THE QUADRATIC FORMULA

Answer all of these questions. Remember to show your working out in all questions.

MAIN QUESTIONS

1.

$x^2 + 5x + 6 = 0$

> $x = -2, x = -3$

2.

$2x^2 - 7x + 3 = 0$

> $x = 3, x = 0.5$

3.

$x^2 - 4x - 5 = 0$

> $x = 5, x = -1$

4.

$3x^2 + 10x - 8 = 0$

> $x = 0.67, x = -4$

5.

$4x^2 - 12x + 9 = 0$

> $x = 1.5$

6.

$5x^2 + 2x - 7 = 0$

> $x = 1, x = -1.4$

7.

$x^2 + 6x + 10 = 0$

> $x = -3 \pm i$

8.

$2x^2 - 5x + 1 = 0$

> $x = 2.28, x = 0.22$

9.

$3x^2 + 7x - 6 = 0$

> $x = 0.67, x = -3$

10.

$x^2 - 8x + 15 = 0$

> $x = 5, x = 3$

MASTER QUESTIONS

M1.

A rectangular garden has an area of $54m^2$ and its length is 3m more than its width. Find the dimensions of the garden.

> The garden is 9m by 6m

M2.

A ball is thrown upwards from a height of 2m with an initial velocity of 15m/s. The height h after t seconds is given by $h = -5t^2 + 15t + 2$. When does the ball hit the ground?

> The ball hits the ground after 3.28 seconds

M3.

The product of two consecutive odd numbers is 143. Find the numbers.

> The numbers are 11 and 13

M4.

A right-angled triangle has a hypotenuse of 13cm and an area of $30cm^2$. Find the lengths of the other two sides.

> The sides are 5cm and 12cm

M5.

A company's profit P in thousands of pounds is given by $P = -2x^2 + 40x - 150$, where x is the number of units sold. How many units must be sold to break even?

> The company breaks even at 5,000 or 15,000 units