1 Find the temperature that is 8 °C colder than −5 °C.

..... °C [1]

2 There are two prime numbers in this list.

27 47 57 61 75 93

Work out the sum of these two prime numbers.

..... [2]

3 On ten days, Stefan records the number of minutes he has to wait for a train.

1 3 12 5 4 23 5 24 11 8

(a) Complete the stem-and-leaf diagram to show this information.

0	1 3
1	
2	

Key: 0 | 1 represents 1 minute

[2]

(b) Find the median.

..... min [1]

4 The distance from town *A* to town *B* on a map is 3.5 cm.
The scale on the map is 1 : 250 000.

Find the actual distance, in kilometres, from town *A* to town *B*.

..... km [2]

5 A spinner is spun.
The possible outcomes are A, B, C or D.
The probability of spinning A, C or D is shown in the table.

Letter on spinner	A	B	C	D
Probability	0.2		0.05	0.35

Complete the table.

[2]

6 $\mathscr{E} = \{x: 1 \leqslant x \leqslant 20\}$
$E = \{\text{even numbers}\}$
$M = \{\text{multiples of 5}\}$

(a) Find $\text{n}(M)$.

..... [1]

(b) Find the elements in the set $E \cap M$.

..... [1]

(c) $y \notin E$.

Write down a possible value of y.

..... [1]

7 **Without using a calculator**, work out $\frac{4}{7} \div 1\frac{5}{21}$.
You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

8 Solve.

(a) $\frac{30}{x} = 6$

$x =$ ..... [1]

(b) $11x - 3 \geqslant 2(2x + 9)$

..... [3]

9 F is the point $(1, -4)$, $\overrightarrow{FG} = \begin{pmatrix} 8 \\ -3 \end{pmatrix}$ and $\overrightarrow{GH} = \begin{pmatrix} -12 \\ 35 \end{pmatrix}$.

Find

(a) $3\overrightarrow{FG}$

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

(b) $\overrightarrow{FG} + \overrightarrow{GH}$

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

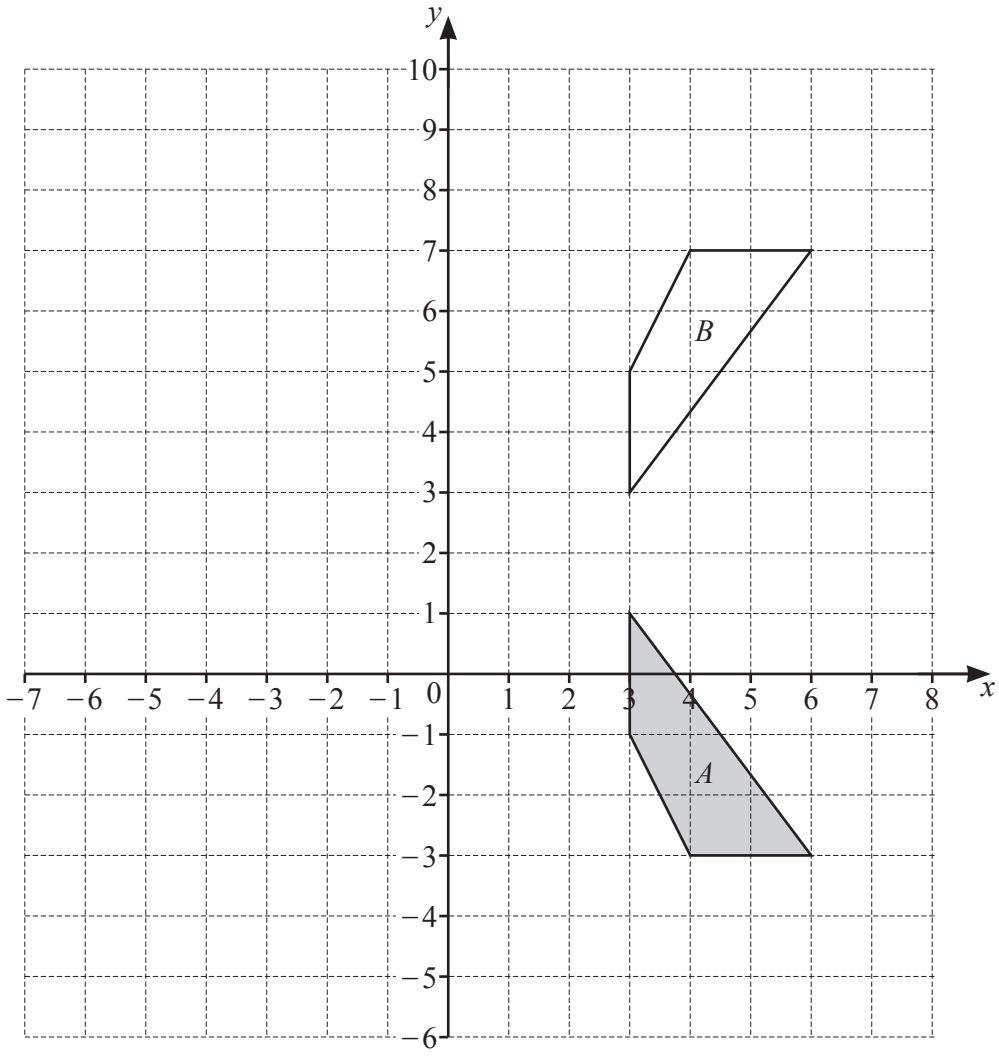
(c) the coordinates of the point G

(..... , ...) [1]

(d) the magnitude of vector $\overrightarrow{GH}$.

..... [2]

10



(a) Describe fully the **single** transformation that maps shape *A* onto shape *B*.

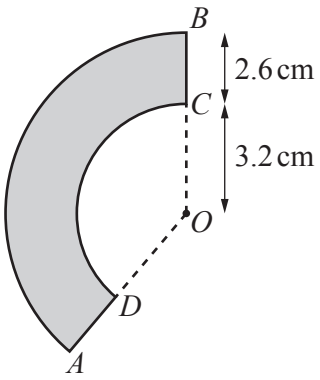
.....

..... [2]

(b) Rotate shape *A* 90° clockwise about the point (−1, 2). [2]

(c) Enlarge shape *A* by scale factor −2, centre (2, 0). [2]

11



NOT TO SCALE

The diagram shows a shape, $ABCD$, formed by the sectors of two circles with the same centre O.
Both sector angles are 140°, $OC = 3.2$ cm and $CB = 2.6$ cm.
The area of the shape is $k\pi$ cm^2.

Find the value of k.

$k =$ ..... [3]

12 One solution of the equation $ax^2 + b = 181$ is $x = 8$.
a and b are both positive integers **greater than 1**.

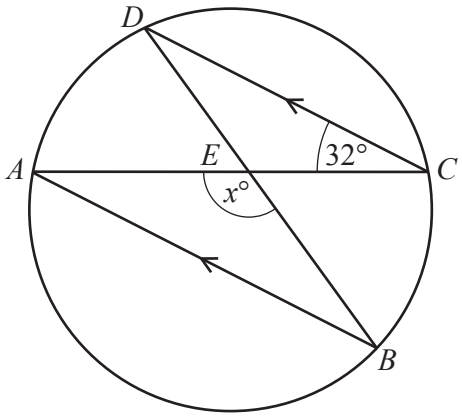
(a) Find the value of b.

$b =$ ..... [2]

(b) Write down the other solution of the equation $ax^2 + b = 181$.

$x =$ ..... [1]

13



NOT TO SCALE

A, B, C and D are points on a circle.
AB is parallel to DC and angle $ACD = 32°$.
Chords AC and DB intersect at E.

Find the value of x.

$x =$ ..... [2]

14 $f(x) = 5x + 2$

Find $f^{-1}(x)$.

$f^{-1}(x) =$ ..... [2]

15 C is the point $(5, -1)$ and D is the point $(13, 15)$.

(a) Find the midpoint of CD.

(..... , ...) [2]

(b) Find the gradient of CD.

..... [2]

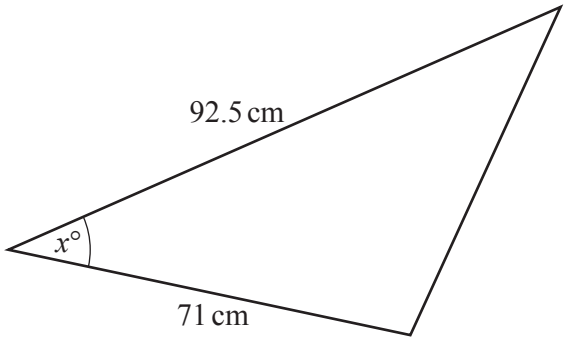
(c) Find the equation of the perpendicular bisector of CD.
Give your answer in the form $y = mx + c$.

$y =$ ..... [3]

16 Write $0.62\dot{1}$ as a fraction in its simplest form.
You must show all your working.

..... [3]

17



NOT TO SCALE

The diagram shows a triangle with an acute angle marked $x°$.
The area of the triangle is $2143\,\text{cm}^2$.

Work out the value of x.

$x =$ ..... [2]

18 Make x the subject of the formula.

$$c = \frac{3x}{2x - 5}$$

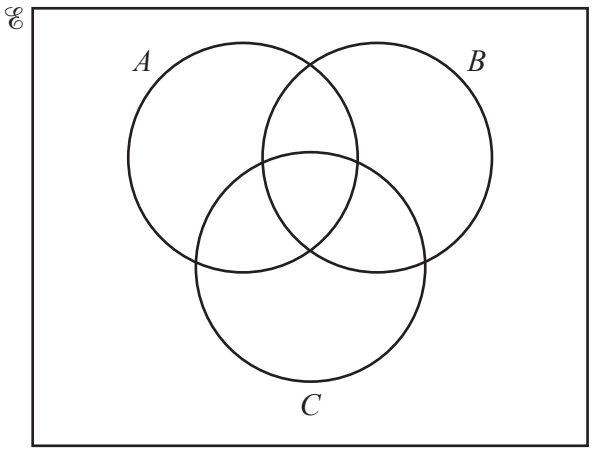
$x =$ ..... [4]

19 m is inversely proportional to the square of $(t+2)$.
$m = 0.64$ when $t = 3$.

Find m when $t = 8$.

$m =$ ..... [3]

20 In the Venn diagram, shade the region $A \cap B' \cap C$.



[1]

21 Solve the equation $5\sin x = -3$ for $0° \leqslant x \leqslant 360°$.

..... [3]

22 Write as a single fraction in its simplest form.

$$\frac{5}{3x+2}+\frac{4}{2x-1}$$

..... [3]

23 Bag A and bag B each contain red sweets and yellow sweets.
Anna picks a sweet at random from bag A.
Ben picks a sweet at random from bag B.
The probability that Anna picks a red sweet is $\frac{2}{5}$.
The probability Anna and Ben both pick a yellow sweet is $\frac{1}{10}$.

Find the probability that Anna and Ben both pick a red sweet.

..... [3]