EXAM PAPERS PRACTICE

GCSE Edexcel Math
1MA1
Substitution

Answers

"We will help you to achieve A Star "

Answer 1

You can work out the amount of medicine, c m*l*, to give to a child by using the formula

$$c = \frac{ma}{150}$$

m is the age of the child, in months.
a is an adult dose, in m*l*.

A child is 30 months old.
An adult's dose is 40 m*l*.

Work out the amount of medicine you can give to the child.

TOP: 3×4 WITH 2 ZEROS

$$c = \frac{30 \times 40}{150}$$

$$= \frac{1200}{150}$$ CANCEL ZEROS

$$= \frac{{}^{4}12 \times 10^{2}}{{}_{1}3 \times 5_{1}}$$ SPLIT INTO EASY FACTORS AND CANCEL.

$$= \frac{8}{1}$$

$$= 8$$

8 ml

Answer 2

The body mass index, B, for a person of mass m kg and height h metres is given by the formula

$$B = \frac{m}{h^2}$$

Usman has a mass of 50 kg.
He has a height of 1.57 m.

(a) Work out Usman's body mass index.
Give your answer correct to one decimal place.

$B = \frac{50}{1.57^2}$

$= 20.284798...$

$= 20.3$ (≥5 ROUND UP)

20.3

Answer 3

$v = w^2 - 2w.$

Work out the value of v when $w = 6$

$V = (6)^2 - 2(6)$

$V = 36 - 12$

$V = 24$

$v = 24$

Answer 4

$H = g^3 + 6g$

Work out the value of H when $g = 2$

Substitue 2 into equation H

2x2x2 + 6(2) = 8 +12 = 20

$H =$ 20

Answer 5

$f = 3g + 7h$

Work out the value of f when $g = -5$ and $h = 2$

$f = 3 \times (-5) + 7 \times 2$

$= -15 + 14$

$= -1$

Answer 6

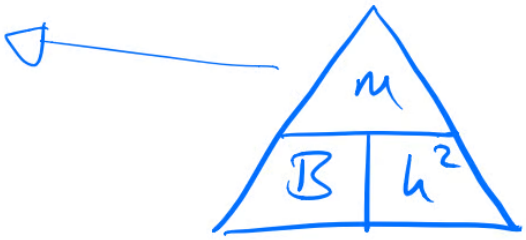
Tom's height is 1.80 m.
He wants his body mass index to be 21

(b) Work out the mass that will give Tom a body mass index of 21

$m = B \times h^2$

$= 21 \times 1.80^2$

$m = 68.04$ kg



Answer 7

$$W = \frac{5.6a}{b^2}$$

$a = 1.28 \quad b = 0.8$

Work out the value of W.

$$W = \frac{5.6\ (1.28)}{0.8^2} = 11.2$$

$W =$ 11.2

Answer 8

$A = 4bc$

$A = 100$
$b = 2$

Work out the value of c.

$100 = 4 \times 2 \times c$

$\frac{100}{8} = \frac{8c}{8}$

$c = 12.5$

Answer 9

$x = 0.7$

Work out the value of $\dfrac{(x+1)^2}{2x}$

Write down all the figures on your calculator display.

$\dfrac{(0.7+1)^2}{2\times 0.7} = 2.064285714\ldots$

Answer 10

$h = 3t^2$

(b) Work out the value of t when $h = 108$

$h = 3t^2$

$h = 108$: $\frac{108}{3} = \frac{3t^2}{3}$

$36 = t^2$

$\pm\sqrt{\ }$ $\pm 6 = t$

$3\overline{)10'8}$ $= 36$

$(-6)^2 = 36$

$6^2 = 36$

Answer 11

$h = 5t^2 + 2$

(i) Work out the value of h when $t = -2$

$h = 5 \times (-2)^2 + 2$

$= 5 \times 4 + 2$

$= 22$

$(-2)^2$

$= -2 \times -2$

$= 4$

(ii) Work out a value of t when $h = 47$

$47 = 5t^2 + 2$

$-2 \quad -2$

$\frac{45}{5} = \frac{5t^2}{5}$

$\sqrt{9} = \sqrt{t^2}$

$3 = t$ (or $t = -3$)

OTHER SQUARE ROOT OF 9.

Answer 12

You can change temperatures from °F to °C by using the formula

$$C = \frac{5(F - 32)}{9}$$

F is the temperature in °F.
C is the temperature in °C.

The minimum temperature in an elderly person's home should be 20 °C.

Mrs Smith is an elderly person.
The temperature in Mrs Smith's home is 77 °F.

Decide whether or not the temperature in Mrs Smith's home is lower than the minimum temperature should be.

$F = 77 \rightarrow C = \frac{5(77-32)}{9}$

$77 - 32 = 45$

$C = \frac{5 \times 45^{5}}{9_{1}}$

$C = 5 \times 5$

$C = 25°C$

No, because $25°C > 20°C$.

Answer 13

$h = 3t^2$

(a) Work out the value of h when $t = 5$

$h = 3t^2$

$t = 5$: $h = 3 \times 5^2$

$h = 3 \times 25$

$h = 75$

25
25 +
50
25 +
75

Answer 14

(c) Make a the subject of the formula

$$v = u + at$$

$$v = u + at$$
$$-u \quad -u$$
$$v - u = at$$
$$\frac{v-u}{t} = \frac{at}{t}$$
$$\frac{v-u}{t} = a$$

Answer 15

$y = p - 2qx^2$

$p = -10$
$q = 3$
$x = -5$

Work out the value of y.

$y = -10 - 2 \times 3 \times (-5)^2$

$= -10 - 2 \times 3 \times 25$

$= -10 - 6 \times 25$

$= -10 - 150$

$= -160$

$(-5)^2$

$= -5 \times -5$

$= 25$

$\times 25$

$\times 1 \quad 25$
$\times 2 \quad 50$
$\times 4 \quad 100$ +
$\times 6 \quad 150$