Student Activity on Circles with Centre (0,0) 2
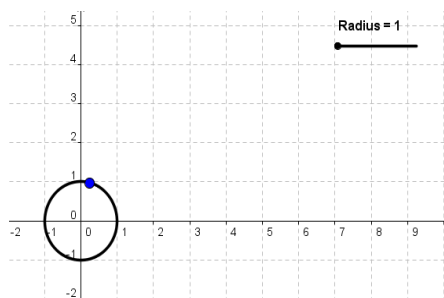
Use in connection with the interactive file "Circles with Centre (0,0) 2" on the Student's CD.

> To explore the relationship between the equation of a circle and the circle's radius, and also to look at the relationship between the points on the circle and the equation of circles of the form $x^2+y^2=r^2$

The slider called "Step" is used to change the information on the screen.

To start set the slider to "Step = 1"

1.   Change the radius using the Radius slider and drag the blue dot around the circle.

When the radius of a circle is a whole number there are always (at least) how many points

on the circle with whole number coordinates?_____

2. $(0)^2 =$ _____ $(4)^2 =$ _____ $(-4)^2 =$ _____

3.   Except for zero, every time you square a (real) number it is always_____

4.   Move the "Step" slider to 2. The circle $x^2+y^2=16$ is shown. There are 4 points

marked in on the diagram.

Fill in the coordinates into the spaces and see do they satisfy the equation $x^2+y^2=16$?

$x^2 + y^2 = 16$ $x^2 + y^2 = 16$ $x^2 + y^2 = 16$ $x^2 + y^2 = 16$

( )²+( )²= 16   ( )²+( )²= 16   ( )²+( )²= 16   ( )²+( )²= 16

    +   = 16   +   = 16   +   = 16   +   = 16

5.   Move the "Step" slider to 3. Let's see if other points on the circle satisfy the

equation x^2+y^2=16. Move the blue dot to any point on the circle (but not (4,0), (0,4), (−4,0)

or (0,−4)).

Fill in the coordinates into the spaces and see do they satisfy the following equations

$x^2 + y^2 = 16$

( )²+( )²= 16

    +   = 16

Note: Both sides might not be equal here because the diagram has rounded the coordinates

of the point to two decimal places.

6.   Drag the slider called "Animation". What type of triangle can you see?_____

_____

7.   What is the length of the base of the triangle?_____

8.   What is the height of the triangle?_____

9.   What theorem can we use when we have the lengths of two sides of a right angled

triangle and need to work out the third side?_____

10.   Work out the length of the radius_____

_____

_____

_____

11.   Write down the relationship between points on a circle and the circle's radius_____

_____

_____

_____