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0580/13

May/June 2018

1 hour

Additional Materials: Electronic calculator Geometrical instruments
 Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

DO **NOT** WRITE IN ANY BARCODES.

For π , use either your calculator value or 3.142.

The total of the marks for this paper is 56.

This document consists of **12** printed pages.

- 1 Write 75% as a fraction in its simplest form.

..... [1]

- 2 Factorise.

$$w + w^3$$

..... [1]

- 3 Liz takes 65 seconds to run 400 m.

Calculate her average speed.

..... m/s [1]

- 4 Calculate.

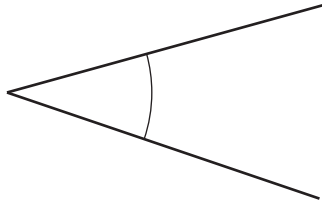
$$\sqrt{\frac{18^2}{0.5 + 1.75}}$$

..... [1]

- 5 Work out the value of 4^{-2} .

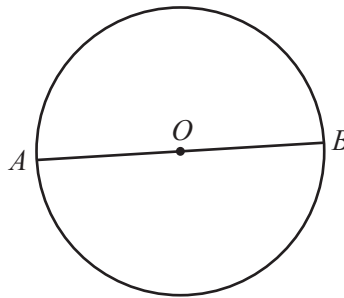
..... [1]

- 6 (a) Write down the mathematical name of the type of angle marked.



..... [1]

- (b) A and B are points on the circumference of a circle, centre O .



Write down the mathematical name of the line AB .

..... [1]

- 7 Write these numbers in order, starting with the smallest.

$$\frac{4}{15}$$

$$26\%$$

$$0.24$$

$$\frac{1}{4}$$

..... < < < [2]
smallest

- 8 Complete the list of factors of 36.

1, 2,, 36 [2]

- 9 Increase \$22 by 15%.

\$..... [2]

- 10 (a)** Write 209 802 correct to the nearest thousand.

..... [1]

- (b)** Write 4123 correct to 3 significant figures.

..... [1]

- 11** Jez and Soraya share \$2500 in the ratio Jez : Soraya = 7 : 3.

Work out how much Soraya receives.

\$..... [2]

- 12** The probability that Kim wins a game is 0.72 .
In one year Kim will play 225 games.

Work out an estimate of the number of games Kim will win.

..... [2]

- 13 (a)** Write 4.82×10^{-3} as an ordinary number.

..... [1]

- (b)** Write 52 million in standard form.

..... [1]

14 Solve.

$$\frac{1-p}{3} = 4$$

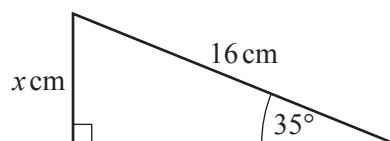
$$p = \dots\dots\dots [2]$$

15 The mass, m kilograms, of a package is 6.2 kg, correct to 1 decimal place.

Complete the statement about the value of m .

$$\dots\dots\dots \leq m < \dots\dots\dots [2]$$

16



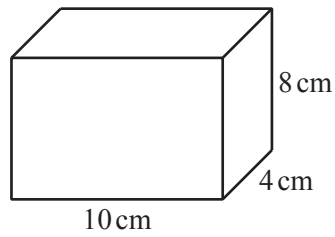
NOT TO
SCALE

The diagram shows a right-angled triangle.

Calculate the value of x .

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

- 17 The diagram shows a cuboid.



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Work out the surface area of this cuboid.

.....cm² [3]

- 18 **Without using a calculator**, work out $\frac{2}{3} \div 1\frac{1}{5}$.

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

..... [3]

19 (a) Work out.

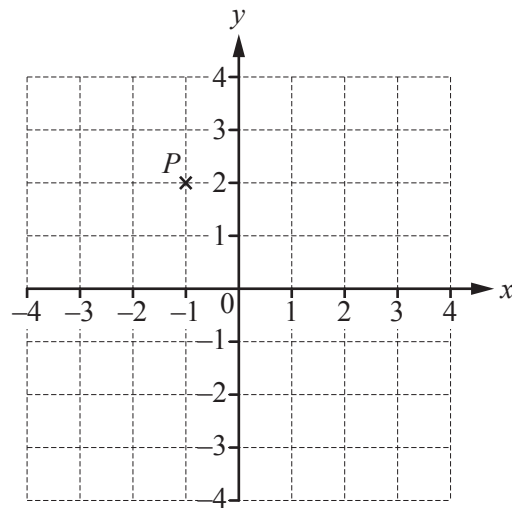
(i) $\begin{pmatrix} 5 \\ -1 \end{pmatrix} + \begin{pmatrix} 2 \\ 6 \end{pmatrix}$

$$\begin{pmatrix} \\ \end{pmatrix} \quad [1]$$

(ii) $4 \begin{pmatrix} -5 \\ 2 \end{pmatrix}$

$$\begin{pmatrix} \\ \end{pmatrix} \quad [1]$$

(b)



P is the point $(-1, 2)$ and $\overrightarrow{PQ} = \begin{pmatrix} 4 \\ -3 \end{pmatrix}$.

Find the co-ordinates of Q .

(.....,) [1]

- 20 (a)** Line L has the equation $y = 5x + 12$.

Write down the gradient of line L .

..... [1]

- (b)** Another line, M , has the equation $y = 8x + 3$.

Write down the equation of the line parallel to line M that passes through the point $(0, 6)$.

..... [2]

- 21 (a) Change 568 000 cm into metres.

..... m [1]

- (b) The scale drawing shows the positions of two towns, A and B .
The scale is 1 centimetre represents 5 kilometres.



Scale : 1 cm to 5 km

- (i) Measure the bearing of town B from town A .

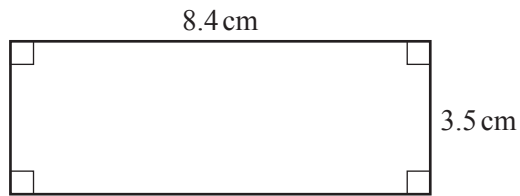
..... [1]

- (ii) Find the actual distance, in kilometres, from town A to town B .

..... km [2]

22 Work out the area of each shape.

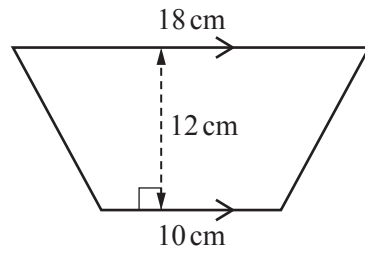
(a)



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.....cm² [2]

(b)



NOT TO
SCALE

.....cm² [2]

- 23** Solve the simultaneous equations.
You must show all your working.

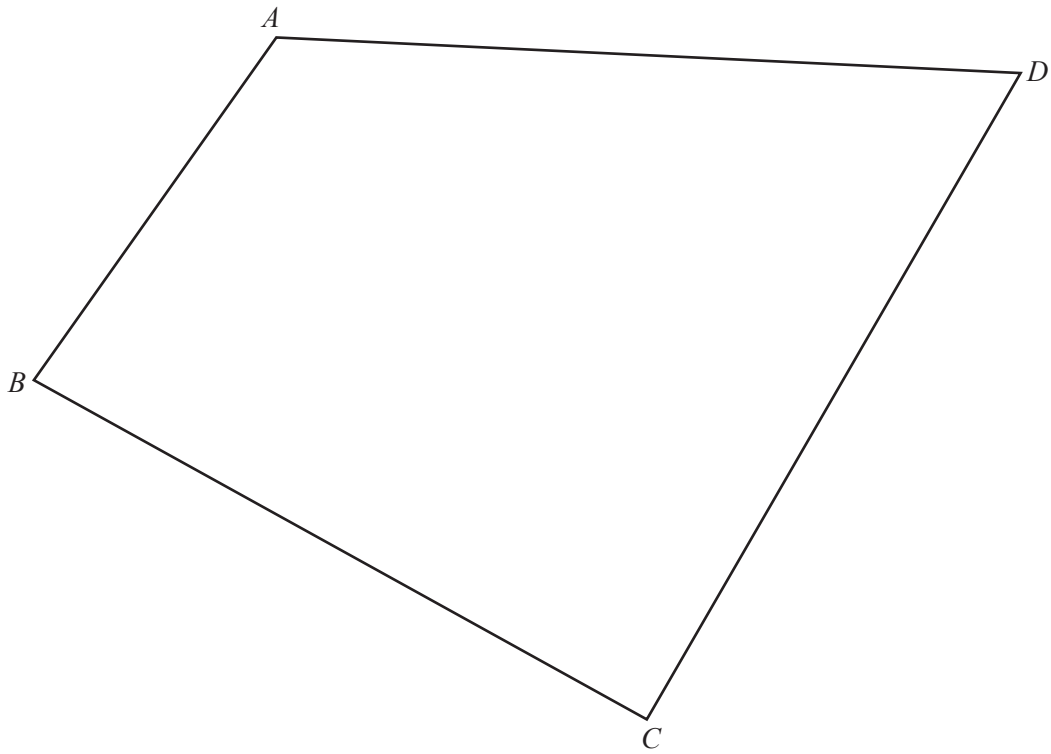
$$\begin{aligned}3x - 2y &= 23 \\ 2x + 5y &= 9\end{aligned}$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots [4]$$

Question 24 is printed on the next page.

24 $ABCD$ is a quadrilateral.



- (a) **Using a straight edge and compasses only**, construct the perpendicular bisector of BC .
Show all your construction arcs. [2]
- (b) **Using a straight edge and compasses only**, construct the bisector of angle BCD .
Show all your construction arcs. [2]
- (c) Shade the region inside $ABCD$ that is
- nearer to B than to C
- and
- nearer to CD than to BC . [1]

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