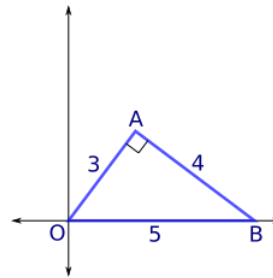




**Age 14+ Level ★★★
Worksheet 1**

1. Triangular Slope

What is the gradient of OA?
What is the gradient of AB?



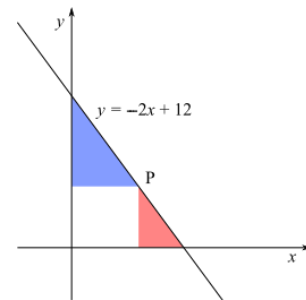
2. Graph Triangles

This is the graph of the line $y = -2x + 12$.

Point P is on this line.

The ratio of the area of the red triangle to the area of the blue triangle is 1:4.

Find the coordinates of point P.

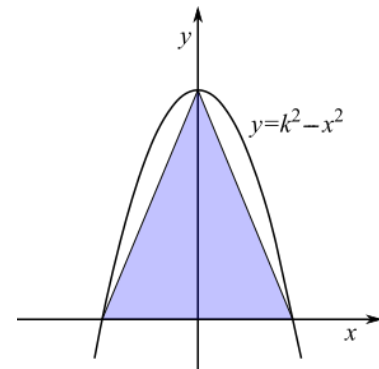


3. Inside a Parabola

The points where the parabola $y = k^2 - x^2$ crosses the coordinate axes are joined to form a triangle.

The area of the triangle is 64 square units.

What is the value of k ?



4. Closer to Home

Consider the graphs with equations $y = 2x - 10$ and $y = x - 6$.

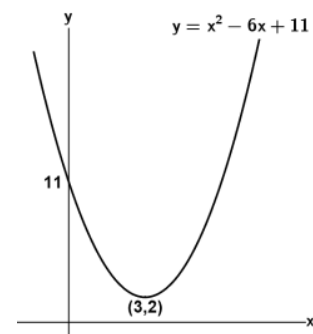
Which comes closer to the origin?

Can you find the shortest distance between this line and the origin?

5. Quadratic Rotation

The curve $y = x^2 - 6x + 11$ is rotated through 180° about the origin.

What is the equation of the new curve?



These problems are adapted from UKMT (ukmt.org.uk) and SEAMC (seamc.asia) problems.