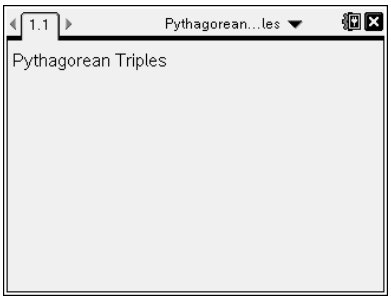
Pythagorean Triples
Geometry—Creating a Document

Activity Overview:

This activity gives directions for constructing a right triangle such that the measures of the legs have whole number values. You will explore when the measure of the hypotenuse is a whole number and discover some Pythagorean Triples.



Materials

• *Technology needed (TI-Nspire™ handheld, computer software)*

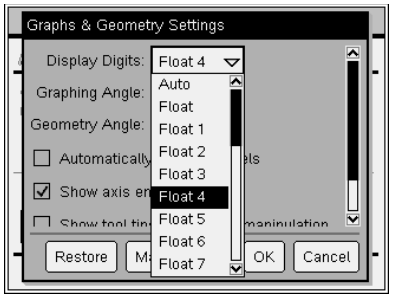
Step 1 Preparing the document

1. Open a new document by clicking on

   on > **New Document > Add Notes**.

2. Type **Pythagorean Triples**.

Note: To obtain capital letters, press the shift key, then the letter.

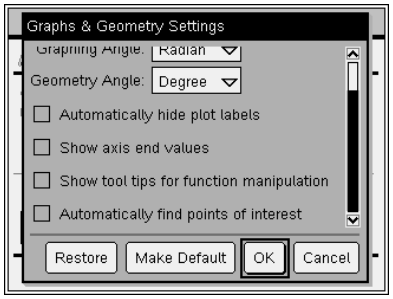


3. Press doc > **File > Save As …**

   Type **Pythagorean_Triples**.

   Tab to save and press enter .

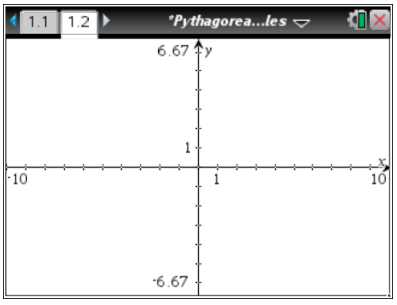
Note: To obtain the underscore, press ctrl .



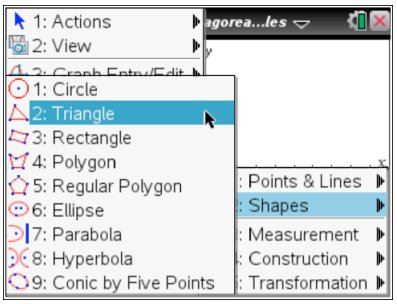
4. To add a new page, press ctrl doc > **Add Graphs**.

5. Press **Menu > Settings > Settings**. Select *Float 4* for Display Digits. Then press tab to move from one field to the next and press to uncheck all the boxes. Tab to OK and press or enter.

6. Press ctrl G to remove the function entry line.



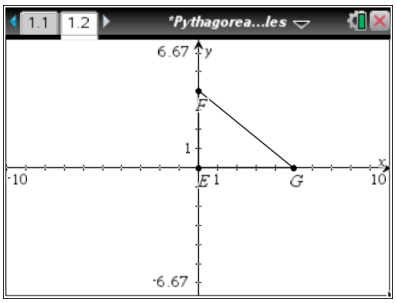
Step 2 Making a triangle



1. To make a triangle, press **Menu > Geometry > Shapes > Triangle**.

Note: Be sure that you place the vertices on a tick mark. You need integer measurements for the legs.

Move the pencil to the origin. It will say *intersection point.* Press enter to place a vertex of the triangle. Label it by pressing ⇧shift E.



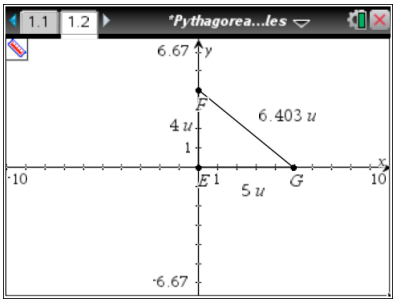
2. Move to a tick mark on the positive *y*-axis. It will say *point on.* Press enter to place the second vertex. Press ⇧shift F to label it.

3. Move to a tick mark on the positive *x*-axis. It will say *point on*. Press enter to place the third vertex. Press ⇧shift G to label it.

Press esc to release the **Triangle** tool.

To make sure these vertices are on integer coordinates, drag points *F* and *G*. Both points should jump from one tick mark to another.

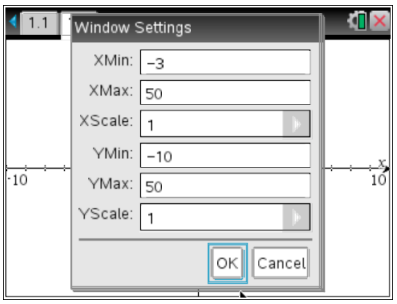
Step 3 Measuring the sides of a triangle



1. To measure the three sides of the triangle, press **Menu > Geometry > Measurement > Length**.
2. Move to a side of the triangle and press tab until the word *side* appears. Press enter to see the measure. Drag to position the measurement. Press enter.
3. Repeat this process for the other two sides.
4. Press esc to release the **Measurement** tool.

Step 4 Adjusting the window settings

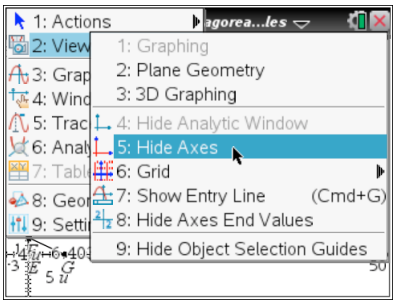
1. To adjust the window settings, press **Menu > Window / Zoom > Window Settings**.
2. Enter the settings as shown in the screen shot to the right. Be sure to use (−) to enter negative numbers. Remember to press tab to move between the settings. Press tab to OK and press enter.



Note: This is not a square window, so isosceles triangles will not look isosceles.

Step 5 Hiding the axes

1. To turn off the axes, press **Menu > View > Hide Axes**.
2. Drag points *F* and *G* to make the triangle larger.
3. Drag the measurements to position them appropriately.



Step 6 Saving the document

1. Press ctrl S.