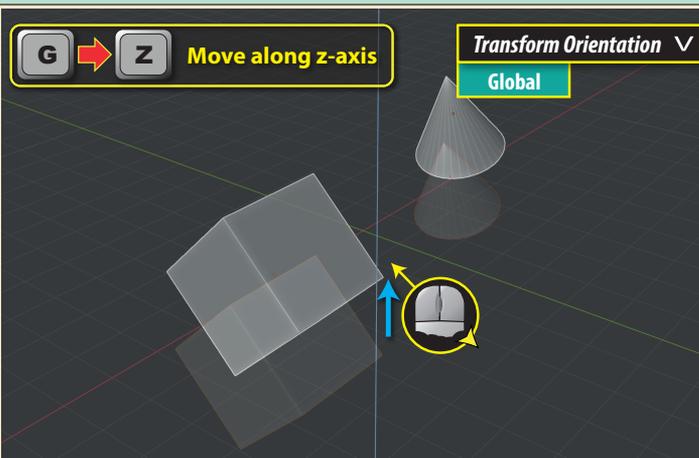
... but if Local axes are specified, then each object moves along its own Local axes set.

**G** ➡ **Z**   Move along z-axis

Transform Orientation ⌄
Local

One way of moving the selected object to a specific position is to display the *Sidebar* (press **N**), select the *Item* page, and enter new values in the *Location* section.

The values given here are the position of the object's origin in World coordinates.

▼ Transform

Location:
X	1.207 m
Y	0 m
Z	1.207 m

Object's World coordinates

Rotation:
X	0°
	5°
	0°

XYZ Euler

Scale:
X	1.000
Y	1.000
Z	1.000

Dimensions:
X	2 m
Y	2 m
Z	2 m

Remember, when we specify a position, the object is moved in such a way as to place that object's origin at the given location.

Cube's initial position

Cube's final position

Origin of Cube

Location:
X	0 m
Y	0 m
Z	0 m
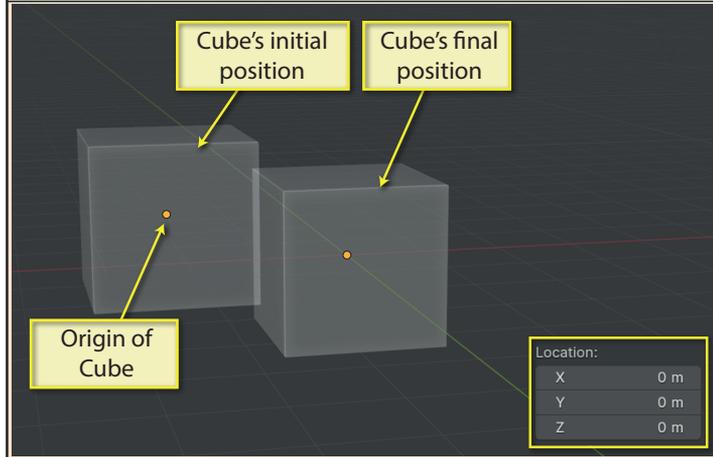
So, if we've moved the origin from its origin location relative to its mesh, then this affects where the mesh itself will be placed.

Cube's initial position

Cube's final position

Origin of Cube

Location:
X	0 m
Y	0 m
Z	0 m
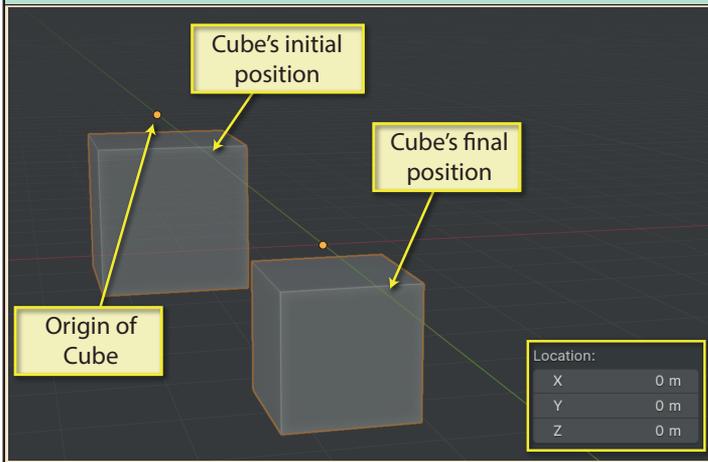
Another way of controlling an object's movement is in the Snapping pie menu created by pressing **Shift S**. We looked at some of the options in this menu previously when moving the 3D cursor.
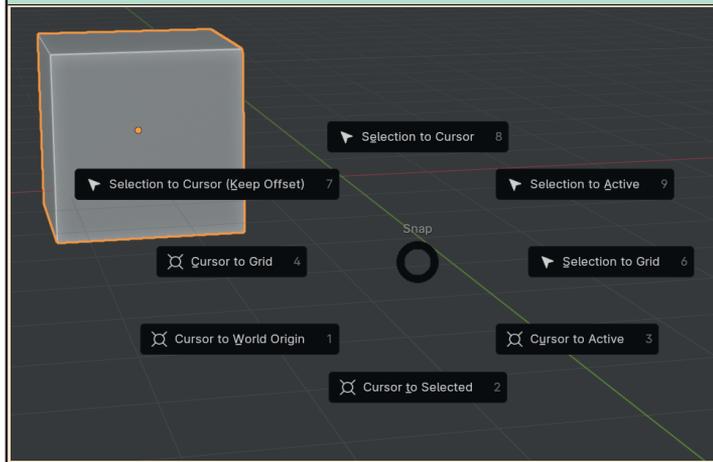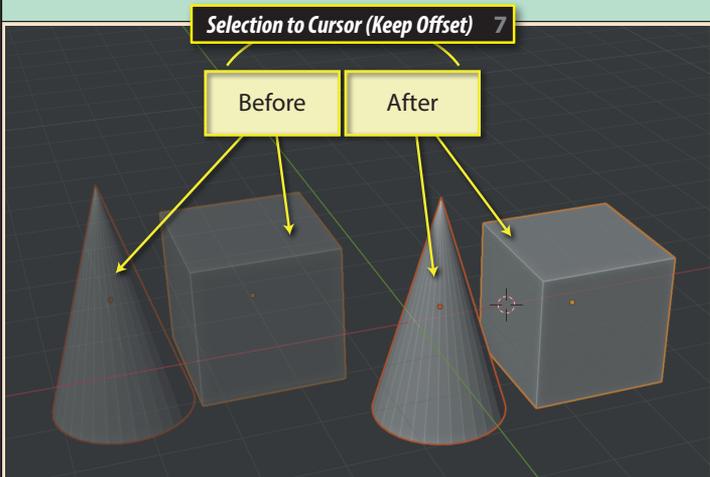

Selection to Cursor, moves the selected object so its origin is at the same location as the 3D Cursor.

Selection to Cursor 8
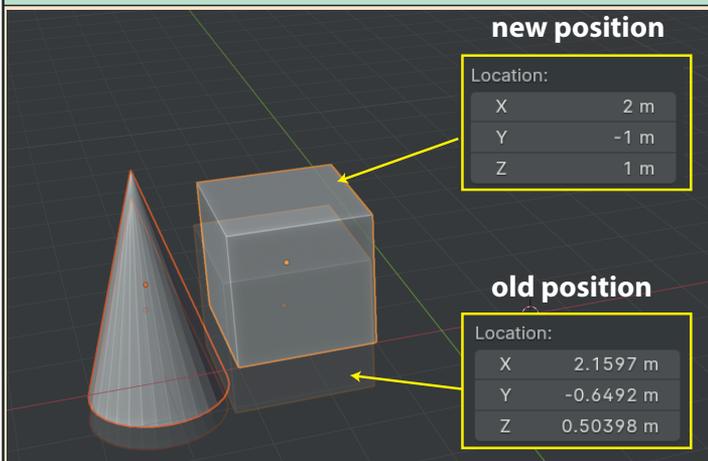
Before   After
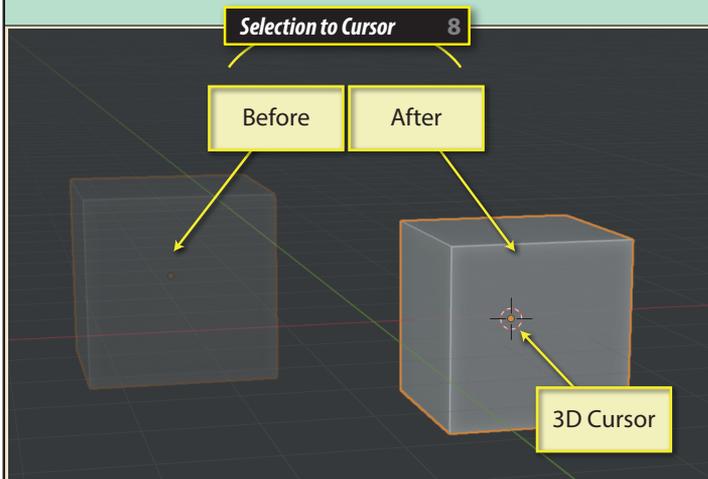
3D Cursor

If more than one object is selected when using **Selection to Cursor**, and assuming the origins of each object is in its original position, the objects will overlap.

*Selection to Cursor* 8

Before   After
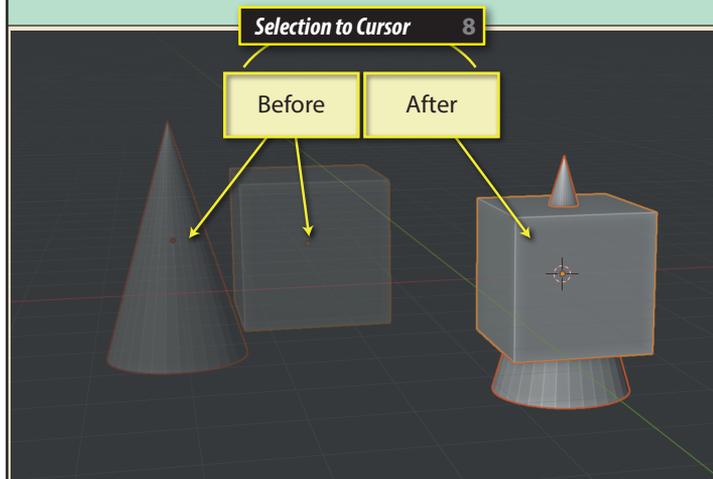
Selection to Cursor (Keep Offset) moves the selected objects keeping them their original separation space. The mid-point of the selected items' origins is placed over the 3D cursor.

Selection to Grid moves the selected object(s) to the nearest grid intersection point.

Selection to Cursor (Keep Offset)   7

Before   After

new position

Location:
X	2 m
Y	-1 m
Z	1 m

old position

Location:
X	2.1597 m
Y	-0.6492 m
Z	0.50398 m

Selection to Active moves all other selected objects to the origin of the Active object. Below the Cone is moved to the same location as the Cube (which is the Active object).

Selection to Active   9

Before   After

Active object
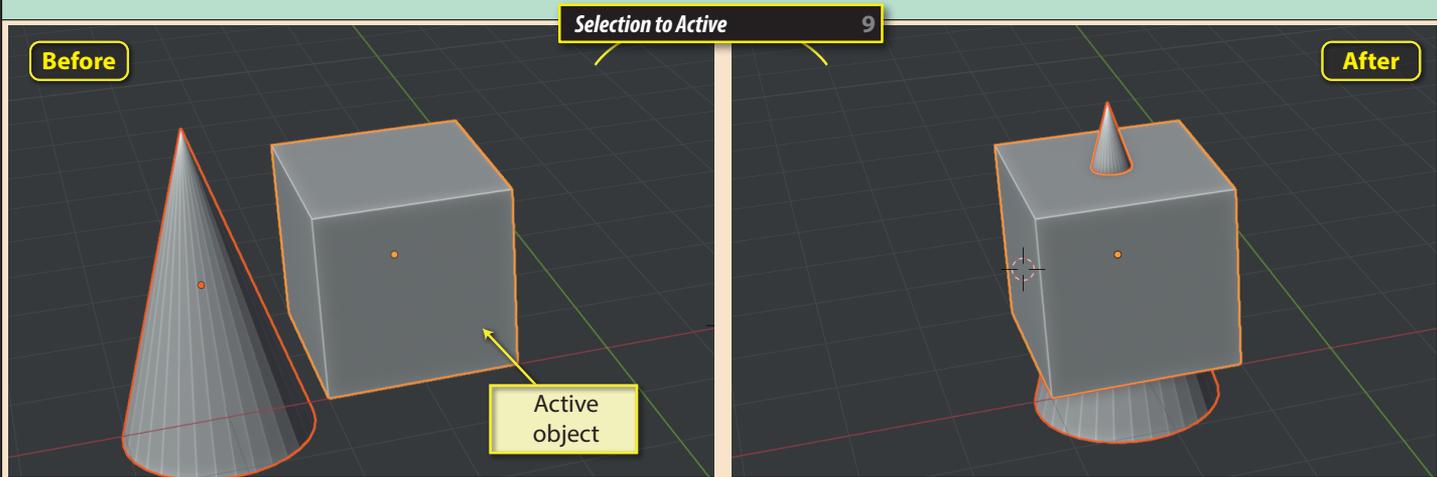
If we want to undone all moves and return an object to the World origin, we can press **Alt G**. Note this will place an object at the World origin even if that was not its original starting point.

Before   After

Alt ➕ G   Position object at (0,0,0)

UVSphere moved to (0,0,0)

UVSphere's initial position