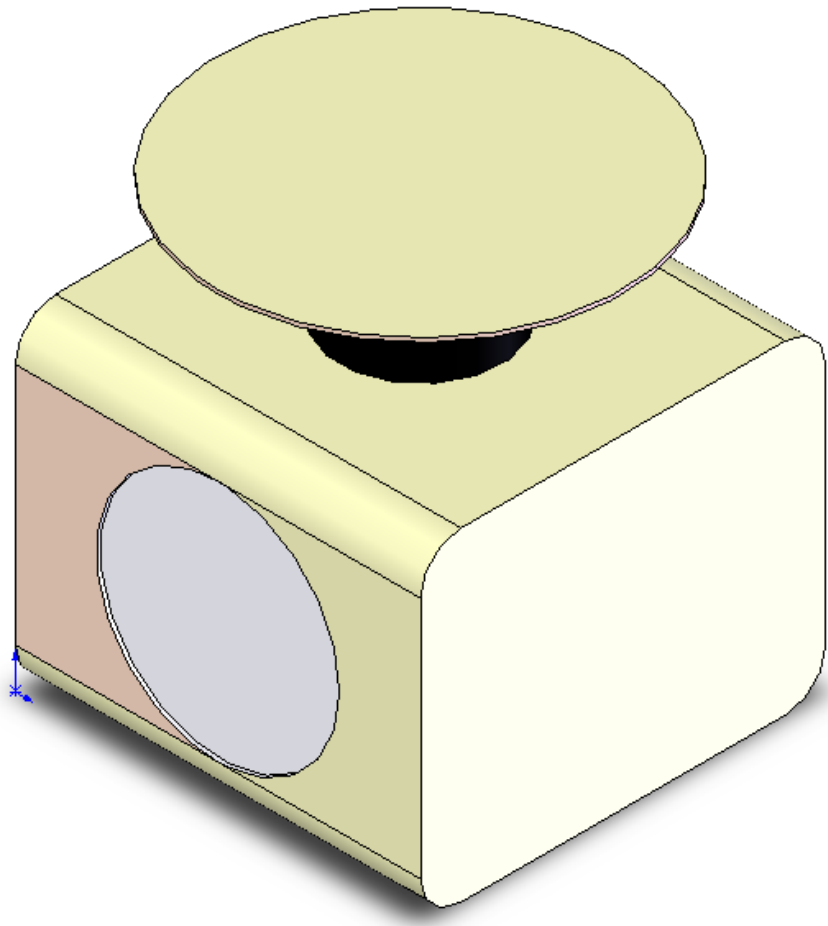# EXERCISE TWO:

WEIGHING SCALES.

Prerequisite knowledge   Students should have completed Exercise One **"The Mobile Phone Holder"**

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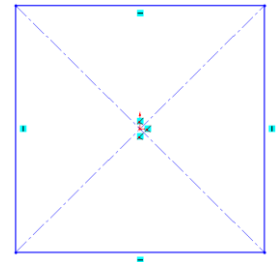
Save File   Select **File, Save As**, Filename Weighing Scales.

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

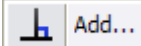**Creating the Sketch:**   Select 'Center Rectangle' rectangle
                           from the sketch toolbar,
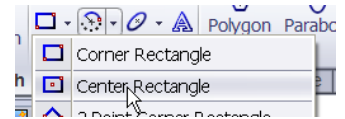
   Create the sketch so that the Origin is in the
                           centre of the rectangle. Placing the Origin at
                           the centre will be very useful as the object is
                           symmetrical.

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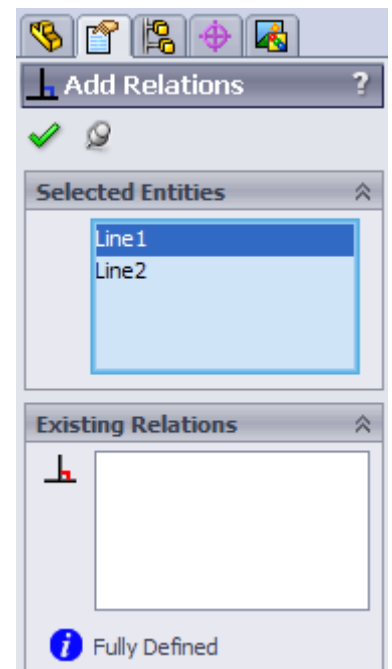
   When you have selected the Add Relation tool
                           You must then select the sides of the sketch
                           to add relations to.

                           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

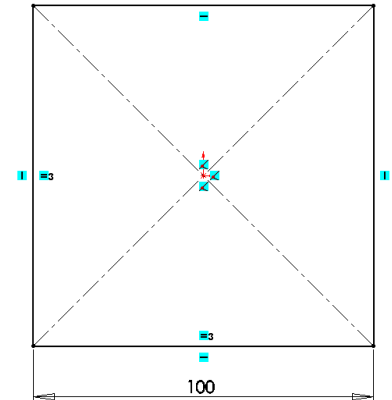   Now the sketch will change to a square and will
                           automatically update when changes are made to
                           one side.
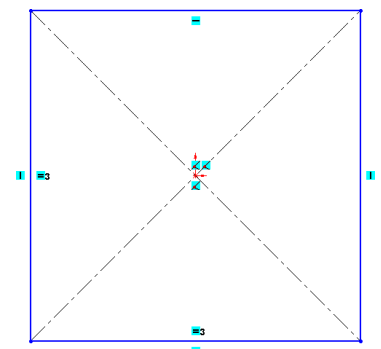
Dimensioning the Sketch: Add a dimension to the base
of the sketch as shown

Dimension of Base = 100mm
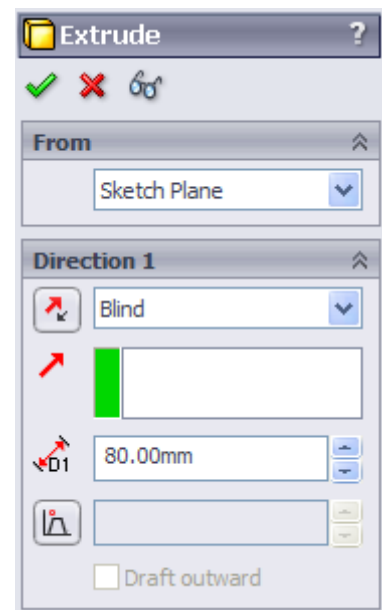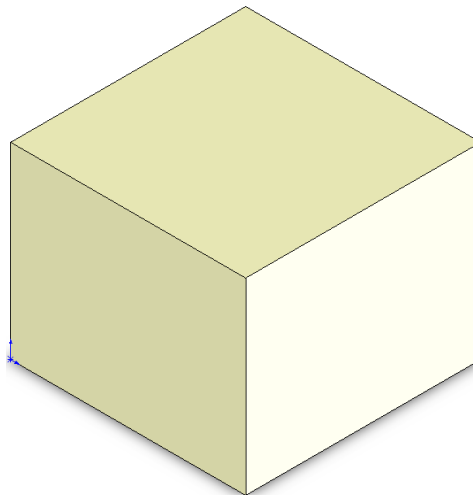
The sketch is now fully defined.

Next exit sketch

Extrude the Model: press **S,** and select Extrude
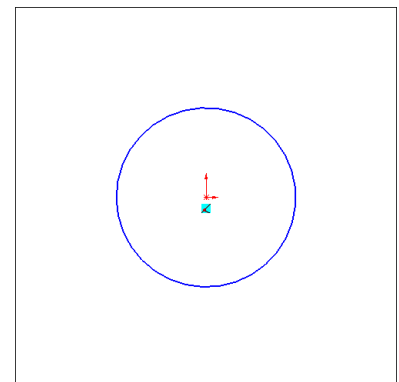
Extrude the model to a height of **80mm.**

Rename the feature as Base.

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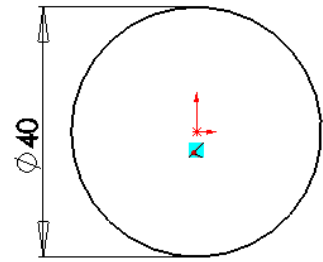the next sketch

Select the circle command from sketch toolbar.

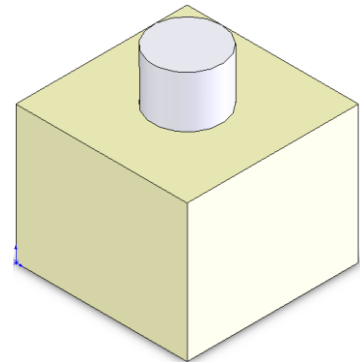Select the Origin as the centre of the circle

.

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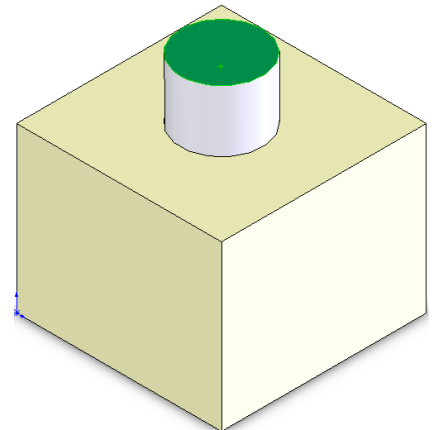The circle as radius 40mm.

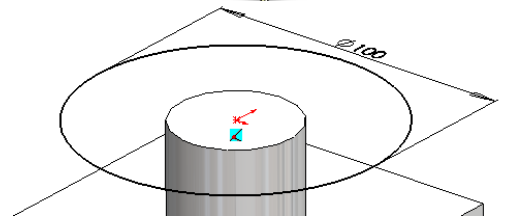Exit Sketch.

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

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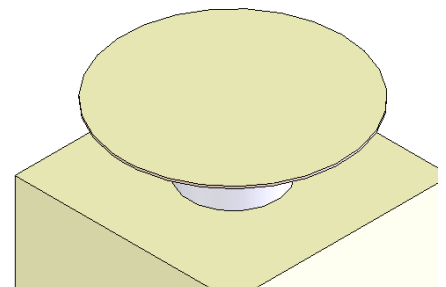Extrusion as shown.

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.

Introduction to Parametric Modelling
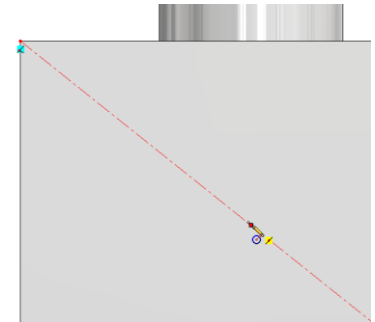Weighing Scales.

Creating sketch:

Choose the front face of the model.

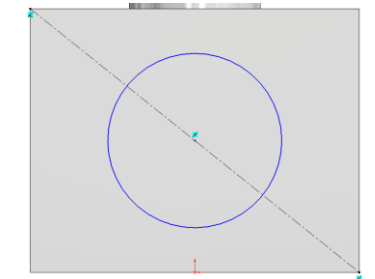Use 'Centerline' to sketch a diagonal
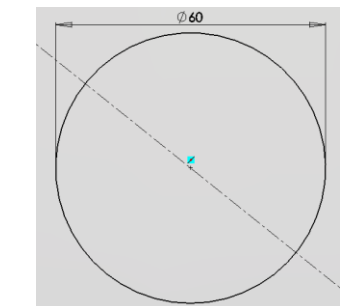
Select 'Circle' from the sketch toolbar.

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

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

Dimension the circle diameter **60mm**
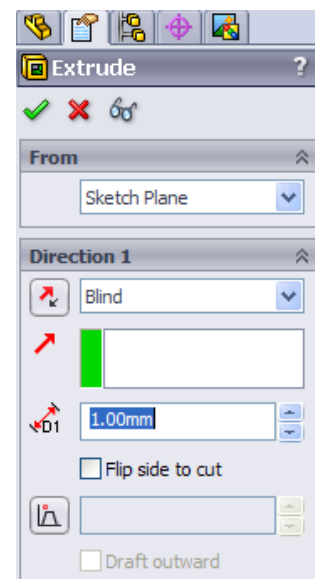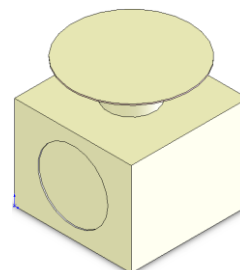
Exit Sketch

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.

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…**

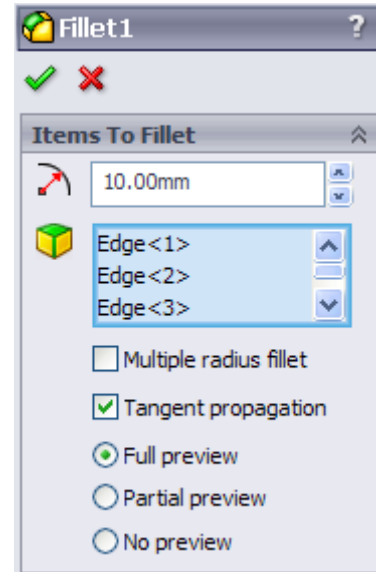**Insert Fillet**

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

Select **Constant radius**
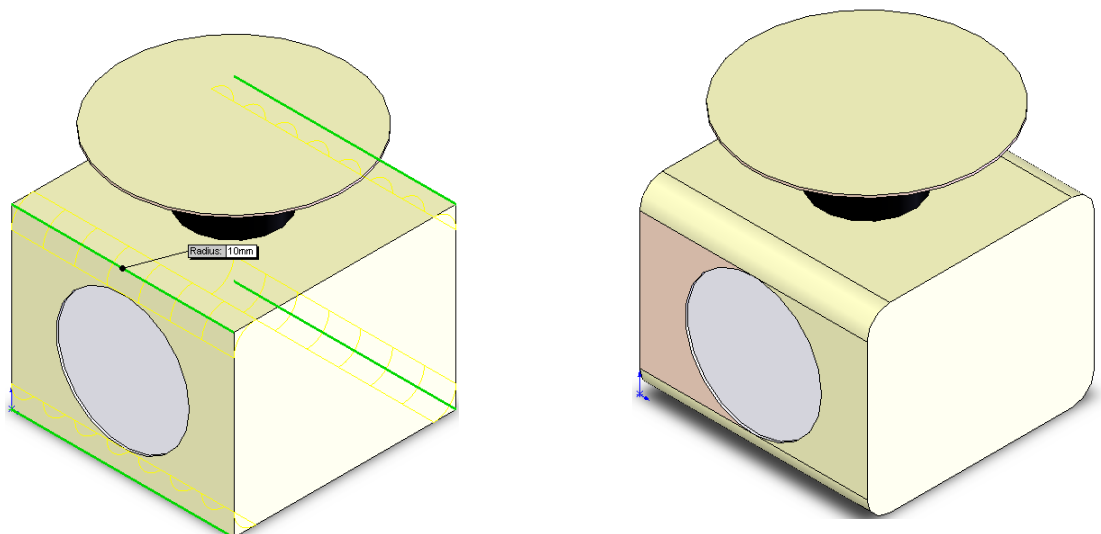
Set the **Radius** value to **10mm**

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**

Rename as Scale.

**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: