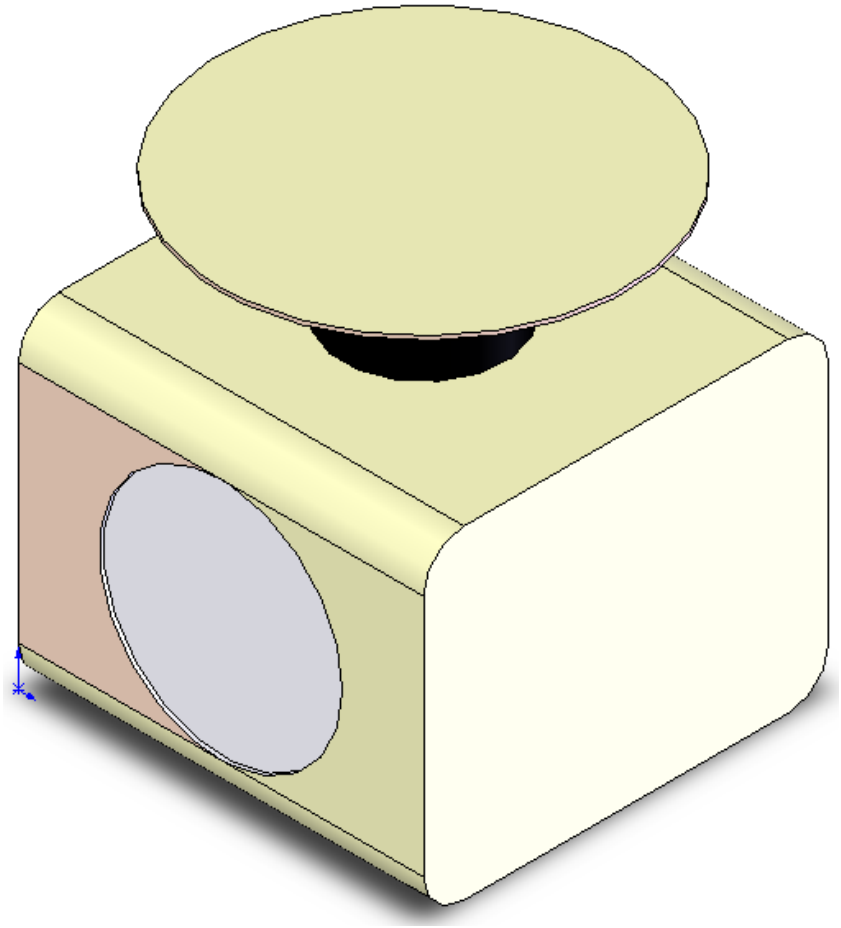
WEIGHING SCALES EXERCISE 1.



Prerequisite knowledge Students should have completed **Unit 2 exercises**

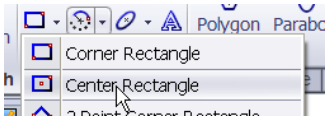
Focus of lesson This lesson will focus on using the following commands **Extrude cut, Fillet and Adding Relations.**

Commands Used This lesson includes Sketching**,** *Extruded Boss/Base, Extruded Cut, Fillet and Adding Relations.*

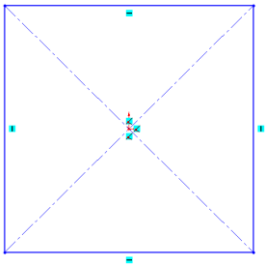
Save File Select **File, Save As**, Filename Weighing Scales.

Getting Started Select the **Top plane,** and select the sketch icon. 

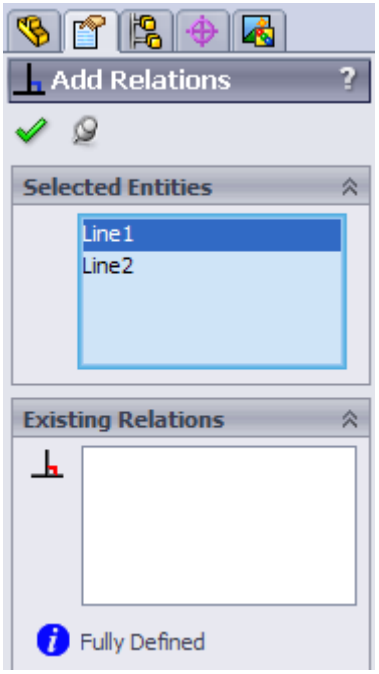
Creating the Sketch: Select 'Center Rectangle' rectangle from the sketch toolbar,

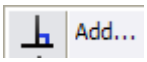


Create the sketch so that the Origin is in the centre of the rectangle. Placing the Origin at the centre will be very useful as the object is symmetrical.



Adding a Relation: In this case we want to change the a rectangle to a square.
We will use **Add Relations** so that if a change is made to one dimension of the square the other three sides will automatically update.



From the menu toolbar select **Tools, Relation** and **Add.** 

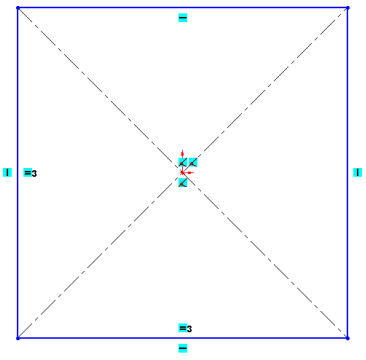
When you have selected the Add Relation tool You must then select the sides of the sketch to add relations to.

Select the base of the sketch by left clicking on it And then left click on either of the vertical lines.

At the left hand panel of the screen a dialogue box will appear. When you have selected the two edges Of the sketch the edges will appear in the dialogue box as shown.

Next select 'Equal' from the Add Relations options in the dialogue box

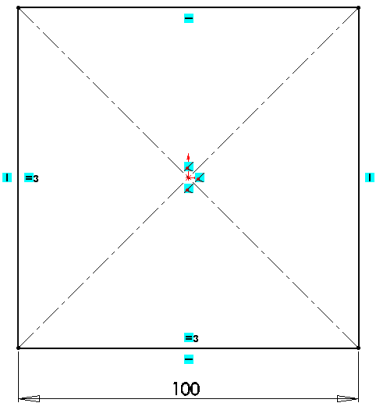
Now the sketch will change to a square and will automatically update when changes are made to one side.



Dimensioning the Sketch: Add a dimension to the base of the sketch as shown

Dimension of Base = 100mm

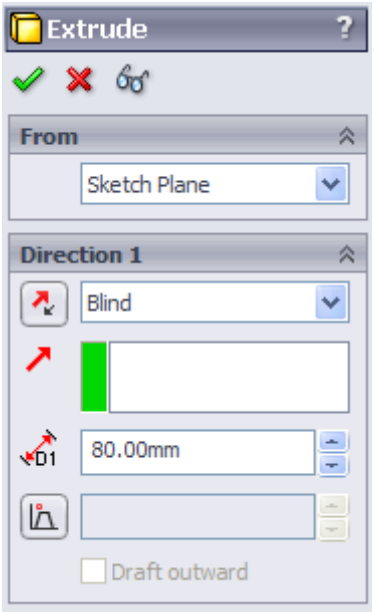
The sketch is now fully defined.

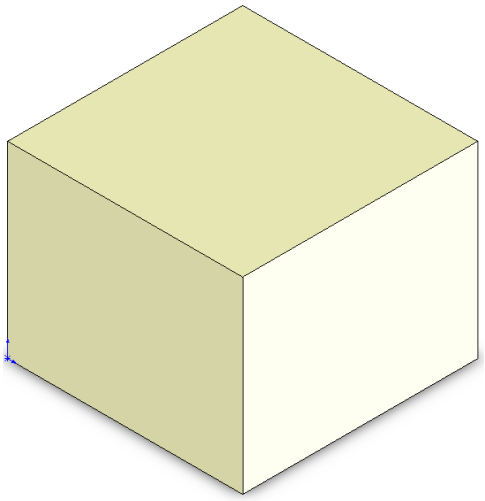


Next exit sketch

Extrude the Model: press **S,** and select Extrude 

Extrude the model to a height of **80mm.**



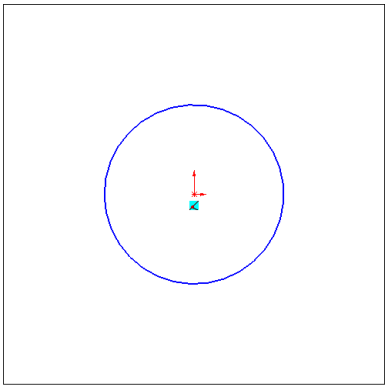


Rename the feature as Base.

Creating second sketch: Select the top surface of the model to create the next sketch

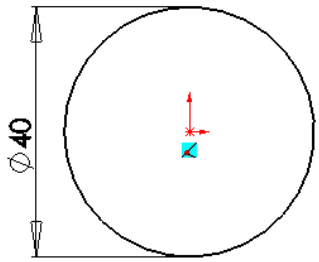
Select the circle command from sketch toolbar.

Select the Origin as the centre of the circle



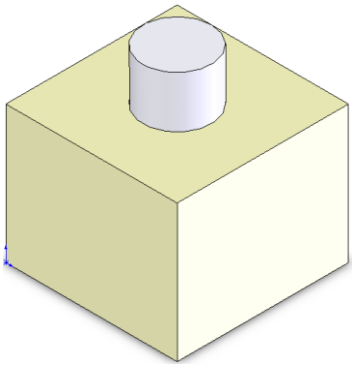
.

Dimension the Circle: Using the smart dimension toolbar to dimension the circle as diameter 40mm.

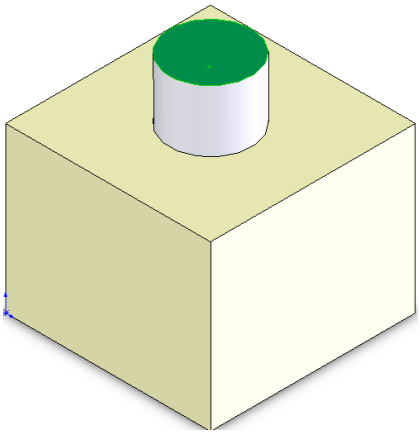


Exit Sketch.

Extrude the sketch to a height of **30mm**

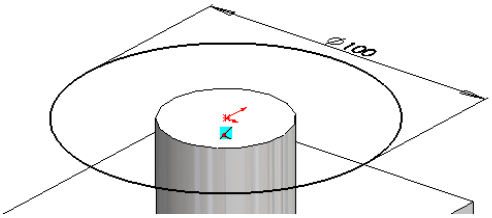


Creating third sketch: Select the top surface of the last Extrusion as shown.



Rename as Support.

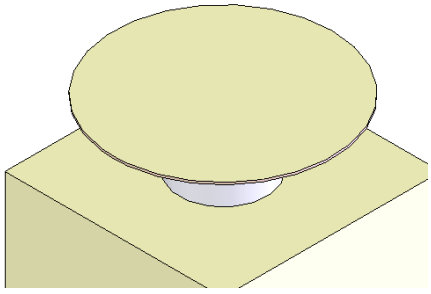
Sketch a circle coincident with the Origin.



Dimension the circle to a diameter of **100mm.**

Exit Sketch.

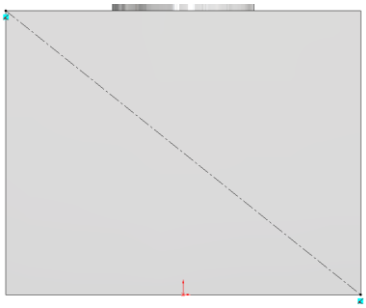
Extrude the sketch to a height of **1mm.**



Rename as weighing tray.

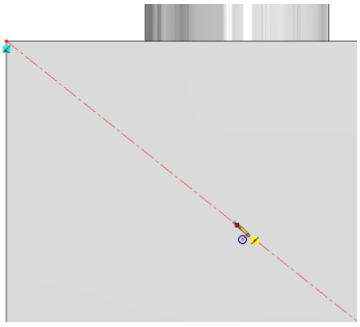
Creating sketch:

Choose the front face of the model.



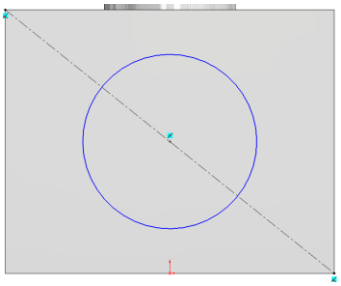
Use ‘Centerline’ to sketch a diagonal

Select ‘Circle’ from the sketch toolbar.

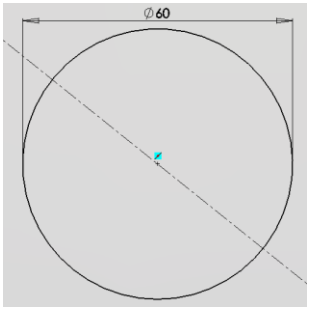


Move the cursors over the diagonal line - the midpoint of this line will be highlighted

Sketch a circle on this line with its centre centre coincident with the midpoint of the diagonal



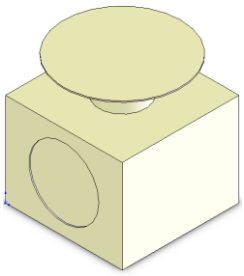
Dimension the circle diameter **60mm**



Exit Sketch

Extrude cut:

Press **S** and on features toolbar select Extrude Cut 



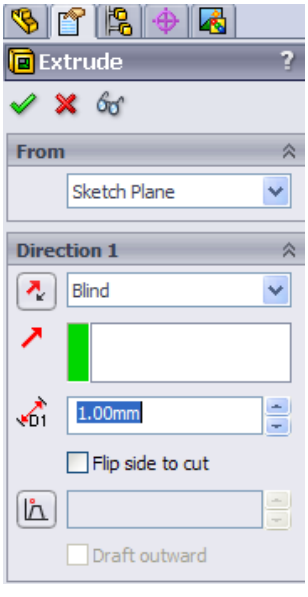
Extrude cut using:

The **Blind** direction

And a Depth of **1mm**

Finally select the OK  button.

Rename as Scale.



Introducing Fillet

Fillets are generally added to the solid rather than the sketch and are referred to as **applied features** .

Where to find it

Select the **Fillet tool**  from the features toolbar *or* from the **Insert** menu, select **Features/Fillet/Round…**

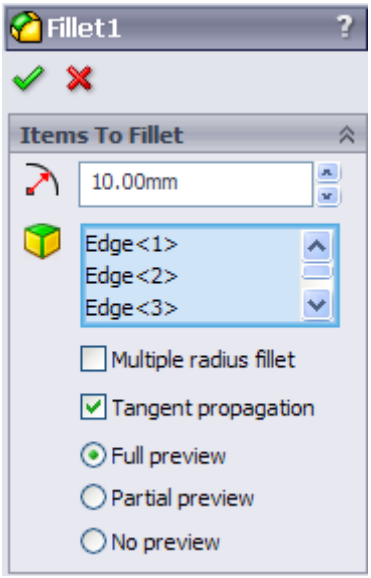
Insert Fillet

Select the **Fillet** option. The fillet options appear in the property manager.

Select **Constant radius**

Set the **Radius** value to **10mm**

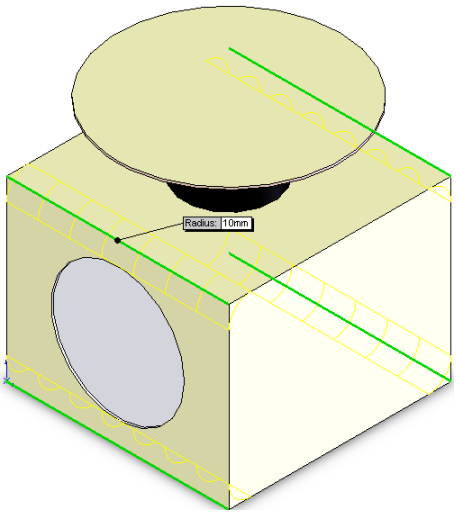
Select **Full Preview**

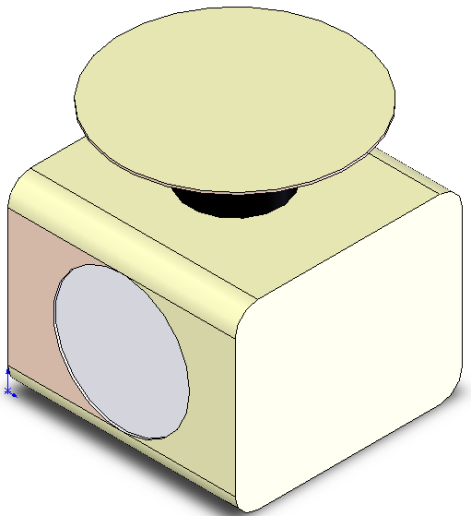


Edge Selection

The edge will highlight red as the cursor moves over it and appear green as it is being select

Select the edges shown and click **OK** 





Add Colour to the Weighing Scales

From the feature manager,
Right click on **Weighing Scales** and
Select **"Appearance"**.

Apply a chosen colour/appearance as in Exercise One.

Finished Exercise: