



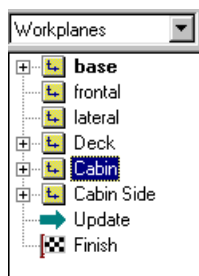
Children's Toy Boat



- *Pro Desktop is a very powerful graphics and drawing package*
- *You have already had an opportunity to see what the software can do – now you are going to create a design a children's toy boat.*
- *You will need to follow these instructions carefully. If you get stuck or lost, please ask for help straight away.*
- *You can use the arrow keys on the keyboard at any time to rotate the shape*

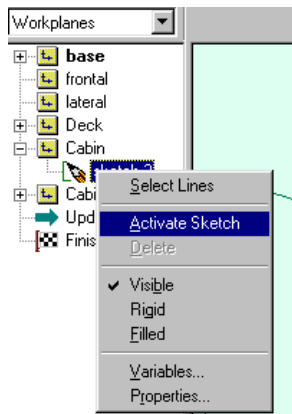
Helpful Hints


To find out which workplane is currently selected




1. Select **Workplanes** from the dropdown box in the top left hand corner of the screen
2. The current workplane is listed in **bold**.

To select the a workplane to work on




1. Click the  next to the workplane you want to work on
2. Click on the sketch name with the right mouse button
3. Choose Active Sketch from the pop up menu


To delete a line or shape that is in the wrong place

1. Choose the **Select Lines**  tool .
2. Click on the shape and press the **Del** key on the keyboard

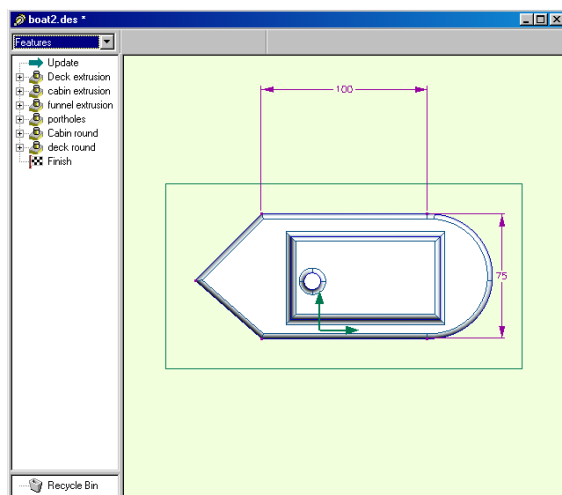
To delete a line or shape that is in the wrong place

1. Choose the **Select Lines**  tool
2. Click on the shape so that the lines go red. Hold the mouse button down and drag the shape to the correct place.

To delete part of an extrusion

1. Select the workplane with the extrusion on – see notes above
2. Using the **Select Lines**  tool, select the shape that forms the base of the extrusion (e.g. circle or rectangle)
3. Delete the shape by pressing the **Del** key on the keyboard
4. Update the display by clicking the green traffic light on the toolbar.

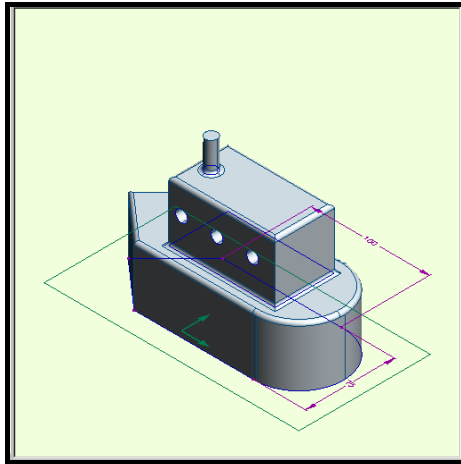
To delete a complete set of extrusions that are incorrect



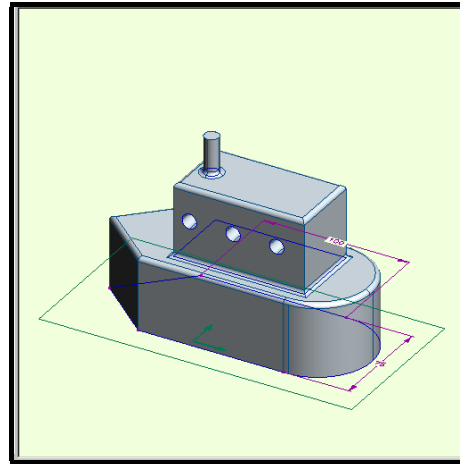
1. Click the dropdown box in the top left hand corner of the drawing and select Features
2. Select the incorrect extrusion and drag it to the recycle bin at the bottom of the screen
3. Click the green traffic light on the toolbar to update your drawing

Types of View

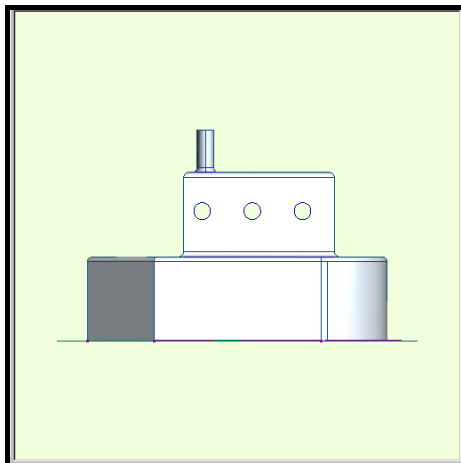
Isometric View



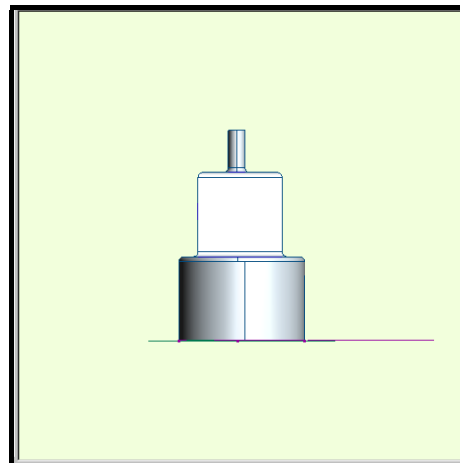
Trimetric View



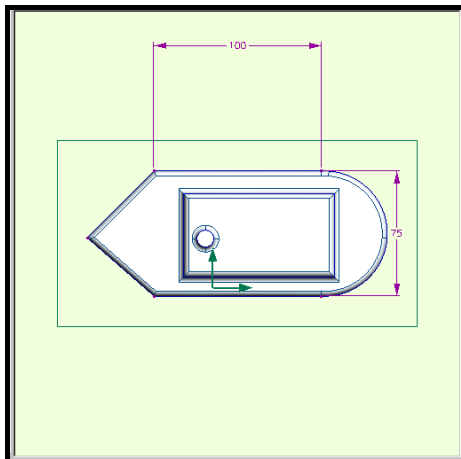
Front Elevation



Right Elevation

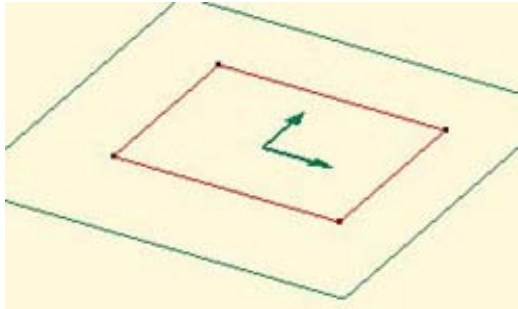



Plan View



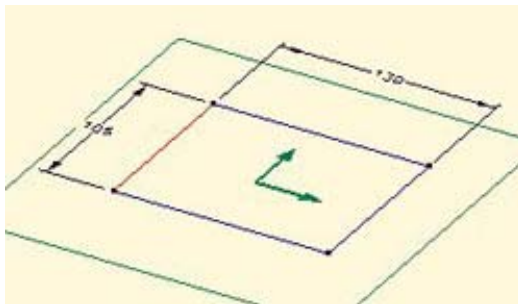
Children's Toy Boat



To draw a sketch of the boat



1. Load Pro Desktop
2. From the **File** menu select **New**
3. Choose **Design**
4. Select **OK**
5. Maximise the screens
6. Choose the **Create Rectangle**  tool.
7. Move the pencil cursor to the **workplane** (Green rectangle with arrow on).
8. Move to just inside the top left of the green rectangle.
9. Press and hold and drag the cursor down to the right to create a rectangle. Release the mouse button to finish creating the rectangle.


To constrain the rectangle to a set size



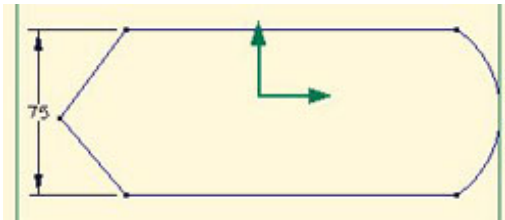
1. Choose the **Sketch Dimensions**  tool
2. Move over one of the short sides of the rectangle (The selected line goes light blue)
3. Select the line by clicking the left mouse button. (The line turns red)
4. Hold down the left mouse button and drag the line away from the rectangle – A measurement will appear.
5. Repeat steps 2-4 for the long side of the rectangle
6. Choose the **Select Constraints** tool 
7. Double-click the left mouse button on the measurement line to open the **Properties** window.
8. Enter a length of **150mm** for the length and click OK
9. Repeat step 7 for the short side and set the length to **75mm**.
10. If the red dimension lines are too far away from the rectangle, click on them and drag the line closer to the box.



To change the shape of the sketch to form the bottom of the boat.

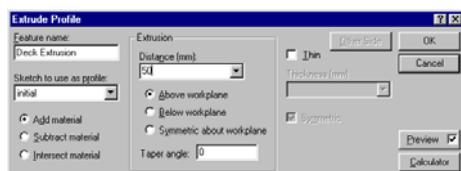
To round the end of the rectangle;

1. Choose the **Arc/File**  tool
2. Select the shortest side of the rectangle (right hand side) Cursor changes to an arc
3. Hold the left mouse button down and drag out the line to form an arc


To draw the pointed end of the boat

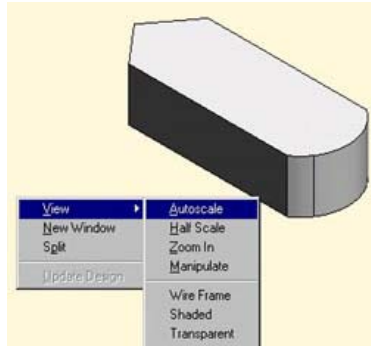


1. From the **V**iew menu choose **go to** and then select **Plan**
2. From the **V**iew menu choose **Autoscale**.
3. Choose the **Straight**  tool
4. Draw two lines from the ends of the rectangle to form a triangle.
5. Choose the **Select Lines**  tool
6. Select the line that forms the base of the triangle - Delete the line by pressing the **Del** key on the keyboard




To change the sketch into a 3D feature to form the body of the boat

1. From the **V**iew menu choose **go to** and then select **Isometric**
2. Choose the **Extrude Profile**  tool
3. In the feature name box, enter Deck Extrusion

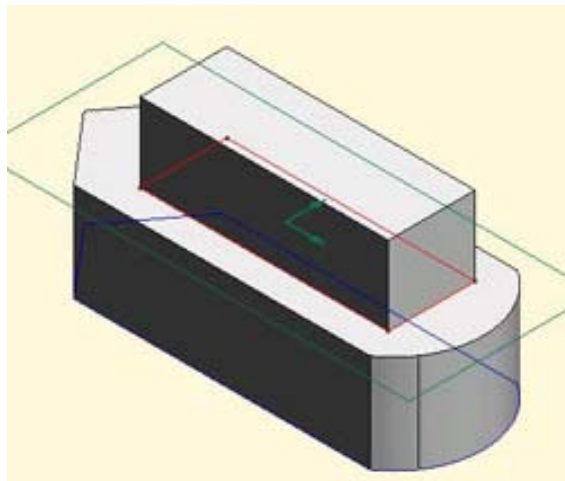




4. In the distance box enter a length of **50mm**, check the **Add material** and **Above workplane**
5. Select **OK**.
6. From the **V**iew menu choose **Autoscale**. (The block fills the screen area)
7. Save your work.

To create a new workplane on which to draw a rectangle on the face of the block

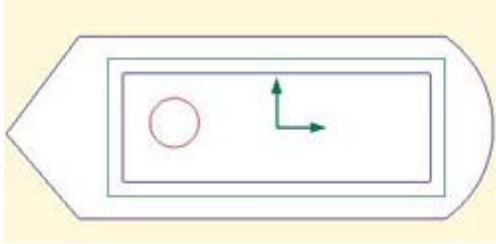
1. From the **V**iew menu choose **Autoscale**. (The block fills the screen area)
2. Choose the **Select Faces**  tool (on the right hand side of the screen)
3. Click the mouse on the top of the box so that all of the edges are highlighted, in light blue or orange
4. Click the mouse on the light blue/orange line to make the line go red.
5. Choose **Workplane, New workplane** and then select **Plane of Object**.
6. **Change** the name of the workplane to **Deck** and select **OK**
7. Choose **Workplane, New sketch** and select **ok**.


To draw a rectangular cabin on the top of the deck





1. Choose the **Create Rectangle**  tool
2. Draw a suitable rectangle to form the sketch of the base of the cabin – you need to leave an even gap around the edge of the Deck
3. Choose the **Extrude Profile**  tool.
4. In the feature name box, enter **Cabin Extrusion**
5. In the dialogue box enter a distance of **40mm**, check the **Add material** and **Above workplane**
6. Select **OK**.
7. Save your work.


To create a new workplane on which to sketch a circle for a chimney




1. Choose **V**iew and then **A**utoscale (This makes the block fill the screen area)
2. Choose the **Select Faces**  tool.
3. Drag the mouse across the area where you want to work until it is highlighted and Click on the top face of the cabin (the it goes red)
4. From the **W**orkplane menu choose **N**ew **W**orkplane and select **P**lane of **O**bject.
5. Change the name of the workplane to **Cabin** and select **OK**
6. From the **V**iew menu choose **g**o to and select **P**lan.
7. Choose **W**orkplane again and select **N**ew **S**ketch and select **ok**.

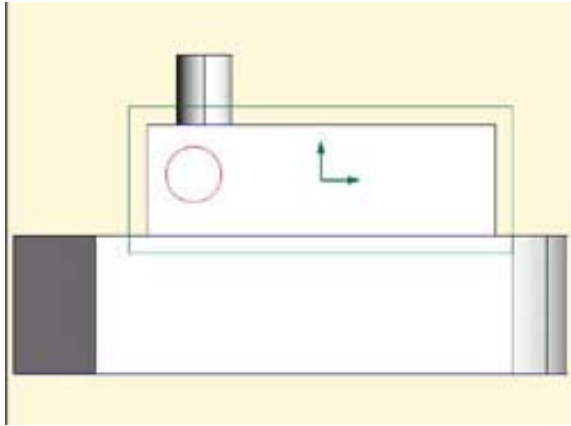
8. Choose the **Create Circle**  tool
9. Draw the circle towards the front of the boat
10. Choose the **Sketch Dimensions**  tool select the circle the circle, hold down the left mouse button and move the mouse so that a dimension line appears
11. Double click on the measurement line and change the Radius to **10mm**
12. Delete the line by selecting it and pressing the **Del** key on the keyboard

To change the circular sketch to a funnel feature

1. From the **V**iew menu choose **g**o to and the select **I**sometric.
2. Choose the **Extrude Profile**  tool
3. In the feature name box, enter **Funnel Extrusion**
4. In the Extrude dialogue box check **Above workplane**, **Add material**, and set the distance to **25mm**.
5. Select **OK**.(This will draw in the chimney)
6. Save your work.

To draw a sketch of the port holes on the cabin

1. Choose the **Select Faces**  tool
2. Highligt the side of the cabin and make it go



red.


3. From the **Workplane** menu choose **New workplane** and select **Plane of Object**
4. Change the name of the workplane to Cabin Side and select **OK**
5. Choose **workplane** again and select **New sketch** and click on **ok**.
6. From the **View**, menu choose **go to** and the select **Front Elevation**.


7. Choose the **Create Circle**  tool

8. Draw a circle to represent a porthole near the left side of the boat

9. Choose the **Sketch Dimensions**  tool select the circle, hold down the left mouse button and move the mouse so that a dimension line appears

10. Double click on the measurement and change the Radius to **10mm**

11. Delete the line by selecting it (use **Select Lines**  tool) and pressing the **Del** key on the keyboard

12. Choose the **Select Lines**  tool and select the circle – it will go red



13. From the **Edit** menu choose **Duplicate**.

14. In the Duplicate circle dialogue box change the X direction number to **4** and enter the Spacing as **30mm**.

15. Select **OK**

16. Save your work.

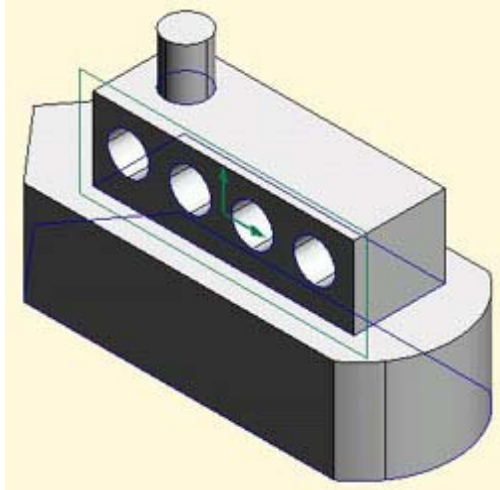
To extend the portholes as a feature through the cabin



1. Select the **Project Profile**  tool.
2. Change the name of the profile to **Portholes**
3. Choose the **Select Lines**  tool and select the circle – it will go red
4. In the dialogue box select **Subtract material** , **Below workplane** and **Through**

to next face

5. Select **OK**
 6. From the **V**iew menu choose **go to** and then select **Isometric** to view the result .
 7. Save your work.
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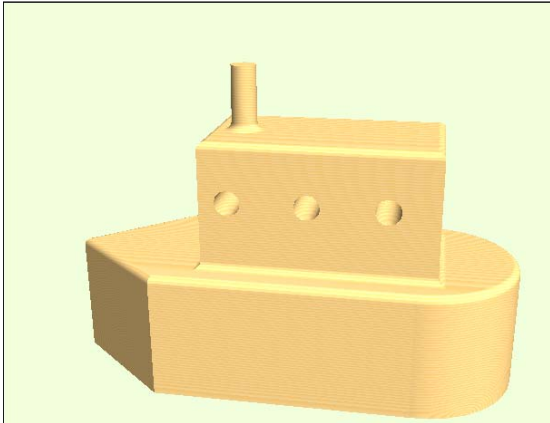
To complete the shape by adding a radius to the top surfaces



1. Choose the **Select Faces**  tool
 2. Select the top surface of the cabin, (the selected lines turn from blue to red)
 3. Select the **Round Edges**  tool
 4. Change the name of the feature to **Round Cabin**
 5. In the **Round** dialogue box enter a radius of **3mm**
 6. Select **OK**
 7. Repeat steps 1-6 for the deck workplane but name the feature **Round Deck**
 8. When you have finished that save your work.
-

To show the finished design in orthographic mode

1. Select on the drawing with the right mouse button
2. Choose **Split** (This will show the boat in Orthographic projection and Isometric on the same screen)
3. **Drag** the cross hair cursor to the centre point of your screen and press the left mouse button.
4. From the **F**ile menu choose **S**ave.
5. Print the drawing in Orthographic Projection

To add texture and background to your drawing

1. With your boat open, from the **F**ile menu choose New
2. Choose **A**lbum, and click **O**K
3. From the **I**mage menu, choose New Image
4. Select your boat and click **O**K
5. From the dropdown box in the top left corner, choose Materials
6. Expand the list of materials by clicking on the **+**
7. Highlight any material to make the boat out of. Hold the mouse button down and drag the paint pot onto the boat
8. Click the green traffic light (on the toolbar) to see your boat made out of the selected material
9. If you move the drawing round using the arrow keys, you will need to re-apply the material by clicking on the traffic light
10. Print your boat made out of your favourite material