

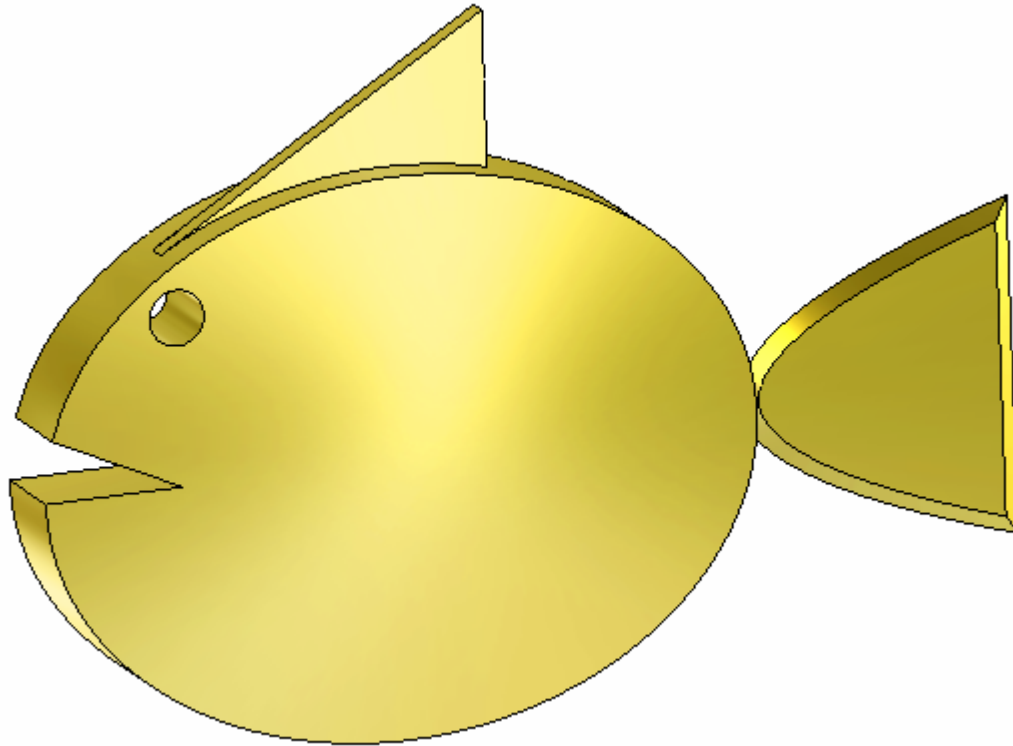


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Ionad Náisiúnta don Teicneolaíocht san Oideachas

Cad TPN Module 3  
Exercise No: 4  
Fish 2002 HL TG



## Fish Exercise



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**Prerequisite Knowledge** To complete this model you should have experience of the following:  
Sketching, Extrude Boss/Base, Extrude Cut and renaming features.

**Focus of Lesson** This lesson will focus on using the following feature commands-  
Ellipse and **Parabola**.

**Commands Used** This lesson includes Sketching, *Extruded Boss/Base*, *Extruded Cut*,  
*Renaming* features, Ellipse and **Parabola**, *Close Sketch to Model*



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## Cad TPN Module 3 Exercise No: 4 Fish 2002 HL TG



### Save File

Select **File, Save As**, filename ‘Fish’.

### Getting Started

Create a sketch of a horizontal centerline on the front plane.

### Add Relation

Select the centerline and the origin and add a **Midpoint** relation.



### Ellipse

Select **Ellipse**  from the Sketch Toolbar.

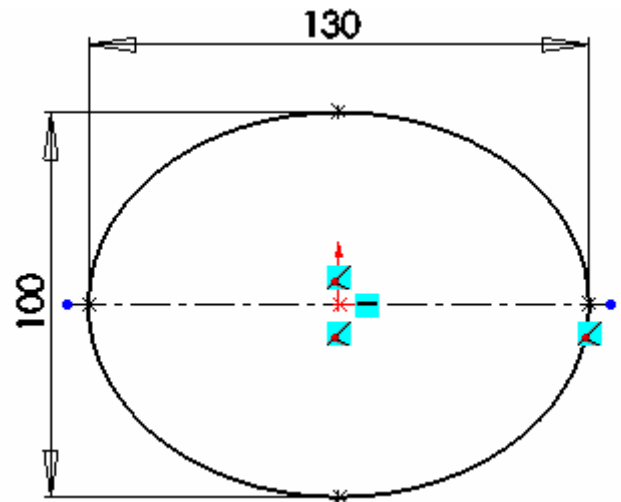


*If the Ellipse icon is not in the Sketch toolbar, refer to Exercise 3a.*

Select the origin as the centre-point of the ellipse and select a major axis ensuring it's coincident with the centerline. Select another point to create the minor axis.

### Add Smart Dimensions

Dimension the sketch to the sizes shown.



### Fish Body

Extrude the sketch using **Extruded Boss/Base**

End condition: **Mid Plane**  
Distance: **18mm**

Rename as “Fish Body”.

### Fish Eye

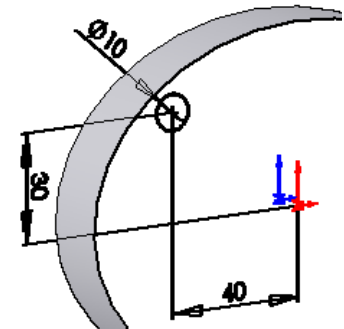
Select front surface of the Fish Body as the sketch plane.

Sketch with **Circle** and **Smart Dimension**.

**Extrude Cut** this sketch to create the eye.

End condition: **Through All**.

Rename as “**Fish Eye**”.

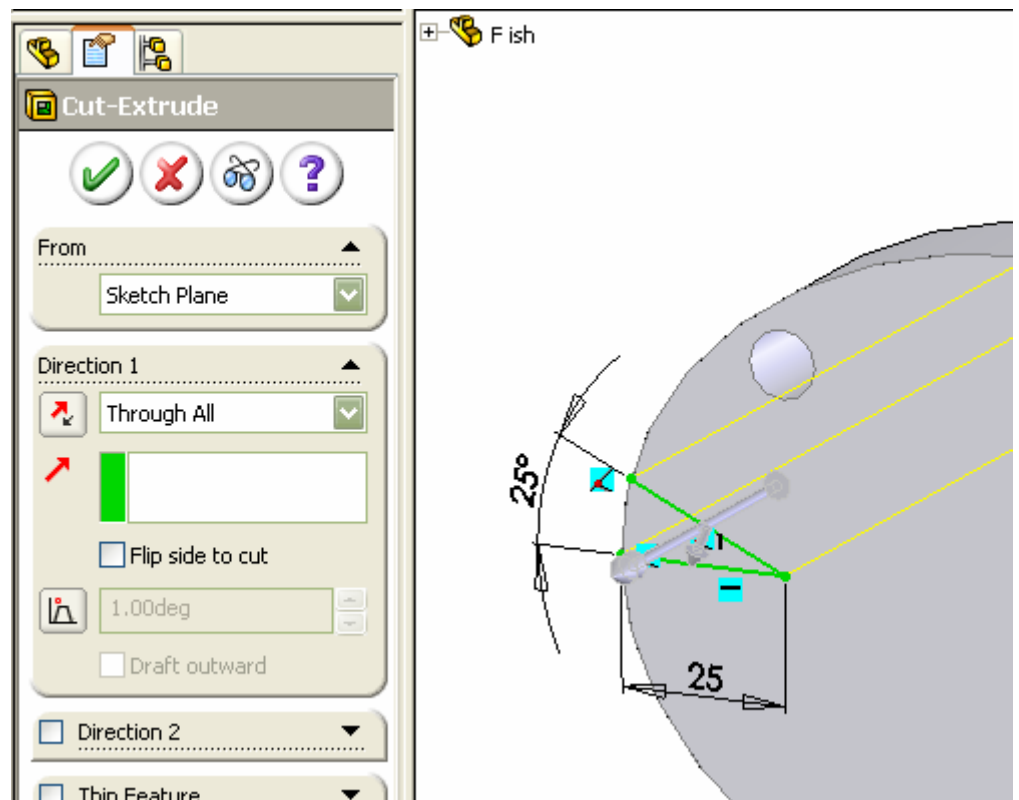


### Fish Mouth

Create a sketch on the **front surface** for the Fish Mouth.

**Extrude Cut** with this sketch to create the mouth.

End Condition: **Through All**



Rename as “**Fish Mouth**”.



Even though the sketch is not closed it will not cause problems unless you are using the feature for a pattern.



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## Fish Fin

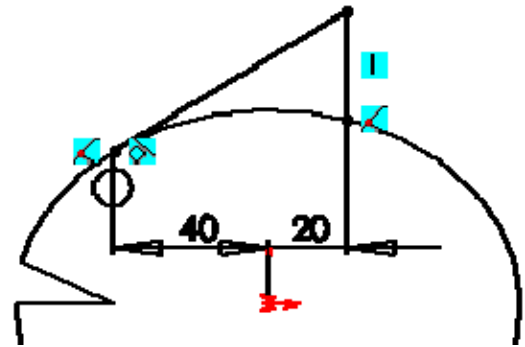
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### Add Relation

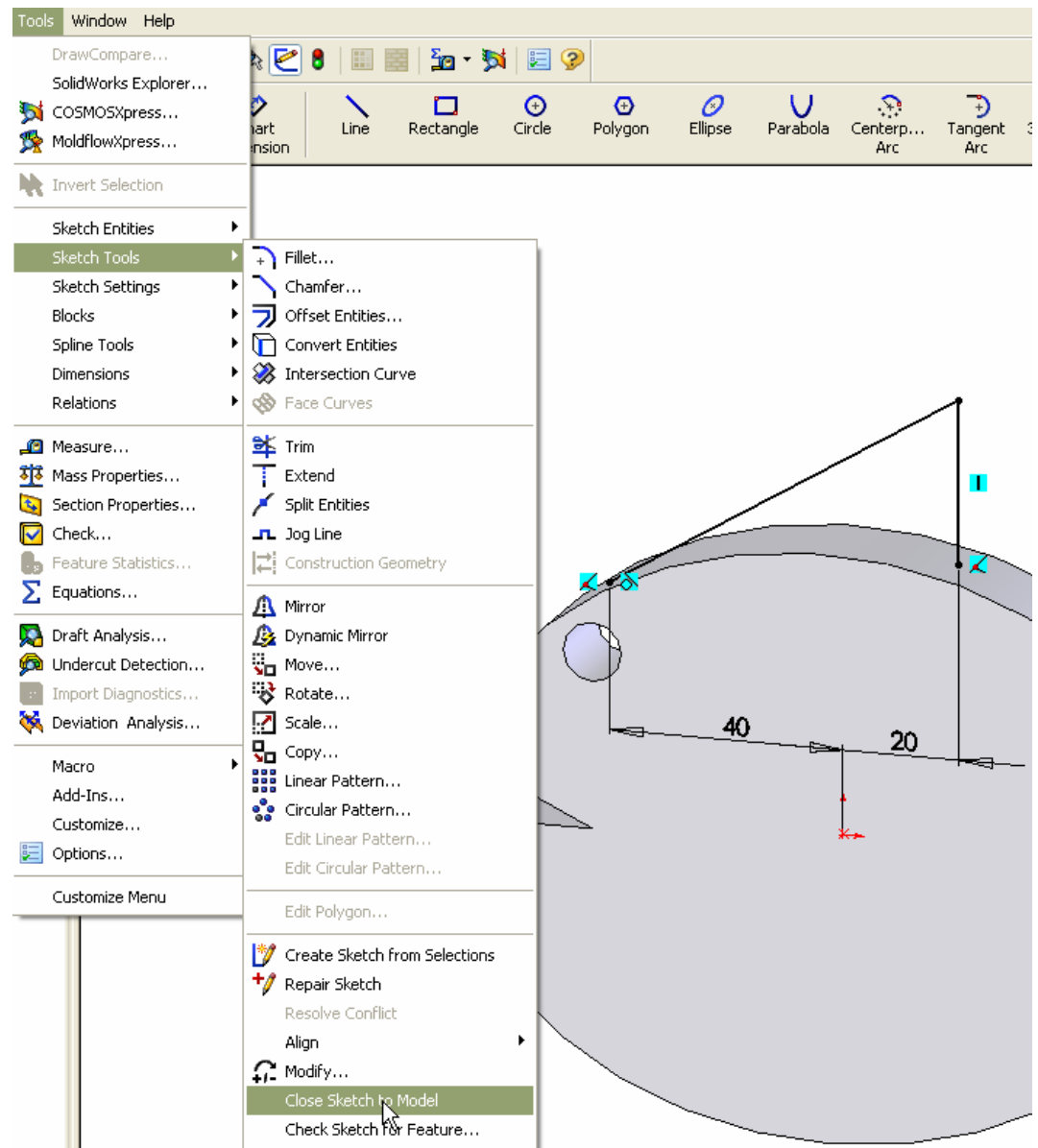
Create a sketch on the **front plane** for the Fish Fin.

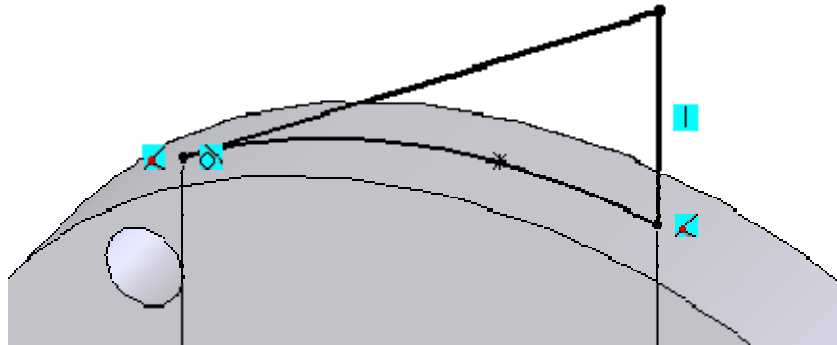
Add a Tangent relation to fully define the sketch.



### Close Sketch to model

Close the sketch using the 'Close Sketch to Model' tool in **Tools > Sketch Tools**. Ensure it closes in the correct direction.





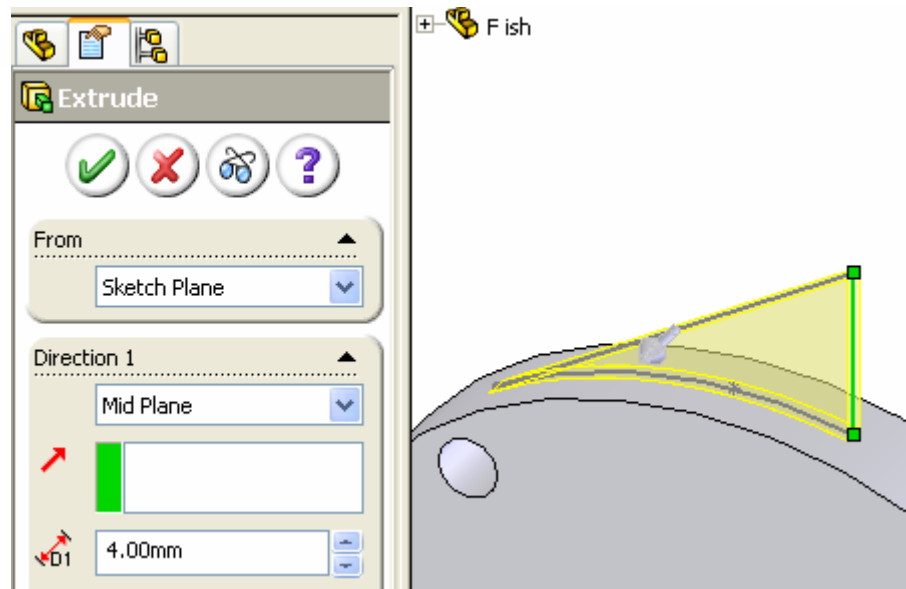
*The Close Sketch to Model tool will close a sketch with an open profile, using existing model edges.*

### Extrude Fin

**Extruded Boss/Base** this sketch to create the fin.

End Condition: **Mid Plane**

Distance: **4mm**

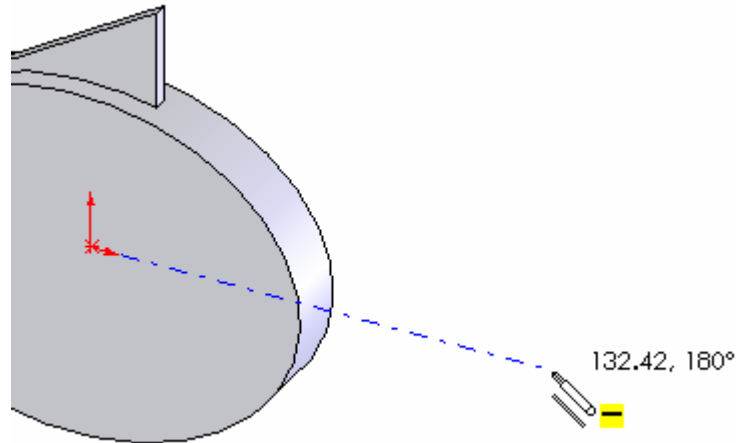


Rename as **“Fish Fin”**.

## Parabola

Create a sketch of a horizontal centerline on the **front plane**.

Use the origin as the start point and ensure a horizontal automatic relation.



Select **Parabola** from the Sketch Toolbar.



*You may need to insert parabola command into the sketch toolbar. Refer to the Exercise 3a.*

## Focus

Select a coincident point on the centerline outside the ellipse as the Focus of the parabola.

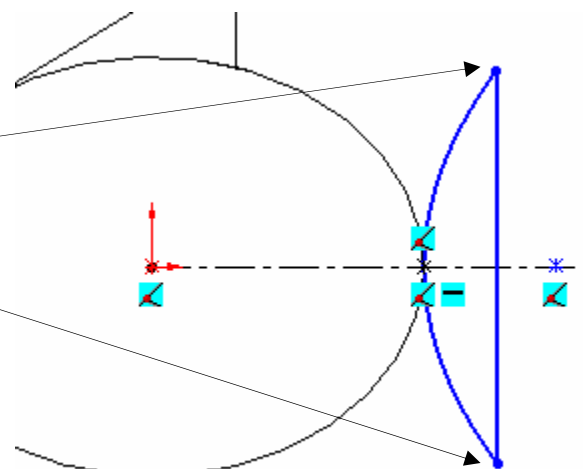
## Vertex

Then select the vertex where the centerline and the ellipse intersect.

Select an approximate point for the start of the Parabola.

Then select the approximate end of the parabola.

Draw a line to close the parabola.





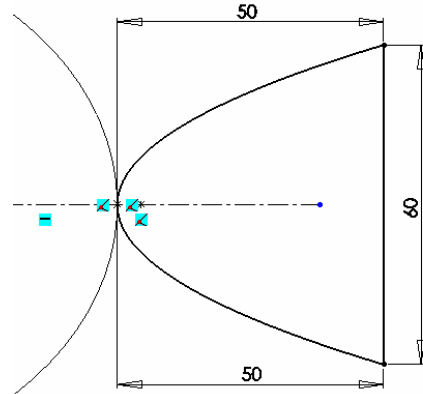
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#### Dimension

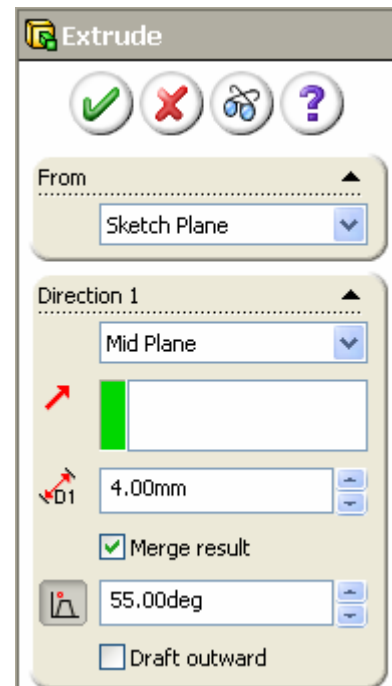
Use **Smart Dimension** to dimension the parabola.



#### Extrude Parabola

**Extrude Boss/Base** this sketch to create the Tail.

Select **Mid Plane** as the end condition  
Distance: **4mm**  
Draft: **55°**



Rename the extrude feature as **“Fish Tail”**.

#### Edit Material

Apply a **Pure Gold** finish using **Edit Material**.

