



QUICK START TUTORIAL

CREATING A PROJECT STEP-BY-STEP

Welcome! We assume that you have successfully installed Pintar Geometry on your computer. You are now ready to use this fantastic tool to explore the wonderful world of mathematics.

In this tutorial, we shall do a couple of small projects. For a novice user, the quickest way to become familiar with Pintar Geometry is to follow this step-by-step tutorial. Throughout this tutorial, you will find quick references to the detail description, as indicated by the (?) symbol.

This tutorial also assumes that you possess a working knowledge of Windows 9x, NT, ME, 2000 or XP. Certain words used to describe operations in this tutorial have specific meaning.

Click	Press once on the mouse button.
Double-click	Press twice on the mouse button in quick succession.
Select	Click once on a specific object.
Drag	Press the mouse button and drag, holding the mouse button down as you do so. Let go to the mouse at the intended location.
Type	Press on a specific key on the keyboard.
Choose	Select a menu item.

Launching Pintar VirtuaLab™ Geometry

We assume that you have successfully installed the Pintar **VirtuaLab™** Geometry. In the Geometry folder, double-click on the icon labelled GEOM.EXE.

TUTORIAL 1

PROBLEM:

An embankment is 3.75 meters high. What is the minimum length of a plank that would be needed in order to ascend the embankment if the incline of the plank is not to exceed 25° .

PROCEDURE:

1. Starting a new project.



- a. Select 'New' from the File menu. A blank Workbench labelled "Untitled-1" is created.
- b. Before proceeding any further, you should fully understand the concept of nodes and segments. This understanding is crucial to for the fluent use of Pintar Geometry.

? • [Starting a new experiment](#)

? • [Concept Of Paths, Segments And Nodes](#)

2. Drawing the graphical representation of the problem.

The Toolbar holds the tools for drawing and manipulating vector graphics objects. The task here is to draw the diagrammatic representation of the embankment.

- a. Select the Polygon tool  in the Toolbar. You will see that the cursor has changed to the shape  reflecting the tool you have chosen. The hotspot is at the center of the crosshair.
- b. Move the cursor to the lower left quadrant of the Workbench. The objective is to draw a diagram that looks something like Figure 1 below.
- c. Position the cursor where you want the first node to be. That would be the position P in Figure 1.
- d. Click. You will not see the nodes until you have finished drawing the whole path.
- e. Move the cursor to the next node position Q of the path. You will see a line extending from node P to the cursor as you drag the cursor. Holding down the Shift key while dragging will constrain the line to a horizontal.
- f. At position Q, click to create the second node of the path, and hence, the first segment.
- g. Next, move the cursor to position R. Again, hold down the Shift key while dragging the mouse to constrain the line vertically. At R, click to establish the node and second segment in the path.
- h. Continue to move the cursor to position S. At position S, double-click to terminate the drawing process.



In Figure 1, PQ represents the horizontal ground, QR represents the embankment, and RS represents the plank to the top of the embankment.

? • [To draw an open multi-straight-segment path](#)

3. To set the length of QR (the height of the embankment) to 3.75 meters.



- Using the Direct-selection tool, double-click on the segment QR. A pop-up menu appears. You will also see the two nodes of the segment labelled Point1 and Point2.
- Choose Properties... from the pop-up menu. A Line properties dialog appears.
- Check that the Angle parameter reads 90 degrees. This means that the segment is vertical.
- Make sure that the checkbox for Point1 is marked. This ensures that Point1 (that is, node Q) is fixed, while Point2 (node R) is free to move when the length of segment QR changes.
- Change the Length parameter to 3.75.
- Click OK. The length of segment QR adjusts. It should now be 3.75 units long.

? • [The Direct-selection tool](#)

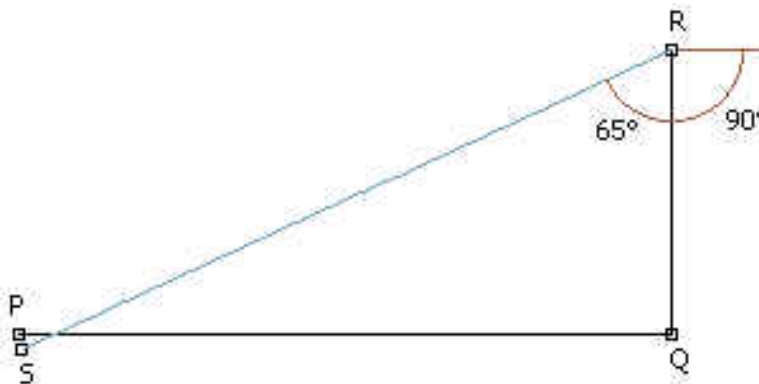
? • [To examine or specify the properties of a segment](#)

? • [To specify \(or change\) the length of a segment](#)

4. To rotate the segment RS about the node R, so that it forms an angle of 65 degrees with segment QR.


Here, we want to dip the segment RS, so that it inclines at 25° to the horizontal ground.

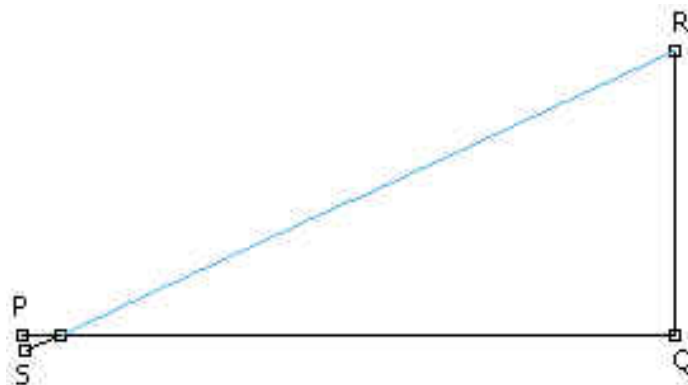
- Using the Direct-selection tool double-click on the segment RS. A pop-up menu appears.
- Choose Properties... from the menu. A Line properties dialog appears.
- For the same reason as described in Step 3 above, make sure that Point2 is fixed.
- Change the Angle parameter to -155 degrees. Why -155 degrees? By convention, angles measured in the clockwise direction are negative.
- Click OK. The segment RS rotates. The node S now drops below segment PQ and the segment RS crosses the segment PQ.



5. To find the point of intersection between segments PQ and RS.


We need to intersect the segments PQ and RS in order to create a node at the point of intersection. Then, we can measure the distance of the segment from node R to the point of intersection.

- Using the Direct-selection tool, and holding down the Shift key, select the segments PQ and RS.
- These two segments highlights in blue. Click on the Intersect tool  in the Toolbar. The two lines intersect and create a new node at the point of intersection.



? • [To create a compound path by intersecting](#)

6. To measure the length of segment between the point of intersection and node R.

- With the Direct-selection tool, click on the segment between the point of intersection and node R.
- Choose the Length tool  in the Toolbar. The length of the segment is displayed on the Status bar.

? • [To measure the length of a segment](#)

7. Saving your project.

If you wish, you can save your project.

- In the File menu, choose Save. Since you have not saved your project before, the Save As... dialog will appear.
- Give your project a name. All Pintar Geometry documents must end with the '.geo' suffix.
- Choose an appropriate folder to save your project in.
- Click Save.

? • [Save](#) (To save the current active project)

? • [Save As...](#) (To save current active project under a different name and location).

? • [Revert](#) (To revert a project to its most recently saved state).

CONCLUSION:

The minimum length of a plank needed to ascend the embankment is about 8.87 meters.


TUTORIAL 2

PROJECT:

Draw a pie chart showing the market share of five companies. Company A: 7% Company B: 15% Company C: 15% Company D: 28% Others: 35% Offset Company C's portion of the pie chart to give it more emphasis.


PROCEDURE:

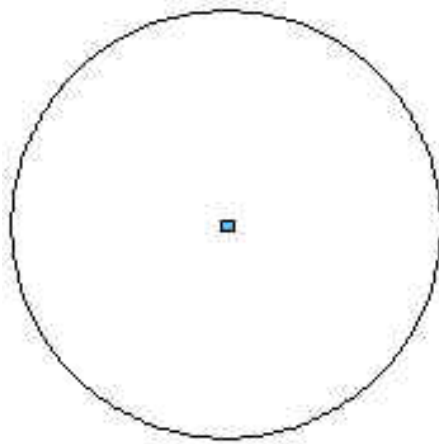
1. Draw whole pie (circle).

- Choose the Circle tool  in the Toolbar.
- On the Workbench, position the cursor at the center of the circle you want to create, and drag diagonally until the shape is approximately the desired size.

? • [To draw a circle by dragging](#)

2. To draw the center of the circle.

- With the Direct-selection tool (remember that a circle is a single segment), double-click on the circle. A pop-up menu appears.
- Choose Properties from the pop-up menu. A Circle properties dialog then appears. Note the position, X_c and Y_c , of the center of the circle. If you wish, you may enter an alternative position, for example, $X_c = 0$ and $Y_c = 0$.
- Click OK.
- Choose the Node tool  from the Toolbar.
- Click somewhere in the center of the circle.
- Using the Direct-selection tool, double-click the center node. A pop-up menu appears.
- Choose Properties... from the menu. A Node properties dialog appears.
- For the Coordinates parameters in the Node properties dialog, make the X and Y parameters the same as for the center of the circle.
- Click OK. This will place the node at the center of the circle.



? • [To examine or specify the properties of a circle](#)

? • [To draw a node](#)

? • [To examine or specify the properties of a node](#)

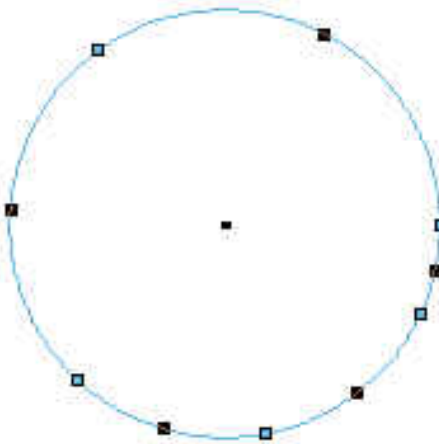
3. Divide the pie into proportions that reflect the companies' share of the market.

a. Using the Selection tool, click on the circle.

b. Click on the Divide tool  in the Tool bar. The Divide dialog appears.


c. Enter in the boxes the proportions in which you want to divide the segment. In our case, enter 7, 15, 15, 28, and 35 into the five boxes respectively.

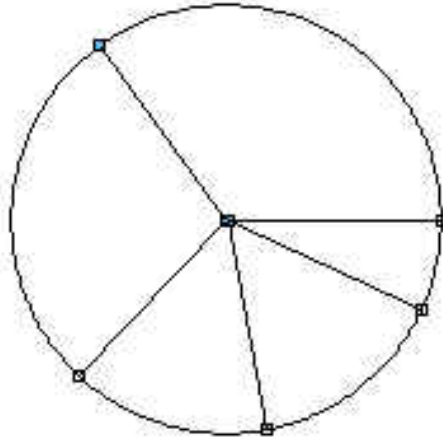
d. Click OK. You will see new nodes added to the circle.



? • [To divide a segment with the Divide tool](#)

4. Join each node at the perimeter of the circle with the center node.

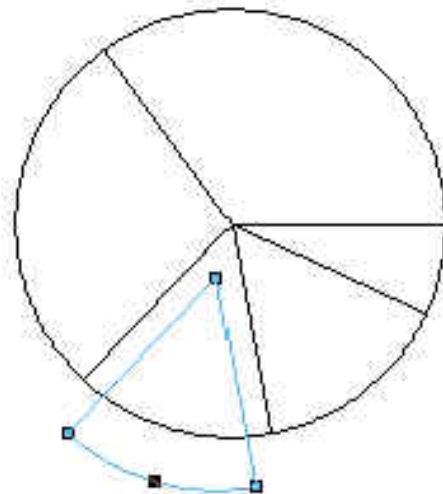
- Using the Direct-selection tool, and holding the Shift key down, click on one node at the perimeter of the circle followed by the center node. The two selected nodes highlight in blue.
- Click on the Join tool . A line joins the two nodes.
- Repeat these two steps until all the nodes at the perimeter of the circle are joined with the center node.



? • [To join two nodes](#)

5. Offset Company C's portion of the pie.

- Using the Direct-selection tool, select the three segments that form Company C's portion of the pie.
- Choose Copy from the Edit menu.
- Then, choose Paste from the Edit menu. Company C's portion is pasted next to its original position.
- Using the Selection tool, drag the portion to a position that looks something like the diagram below. You will notice that the pie shows through the offset portion.



? • [To freely move a path](#)

? • [Copy](#) (Copying a path from the Workbench to the Clipboard).

? • [Paste](#) (Copying a path from the Clipboard to the Workbench).



6. Clean up the pie chart.

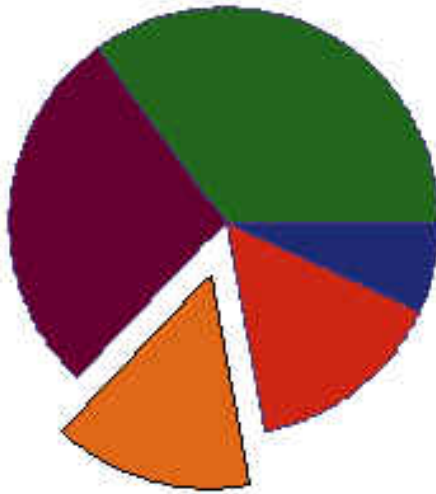
- Using the Direct-selection tool, select the segment of the circle under the offset portion.
- Choose Delete from the Edit menu.

? • [Delete](#) (Deleting one or more components from the Workbench).

? • [To delete a segment in a circle](#)

7. Color the pie chart.

- Click on the Color tool . A Color dialog appears.
- Select from the twelve colors are available.
- Click OK. The selected color is shown in the color swatch on the Color tool.
- With the Selection tool, click on the graphical object you want to fill.
- Choose the Fill tool .
- Click within the object. The object is filled with the color indicated by the color swatch.
- Repeat the above steps until all the portions of the pie chart are colored.




? • [To fill a closed path](#)

? • [To change the fill color of a filled path](#)

? • [To specify a fill color](#)

8. Label the pie chart.

- a. Select the Text tool . The cursor changes to an I-beam shape <pic>. The small line through the I-beam marks the position of the text baseline – where the text sits.
- b. Click on the Workbench to set the position where you want the type to be. A Text dialog appears.
- c. Type inside the text area. Modify the text attributes if you wish.
- d. Click OK. Your text will appear on the Workbench at the position you specified.
- e. Move the text to the appropriate portion of the pie chart, by dragging the text.
- f. Repeat the above steps until you have labelled all the portions of the pie chart.

? • [To place text on the Workbench](#)

9. Save your project.

Choose Save from the File menu.

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