GCSE HIGHER · REVISION MAT 3

Forming and solving equations

1 Two angles on a straight line are

$3x°$ and $(x + 20)°$

Find the value of x.

2 The sum of three consecutive integers is 72.

Find the three integers.

3 Leo has £12 more than Jess.

Mo has twice as much as Leo.

Altogether they have £136.

Show that Jess has £25.

4 A rectangle measures

$(3x + 1)$ cm by $(x + 5)$ cm

A square has sides of $(x + 7)$ cm.

Their perimeters are equal.

Find the area of the square.

5 A cyclist rides for 2 hours at x km/h and then for 3 hours at $(x - 4)$ km/h.

She rides 73 km in total.

Show that $x = 17$.

6 A rectangular garden is 4 m longer than it is wide.

Its area is 45 m².

Find the perimeter of the garden.

7 The height of a ball, h m, after t seconds is

$$h = 20t - 5t^2$$

Show that the ball is 15 m high twice, and find both times.

8 A closed cuboid has a square base of side x cm.

Its height is $(x + 2)$ cm.

Its total surface area is 128 cm².

Find its volume.

Mr&Mrs MATHS

ANSWERS · REVISION MAT 3

Forming and solving equations

1 $4x + 20 = 180$

$x = 40$

2 $n + (n + 1) + (n + 2) = 72$

$3n + 3 = 72 \Rightarrow n = 23$

23, 24, 25

3 $x + (x + 12) + 2(x + 12) = 136$

$4x + 36 = 136$

$x = 25$

4 $2(4x + 6) = 4(x + 7)$

$8x + 12 = 4x + 28 \Rightarrow x = 4$

Square side 11 cm

Area = 121 cm²

5 $2x + 3(x - 4) = 73$

$5x - 12 = 73$

$5x = 85$

$x = 17$

6 $w(w + 4) = 45$

$w^2 + 4w - 45 = 0$

$(w + 9)(w - 5) = 0 \Rightarrow w = 5$

5 m by 9 m

Perimeter = 28 m

7 $20t - 5t^2 = 15$

$5t^2 - 20t + 15 = 0$

$t^2 - 4t + 3 = 0$

$(t - 1)(t - 3) = 0$

$t = 1$ s and $t = 3$ s

8 $2x^2 + 4x(x + 2) = 128$

$6x^2 + 8x - 128 = 0$

$3x^2 + 4x - 64 = 0$

$(3x + 16)(x - 4) = 0 \Rightarrow x = 4$

Volume = 4 × 4 × 6 = 96 cm³

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