National 5 Mathematics

Quadratics - **Questions** - 2014-2017

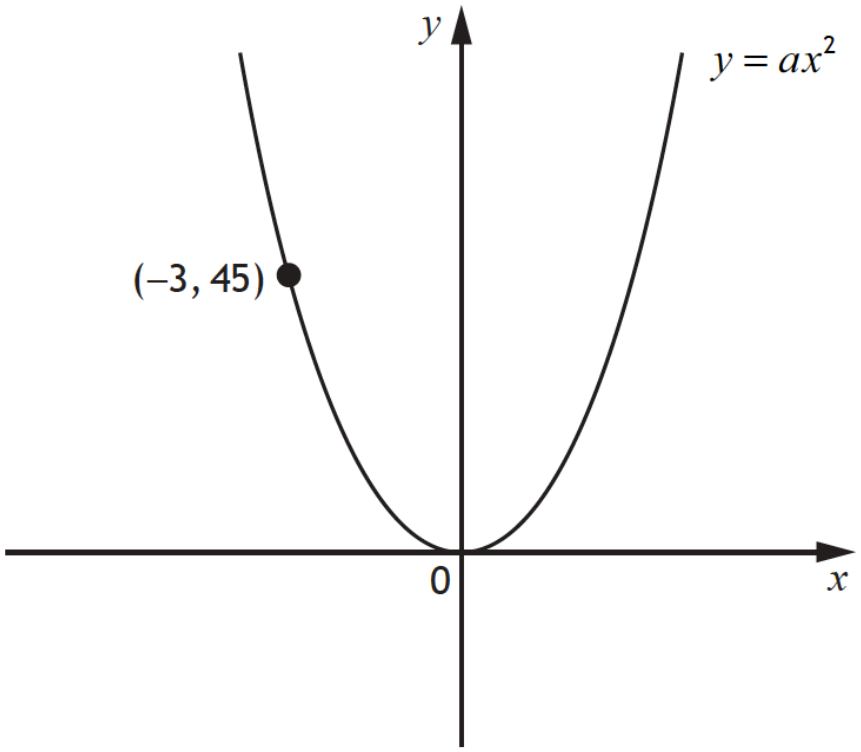
Marks are indicated in brackets after each question number

2014 Paper 1 Question 3, (2)

Express $x^2 - 14x + 44$ in the form $(x-a)^2 + b$.

2014 Paper 1 Question 7, (2)

The diagram below shows part of the graph of $y = ax^2$

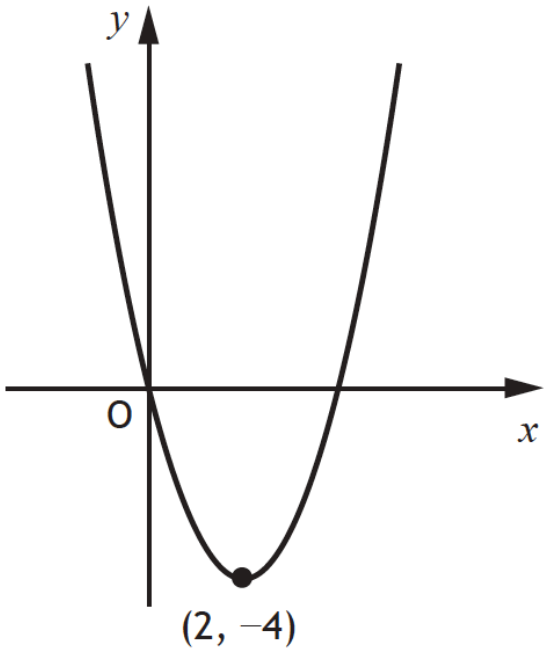


Find the value of *a*.

2015 Paper 1 Question 7, (1) (1) (1)

The graph below shows part of the parabola with equation of the form

$$y = (x + a)^2 + b.$$



The minimum turning point (2, −4) is shown in the diagram.

(a) State the values of

(i) a

(ii) b.

(b) Write down the equation of the axis of symmetry of the graph.

2016 Paper 1 Question 6, (2)

Determine the nature of the roots of the function $f(x) = 7x^2 + 5x - 1$.

2016 Paper 1 Question 10, (3)

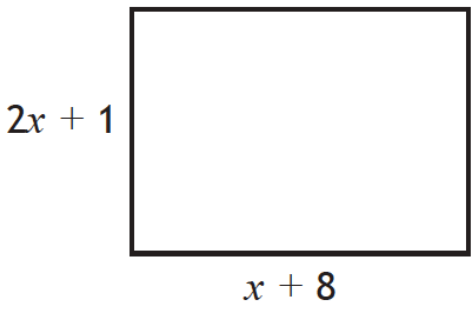
Sketch the graph of $y = (x-3)^2 + 1$.

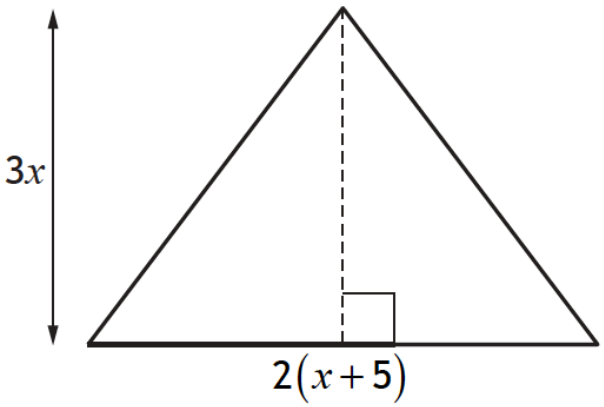
On your sketch, show clearly the coordinates of the turning point and the point of intersection with the y–axis.

2016 Paper 1 Question 12, (1) (3) (3)

The diagrams below show a rectangle and a triangle.

All measurements are in centimetres.





(a) Find an expression for the area of the **rectangle**.

(b) Given that the area of the rectangle is equal to the area of the triangle, show that $x^2 - 2x - 8 = 0$.

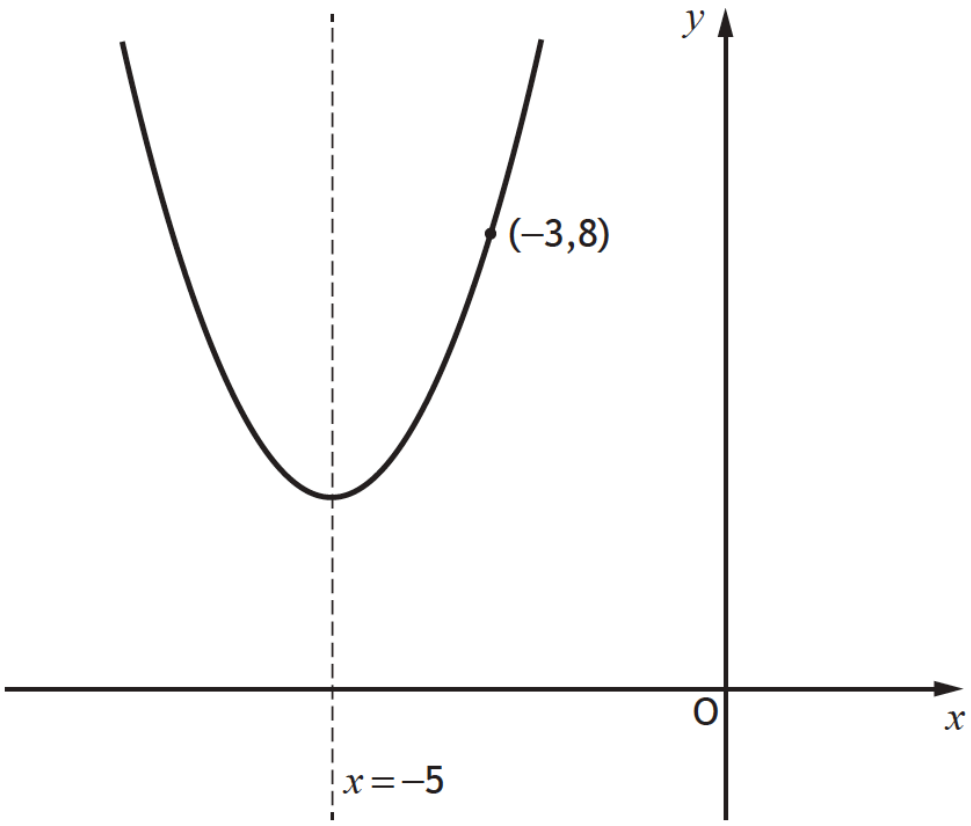
(c) Hence find, **algebraically**, the length and breadth of the rectangle.

2016 Paper 2 Question 9, (2)

Express $x^2 + 8x - 7$ in the form $(x+a)^2 + b$.

2017 Paper 1 Question 14, (2) (1)

The graph below shows a parabola with equation of the form $y = (x+a)^2 + b$.



The equation of the axis of symmetry of the parabola is $x = -5$.

(a) State the value of a.

The point (–3,8) lies on the parabola.

(b) Calculate the value of b.

2017 Paper 2 Question 4, (3)

Solve the equation $2x^2 + 5x - 4 = 0$.

Give your answers correct to one decimal place.