

- 1 Write 1.8972 correct to 2 decimal places.

..... [1]

- 2 Factorise $2x^2 - x$.

..... [1]

- 3 Giulio's reaction times are measured in two games.
 In the first game his reaction time is $\frac{1}{3}$ of a second.
 In the second game his reaction time is $\frac{1}{8}$ of a second.
 Find the difference between the two reaction times.

..... s [1]

- 4 The table shows the different methods of travel for 20 people going to work.

Method of travel	Frequency
Car	10
Walk	5
Bike	3
Bus	2

Which type of average, mean, median or mode, can be used for this information?

..... [1]

- 5 (a) Find the co-ordinates of the point where the line $y = 3x - 8$ crosses the y -axis.

(.....,) [1]

- (b) Write down the gradient of the line $y = 3x - 8$.

..... [1]

- 6 Calculate.

- (a) $-12 \div -2$

..... [1]

- (b) $\sqrt[3]{2^3 + 2}$

..... [1]

- 7 Here is a list of numbers.

21 $\frac{2}{3}$ $\sqrt{13}$ 31 $\sqrt{121}$ 51 0.7

From this list, write down

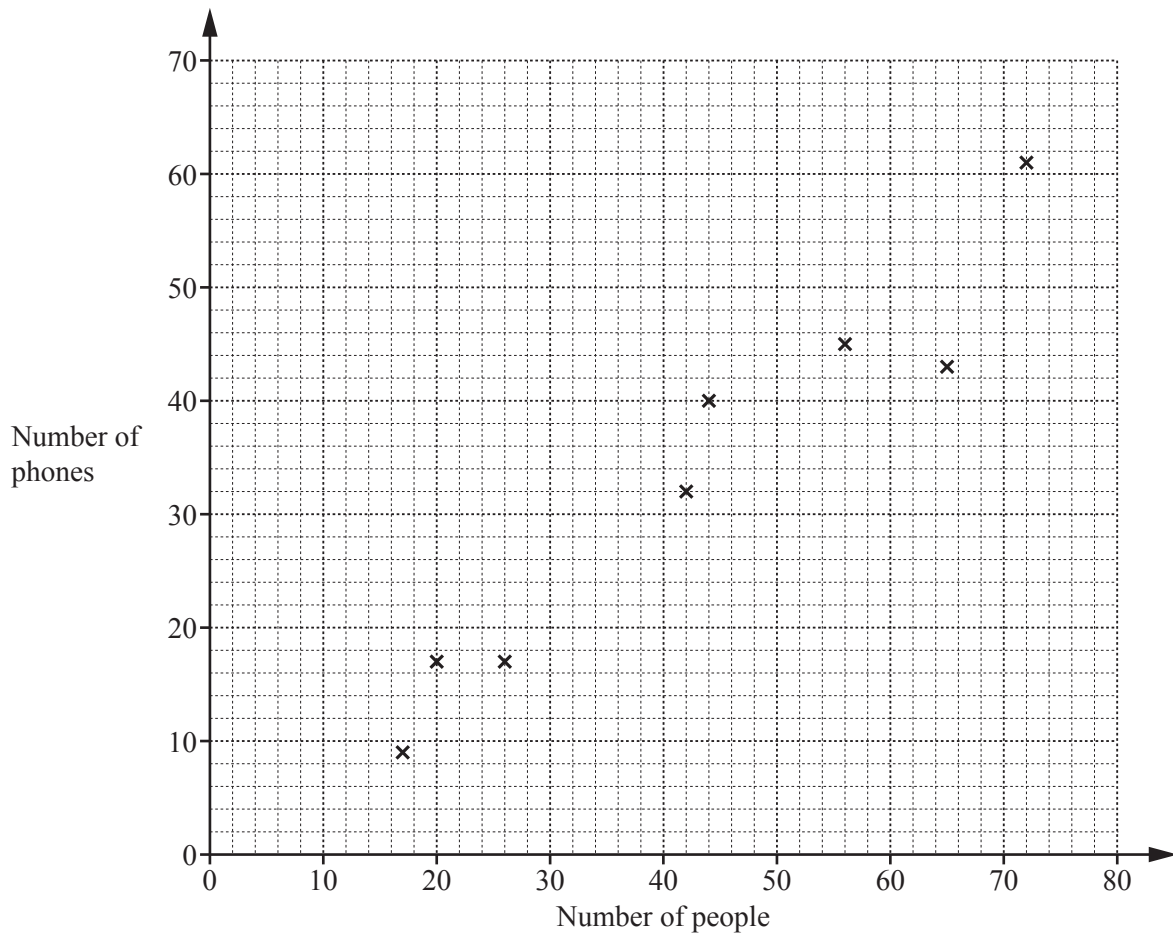
- (a) a prime number,

..... [1]

- (b) an irrational number.

..... [1]

- 8 The scatter diagram shows the number of people and the number of phones in each of 8 buildings.



- (a) One of the buildings contains 42 people.

Write down the number of phones in this building.

..... [1]

- (b) What type of correlation is shown in the scatter diagram?

..... [1]

- 9 Without using a calculator, work out $\frac{12}{35} \times \frac{7}{9}$.

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

..... [2]

- 10 Rearrange $2(w + h) = P$ to make w the subject.

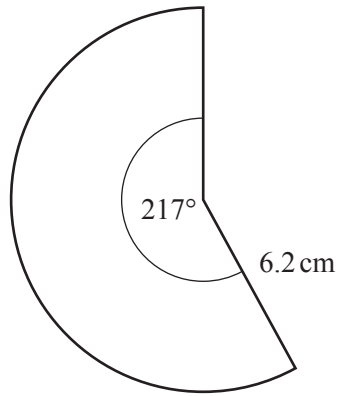
$w =$ [2]

- 11 Complete this statement with an expression in terms of m .

$$18m^3 + 9m^2 + 14m + 7 = (9m^2 + 7)(\text{.....})$$

[2]

12

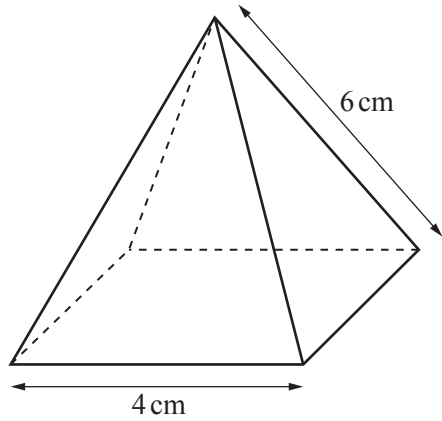
NOT TO
SCALE

The diagram shows a sector of a circle with radius 6.2 cm and sector angle 217° .

Calculate the area of this sector.

..... cm^2 [2]

13



NOT TO
SCALE

The diagram shows a pyramid with a square base.
The triangular faces are congruent isosceles triangles.

- (a) Write down the number of planes of symmetry of this pyramid.

..... [1]

- (b) **Using a ruler and compasses only**, construct an accurate drawing of one of the triangular faces of the pyramid.

[2]

14 One solution of the equation $ax^2 + a = 150$ is $x = 7$.

(a) Find the value of a .

$a = \dots\dots\dots$ [2]

(b) Find the other solution.

$x = \dots\dots\dots$ [1]

15 A is the point $(7, 12)$ and B is the point $(2, -1)$.

Find the length of AB .

$\dots\dots\dots$ [3]

16 $A = \frac{b \times h}{2}$

$A = 10$, correct to the nearest whole number.

$h = 4$, correct to the nearest whole number.

Work out the upper bound for the value of b .

$\dots\dots\dots$ [3]

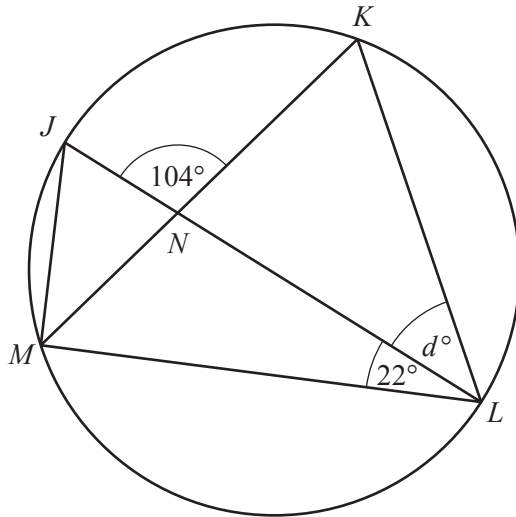
- 17 Simplify $\frac{x^3 + 5x^2}{x^2 - 25}$, giving your answer as a single fraction.

..... [3]

- 18 y is inversely proportional to the square of $(x + 1)$.
 $y = 0.875$ when $x = 1$.

Find y when $x = 4$.

$y =$ [3]



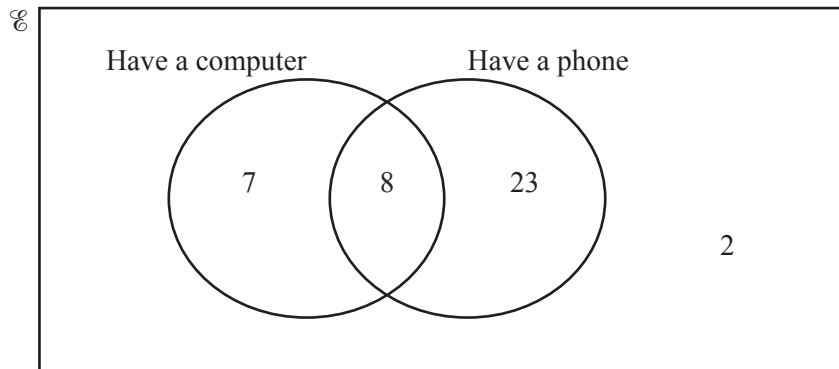
NOT TO SCALE

J , K , L and M are points on the circumference of a circle with diameter JL .
 JL and KM intersect at N .
 Angle $JNK = 104^\circ$ and angle $MLJ = 22^\circ$.

Work out the value of d .

$d = \dots\dots\dots$ [4]

- 20 (a) 40 children were asked if they have a computer or a phone or both. The Venn diagram shows the results.

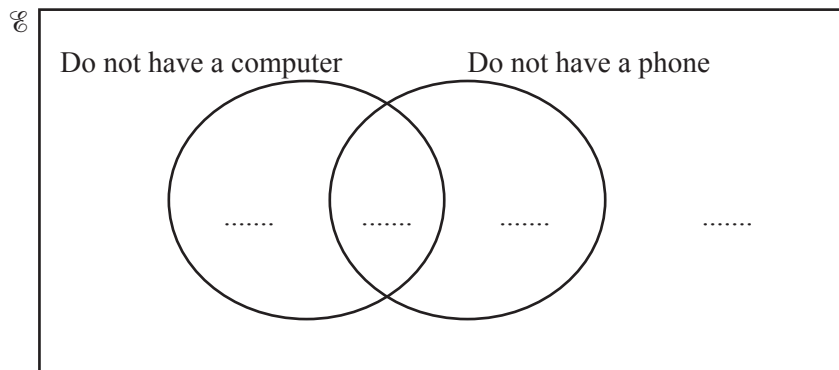


- (i) A child is chosen at random from the children who have a computer.

Write down the probability that this child also has a phone.

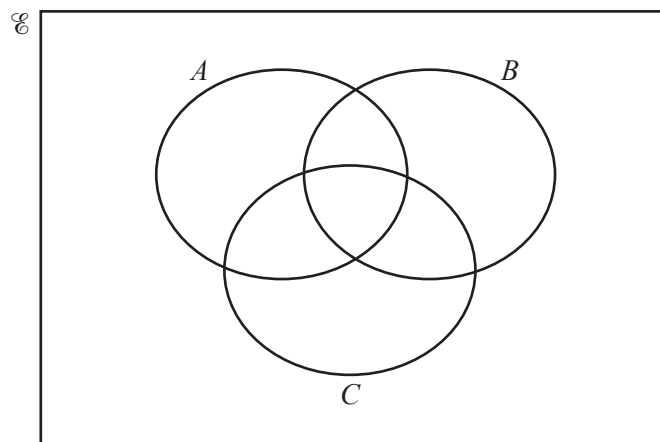
..... [1]

- (ii) Complete the Venn diagram.



[2]

- (b) In this Venn diagram, shade the region $(A \cup B') \cap C$.



[1]

21 $\mathbf{A} = \begin{pmatrix} 3 & 4 \\ 5 & 0 \end{pmatrix}$ $\mathbf{B} = \begin{pmatrix} 1 & 4 \\ -3 & 2 \end{pmatrix}$

Find

(a) $5\mathbf{A}$,

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

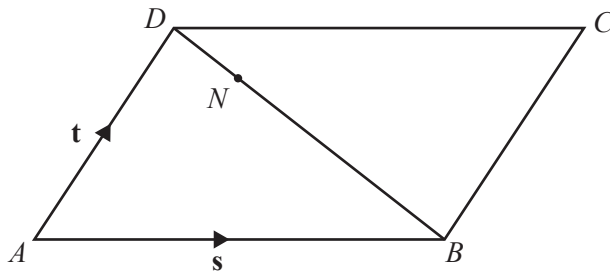
(b) $\mathbf{A} + \mathbf{B}$,

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

(c) \mathbf{AB} .

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

22



NOT TO SCALE

$ABCD$ is a parallelogram.
 N is the point on BD such that $BN : ND = 4 : 1$.
 $\overrightarrow{AB} = \mathbf{s}$ and $\overrightarrow{AD} = \mathbf{t}$.

Find, in terms of \mathbf{s} and \mathbf{t} , an expression in its simplest form for

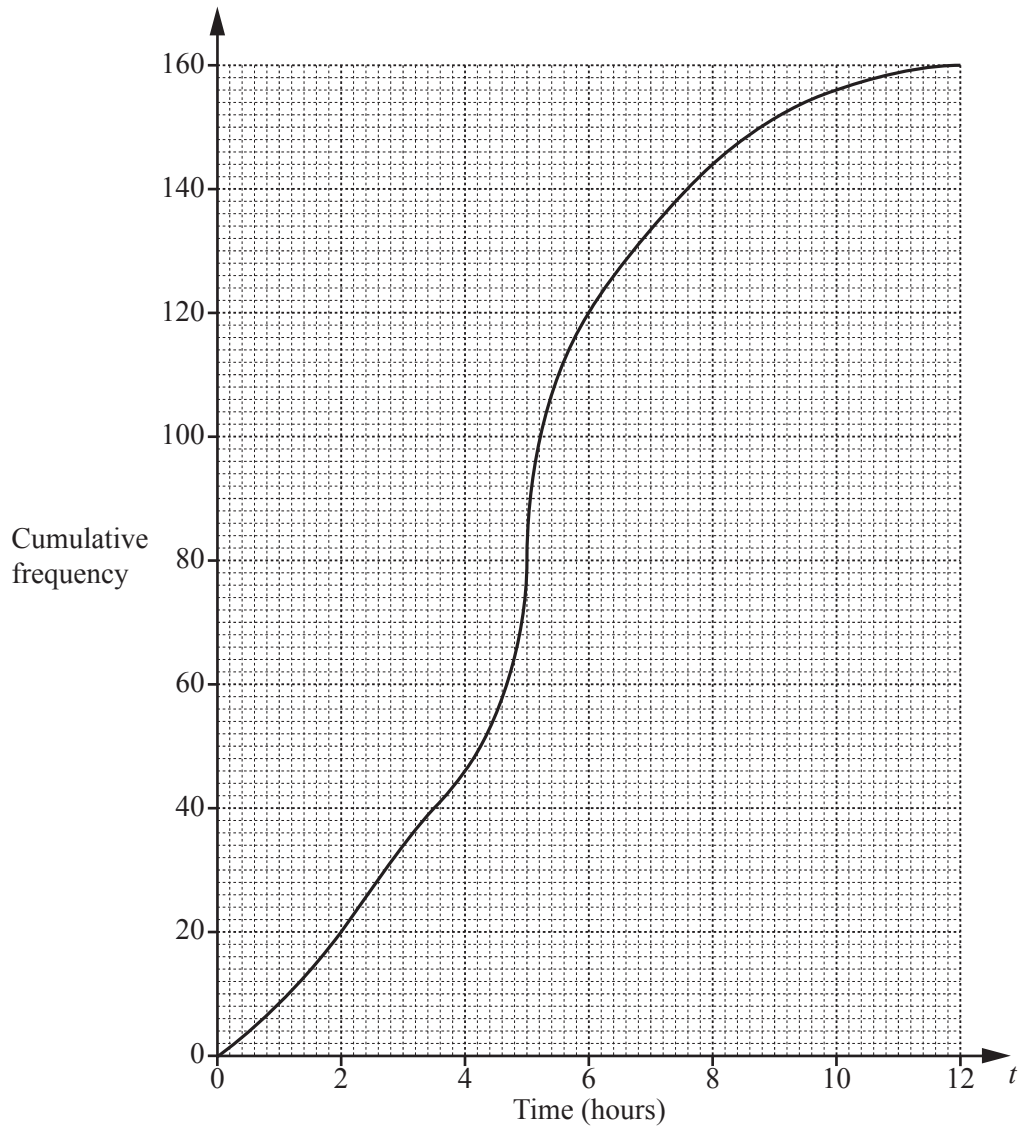
(a) \overrightarrow{BD} ,

$$\overrightarrow{BD} = \dots\dots\dots [1]$$

(b) \overrightarrow{CN} .

$$\overrightarrow{CN} = \dots\dots\dots [3]$$

- 23 160 students record the amount of time, t hours, they each spend playing computer games in a week. This information is shown in the cumulative frequency diagram.



(a) Use the diagram to find an estimate of

(i) the median,

..... hours [1]

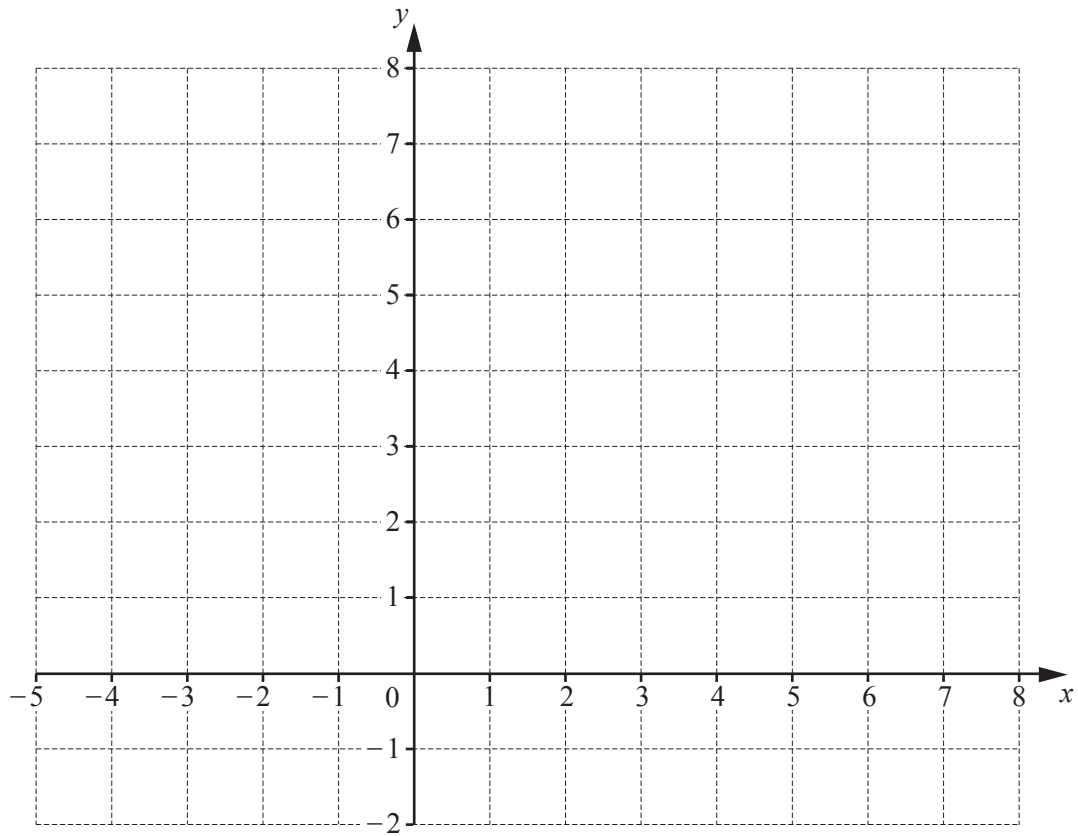
(ii) the interquartile range.

..... hours [2]

(b) Use the diagram to complete this frequency table.

Time (t hours)	$0 < t \leq 2$	$2 < t \leq 4$	$4 < t \leq 6$	$6 < t \leq 8$	$8 < t \leq 10$	$10 < t \leq 12$
Frequency	20			24	12	4

[2]



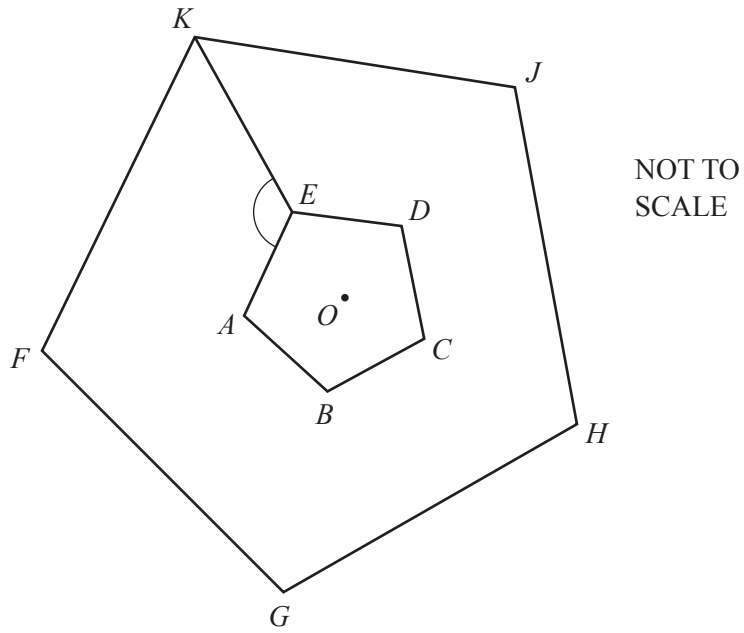
By shading the **unwanted** regions of the grid, draw and label the region R which satisfies the following three inequalities.

$$y \leq 2$$

$$x < 3$$

$$y \leq x + 4$$

[5]



The diagram shows two regular pentagons.
 Pentagon $FGHIK$ is an enlargement of pentagon $ABCDE$, centre O .

(a) Find angle AEK .

Angle $AEK = \dots\dots\dots$ [4]

(b) The area of pentagon $FGHIK$ is 73.5 cm^2 .
 The area of pentagon $ABCDE$ is 6 cm^2 .

Find the ratio perimeter of pentagon $FGHIK$: perimeter of pentagon $ABCDE$ in its simplest form.

$\dots\dots\dots : \dots\dots\dots$ [2]

BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.