

- 1 The temperature at 07 00 is -3°C .
This temperature is 11°C higher than the temperature at 01 00.

Find the temperature at 01 00.

..... $^{\circ}\text{C}$ [1]

- 2 Jodi swims 22 lengths of a swimming pool to raise money for charity.
She receives \$15 for each length she swims.

Calculate how much money Jodi raises for charity.

\$..... [1]

- 3 Write the recurring decimal $0.\dot{2}\dot{3}$ as a fraction.

..... [1]

- 4 (a) Write 0.046 875 correct to 2 significant figures.

..... [1]

(b) Write 2 760 000 in standard form.

..... [1]

- 5 A tourist changes \$500 to euros (€) when the exchange rate is $\text{€}1 = \$1.0697$.

Calculate how many euros he receives.

€..... [2]

- 6 The probability that a sweet made in a factory is the wrong shape is 0.0028 .
One day, the factory makes 25 000 sweets.

Calculate the number of sweets that are expected to be the wrong shape.

..... [2]

- 7 The bearing of Alexandria from Paris is 128° .

Calculate the bearing of Paris from Alexandria.

..... [2]

- 8 O is the origin, $\overrightarrow{OA} = 2\mathbf{x} + 3\mathbf{y}$ and $\overrightarrow{BA} = \mathbf{x} - 4\mathbf{y}$.

Find the position vector of B , in terms of $\mathbf{x}$ and $\mathbf{y}$, in its simplest form.

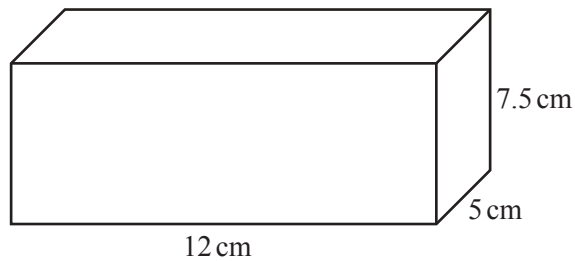
..... [2]

- 9 y is directly proportional to $(x-4)$.
When $x = 16$, $y = 3$.

Find y in terms of x .

$y =$ [2]

10



NOT TO
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Calculate the total surface area of the cuboid.

..... cm^2 [3]

- 11 The number of passengers on a train increases from 63 to 77.

Calculate the percentage increase.

.....% [3]

- 12** A cone with height 14.8 cm has volume 275 cm^3 .

Calculate the radius of the cone.

[The volume, V , of a cone with radius r and height h is $V = \frac{1}{3}\pi r^2 h$.]

..... cm [3]

- 13** Factorise.

(a) $7k^2 - 15k$

..... [1]

(b) $12(m+p) + 8(m+p)^2$

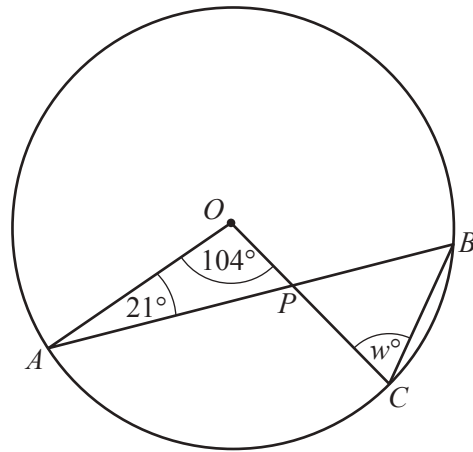
..... [2]

- 14** Eric invests an amount in a bank that pays compound interest at a rate of 2.16% per year.
At the end of 5 years, the value of his investment is \$6999.31 .

Calculate the amount Eric invests.

\$..... [3]

15

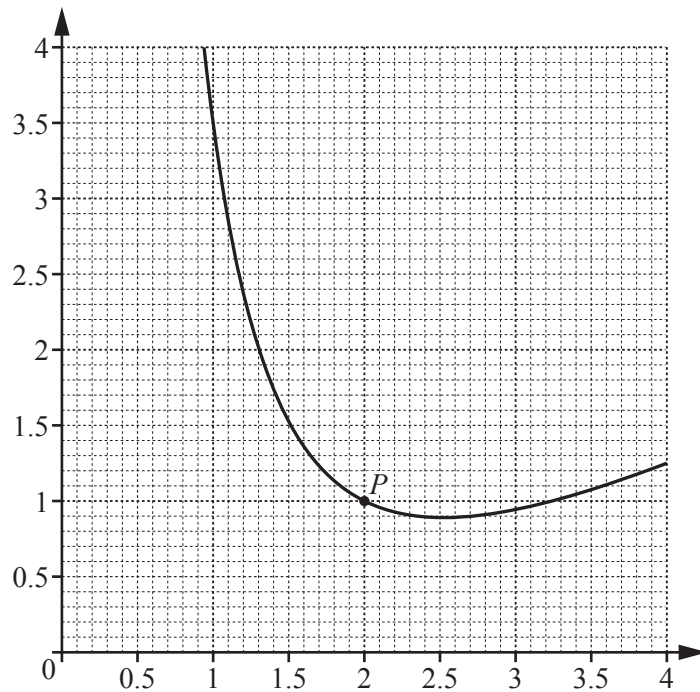
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A , B and C are points on the circle, centre O .
 AB and OC intersect at P .

Find the value of w .

$w =$ [3]

16



By drawing a suitable tangent, estimate the gradient of the curve at the point P .

..... [3]

- 17 (a) Find the value of n when $5^n = \frac{1}{125}$.

$n =$ [1]

- (b) Simplify $\left(\frac{64}{m^3}\right)^{-\frac{1}{3}}$.

..... [2]

- 18 A pipe is full of water.
The cross-section of the pipe is a circle, radius 2.6 cm.
Water flows through the pipe into a tank at a speed of 12 centimetres per second.

Calculate the number of litres that flow into the tank in one hour.

..... litres [3]

- 19 Simplify. $\frac{ab - b^2}{a^2 - b^2}$

..... [3]

20 (a) Work out $\begin{pmatrix} 2 & -1 \\ 4 & 3 \end{pmatrix} \begin{pmatrix} 1 & 6 \\ -5 & 4 \end{pmatrix}$.

$$\begin{pmatrix} & \\ & \end{pmatrix} \quad [2]$$

(b) Find the value of x when the determinant of $\begin{pmatrix} 3 & -1 \\ -7 & x \end{pmatrix}$ is 5.

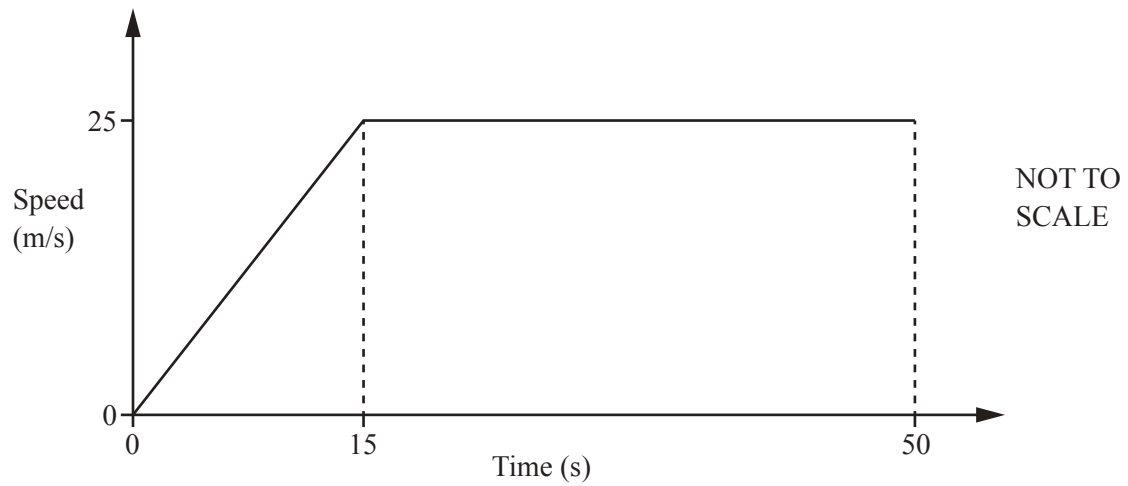
$$x = \dots\dots\dots [2]$$

21 Without using a calculator, work out $3\frac{1}{8} \div \frac{5}{12}$.

You must show all your working and give your answer as a mixed number in its simplest form.

$$\dots\dots\dots [4]$$

22



The speed–time graph shows the first 50 seconds of a journey.

Calculate

- (a) the acceleration during the first 15 seconds,

.....m/s² [1]

- (b) the distance travelled in the 50 seconds.

..... m [3]

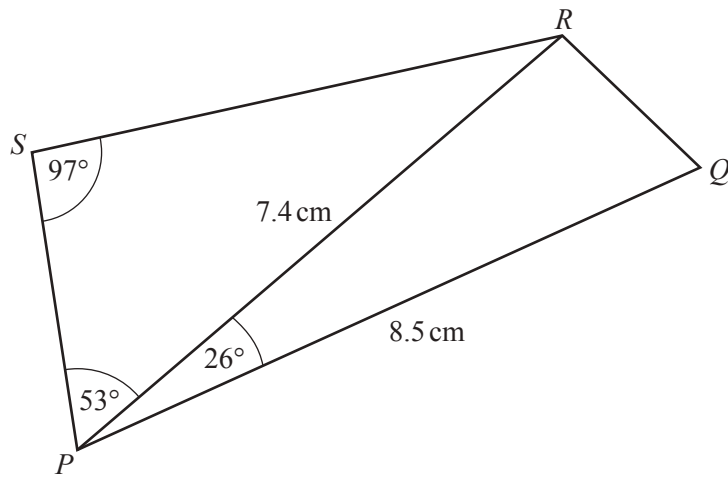
23 A is the point $(2, 3)$ and B is the point $(7, -5)$.

(a) Find the co-ordinates of the midpoint of AB .

(.....,) [2]

(b) Find the equation of the line through A that is perpendicular to AB .
Give your answer in the form $y = mx + c$.

$y =$ [4]



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Calculate

(a) SR ,

$SR = \dots\dots\dots$ cm [3]

(b) RQ .

$RQ = \dots\dots\dots$ cm [4]

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