OCR RECOGNISING ACHIEVEMENT

F

GENERAL CERTIFICATE OF SECONDARY EDUCATION

MATHEMATICS B

Paper 1 (Foundation Tier)

J567/01

SPECIMEN

Duration: 1 hour 30 minutes
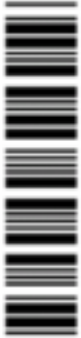
Candidate Forename		Candidate Surname	

Centre Number						Candidate Number				

INSTRUCTIONS TO CANDIDATES

• Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
• Use black ink. Pencil may be used for graphs and diagrams only.
• Read each question carefully and make sure that you know what you have to do before starting your answer.
• Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
• Answer **all** the questions.
• Do **not** write in the bar codes.
• Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

• The number of marks is given in brackets **[ ]** at the end of each question or part question.
• Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
• The total number of marks for this paper is **100**.
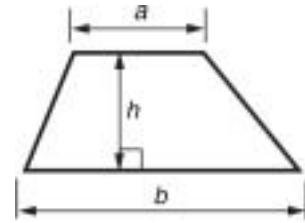• This document consists of **24** pages. Any blank pages are indicated.

WARNING
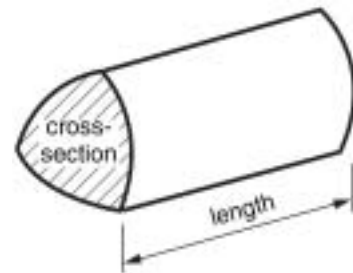**You are NOT permitted to use a calculator for this paper.**

Formulae Sheet: Foundation Tier
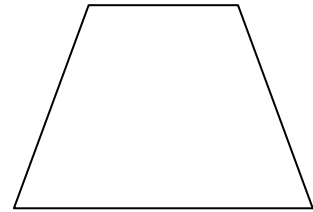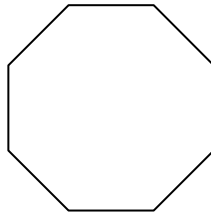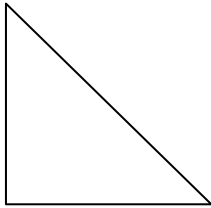
Area of trapezium = $\frac{1}{2}(a+b)\,h$

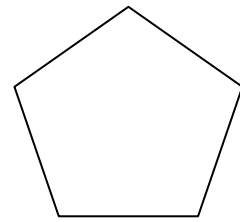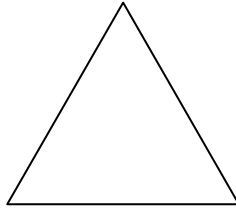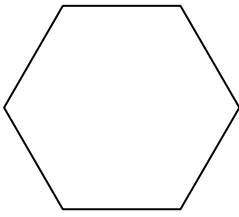**Volume of prism** = (area of cross-section) × length

PLEASE DO NOT WRITE ON THIS PAGE

1 (a) Here are six shapes.

  (i) Write P inside the pentagon. [1]

  (ii) Write O inside the octagon. [1]

  (iii) Put a tick (✓) inside the shape that has rotation symmetry of order 3. [1]

(b) Shade **two** more squares so that the shape below has two lines of reflection symmetry.
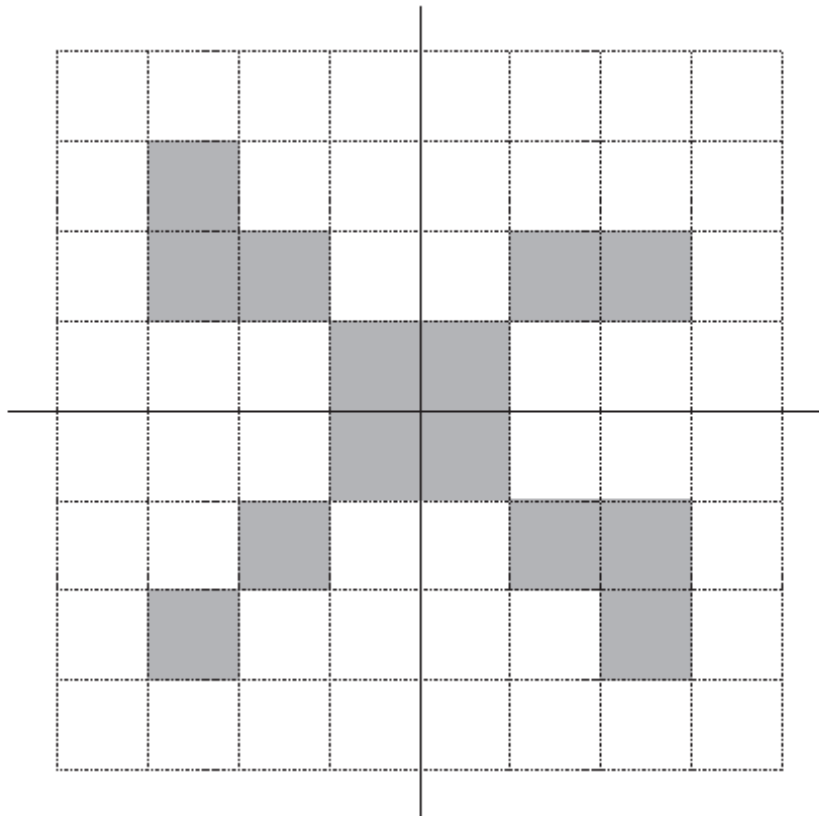
[2]

2 (a) Kezia has some cards with pictures on them.
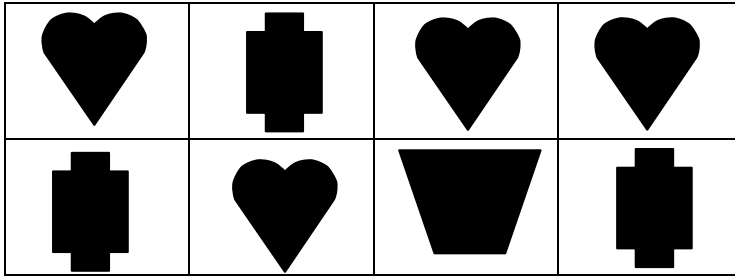
Kezia chooses a card without looking.

Use a word from this list to complete the sentences.

certain   unlikely   evens   likely   impossible

(i) It is _____ she chooses ♥.   **[1]**

(ii) It is _____ she chooses ▲ .   **[1]**

(iii) It is _____ she chooses ▼ .   **[1]**

(b) Kezia asked a group of children what their favourite card game is.
This pictogram shows their answers.

Old Maid	♣ ♣ ♣ ♣ ♣ ♣ ♣ ♣
Happy Families	♣ ♣ ♣ ♣ ♣ ♩
Snap	
Go Fish	♣ ♩

Key	♣ = 2 children

(i) Ten children chose Snap.

Show this on the pictogram. **[1]**

(ii) How many children chose Go Fish?

(b)(ii) _____ **[1]**

3 (a) Work out.

    (i) 63 × 100

                                              (a)(i)_____**[1]**

    (ii) 137 × 10

                                              (ii)_____**[1]**

    (iii) 95 000 ÷ 10

                                              (iii)_____**[1]**

    (iv) 750 ÷ 100

                                              (iv)_____**[1]**

  (b) (i) Write 4836 correct to the nearest 100.

                                              (b)(i)_____**[1]**

    (ii) Write 2981 correct to the nearest 10.

                                              (ii)_____**[1]**

                                SPECIMEN

4 Here is a coordinate grid.
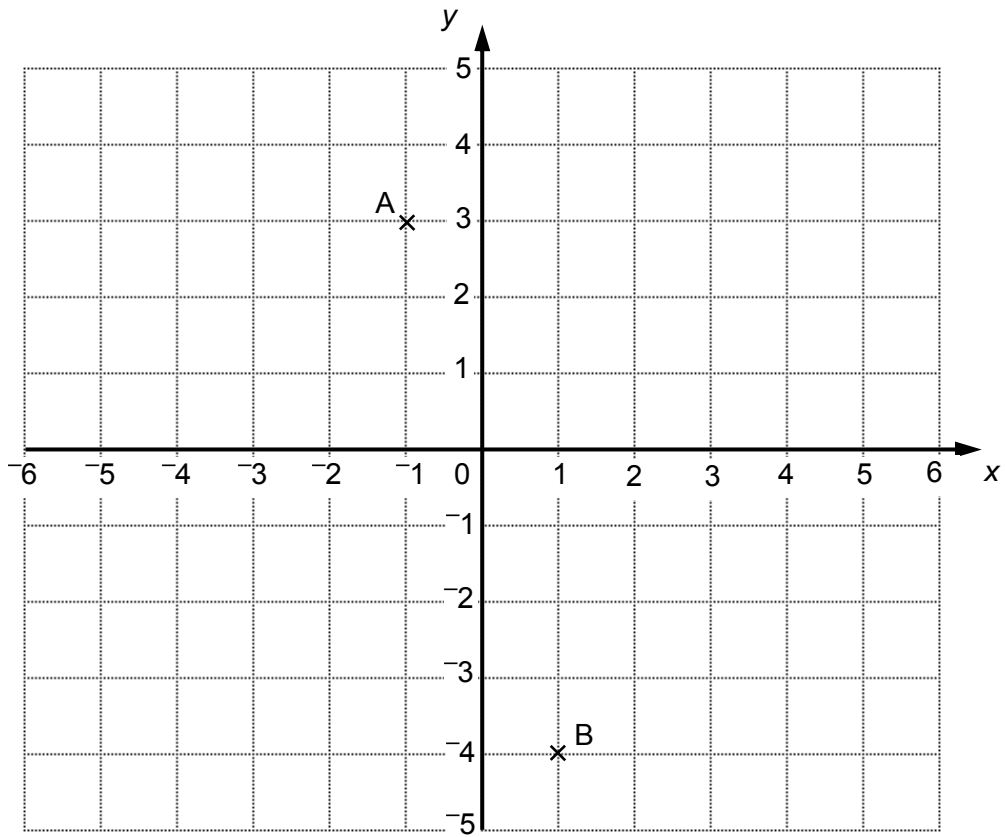
(a) Plot the point (⁻3, ⁻4).
Label it C. **[1]**

(b) Join ABC to make a triangle.

What type of triangle is this?

(b) _____ **[1]**

SPECIMEN   **Turn over**

5 (a) This is a map of Great Britain.
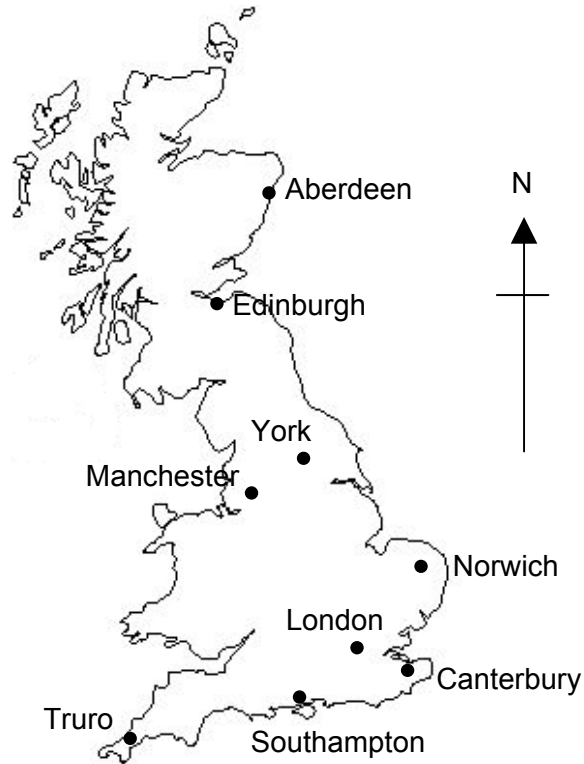
Use information from the map to complete these sentences.

(i) _____ is North East of London. **[1]**

(ii) Manchester is _____ of Edinburgh. **[1]**

(b) This formula is used to change miles into kilometres.

miles ⟶ divide by 5 ⟶ multiply by 8 ⟶ kilometres

Janet drives 75 miles from Southampton to London.

Use the formula to work out how many kilometres she drives.

(b) _____ km **[2]**

(c) This table shows the distances, in miles, between some British cities.

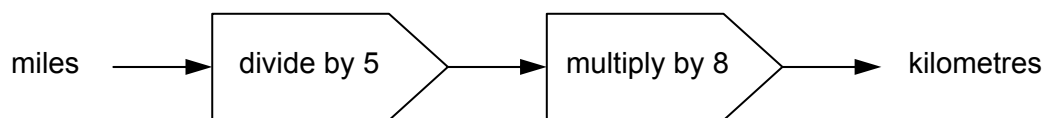|	Southampton	Birmingham	London	Cardiff
Oxford	69	68	63	106
Manchester	226	86	201	189
Cambridge	130	98	64	200
Norwich	201	159	118	272

(i) How many miles is it from Oxford to Birmingham?

(c)(i) _____ **[1]**

(ii) Eddie drives from Cambridge to Birmingham and then from Birmingham to Norwich.

How many miles does he drive altogether?

(ii) _____ miles **[3]**

6 (a) Mr Morgan and his family go on a camping holiday.
This is a scale drawing of the pitch for their tent.
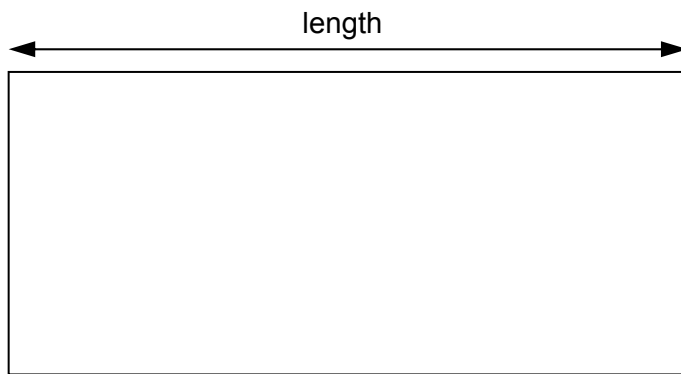
length

Scale: 1 cm to 1·5 m

Find the real length of the pitch.

_____m **[2]**

(b) This is the base of Mr Morgan's tent.

4 m
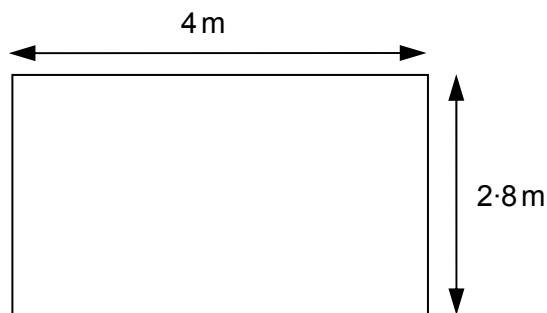
2·8 m   **Not to scale**

What is the area of the base?

(b) _____m² **[2]**

(c) Mr Morgan is in his tent.
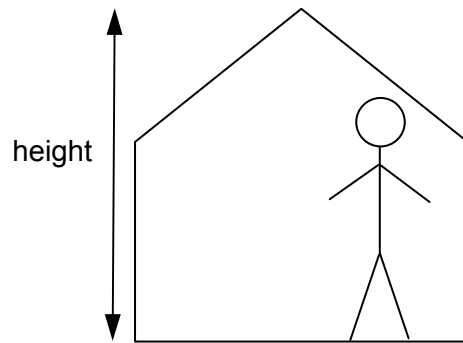
Estimate the height of the tent.

(c) _____ m **[1]**

(d) Mr Morgan has a bottle of water.
The bottle contained 1·5 litres of water when it was full.
He has used 850 ml.

How many millilitres of water are left in the bottle?

(d) _____ ml **[2]**

SPECIMEN **Turn over**

7 Work out.

(a) (6 + 2) × (12 – 3)

(a) _____ **[2]**

(b) 267 × 28

(b) _____ **[3]**

(c) $5^2 - 2^3$

(c) _____ **[2]**

8 Here are the first five terms in a sequence of numbers.

<div align="center">

7   11   15   19   23

</div>

(a) What is the next term in the sequence?
Explain how you worked it out.

_____ because _____

_____ **[2]**
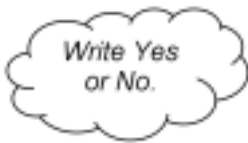
(b) The 100th term in the sequence is 403.

What is the 98th term in the sequence?

(b) _____ **[1]**

(c) Sahib thinks that the 50th term is 202.

Is he correct?
Explain your answer.

> Write Yes
> or No.

_____ because _____
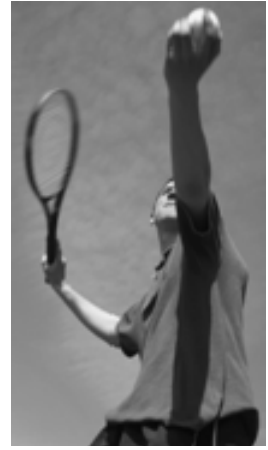
_____ **[1]**

9 Two tennis players, Novak and Rafael, are playing a match.

(a) During the first set Novak wins 60% of his serves.
He serves 35 times.

Work out how many serves Novak wins in the first set.

(a) _____ **[2]**

(b) During the second set Rafael wins $\frac{4}{5}$ of his serves.

What percentage of his serves does Rafael win?

(b) _____% **[2]**

SPECIMEN

10 (a) Gurbir records the outside temperature on four days in January.

$$^-4 \qquad 3 \qquad {}^-5 \qquad 2$$

Work out the median temperature.

(a) _____ [2]

(b) Ellie has a set of six cards.
She has written the temperatures Gurbir recorded on four of the cards.

$^-4$	3	$^-5$	2		

Fill in Ellie's two blank cards so that
- three of the six numbers are negative, and
- the mode of the six numbers is negative. [2]

(c) Mtisunge has a set of five number cards.
The median of Mtisunge's five numbers is smaller than the mode.

Write down a possible set of numbers for Mtisunge's cards.

[2]

11 (a) *Katherine's Cars* charges a flat fee of £2·50 as well as £1·25 per mile for a taxi journey.

(i) Write a formula for the total cost, £*C*, of a journey of *m* miles.

(a)(i) _____ [2]

(ii) Calculate the cost of a journey of 4 miles.

(ii) £_____ [2]

(b) Another company, *Luxury Taxis*, uses the following formula to work out the charge.
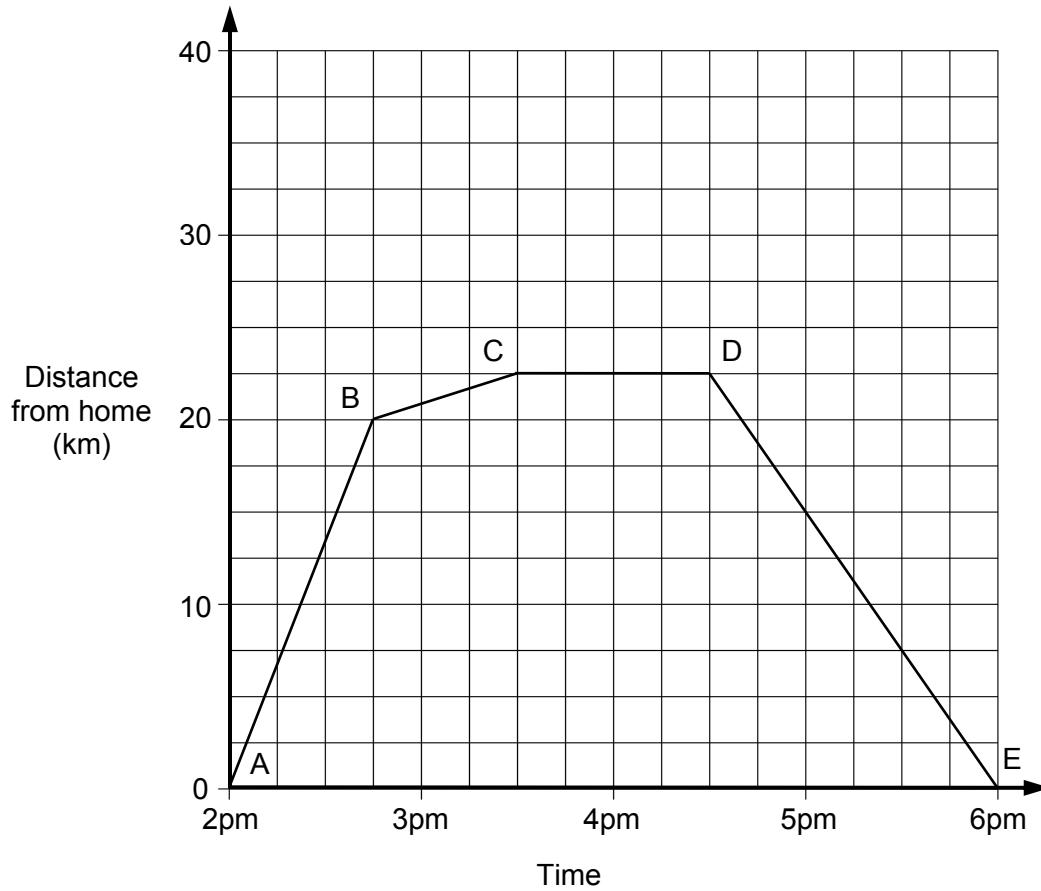
$P = 3x + 7$

P is the cost in pounds.
x is the distance in miles.

Work out the distance, *x*, when *P* = 25.

(b)_____[2]

12 Chung drives to a 'paint-balling' event.
Here is the distance/time graph for this journey.
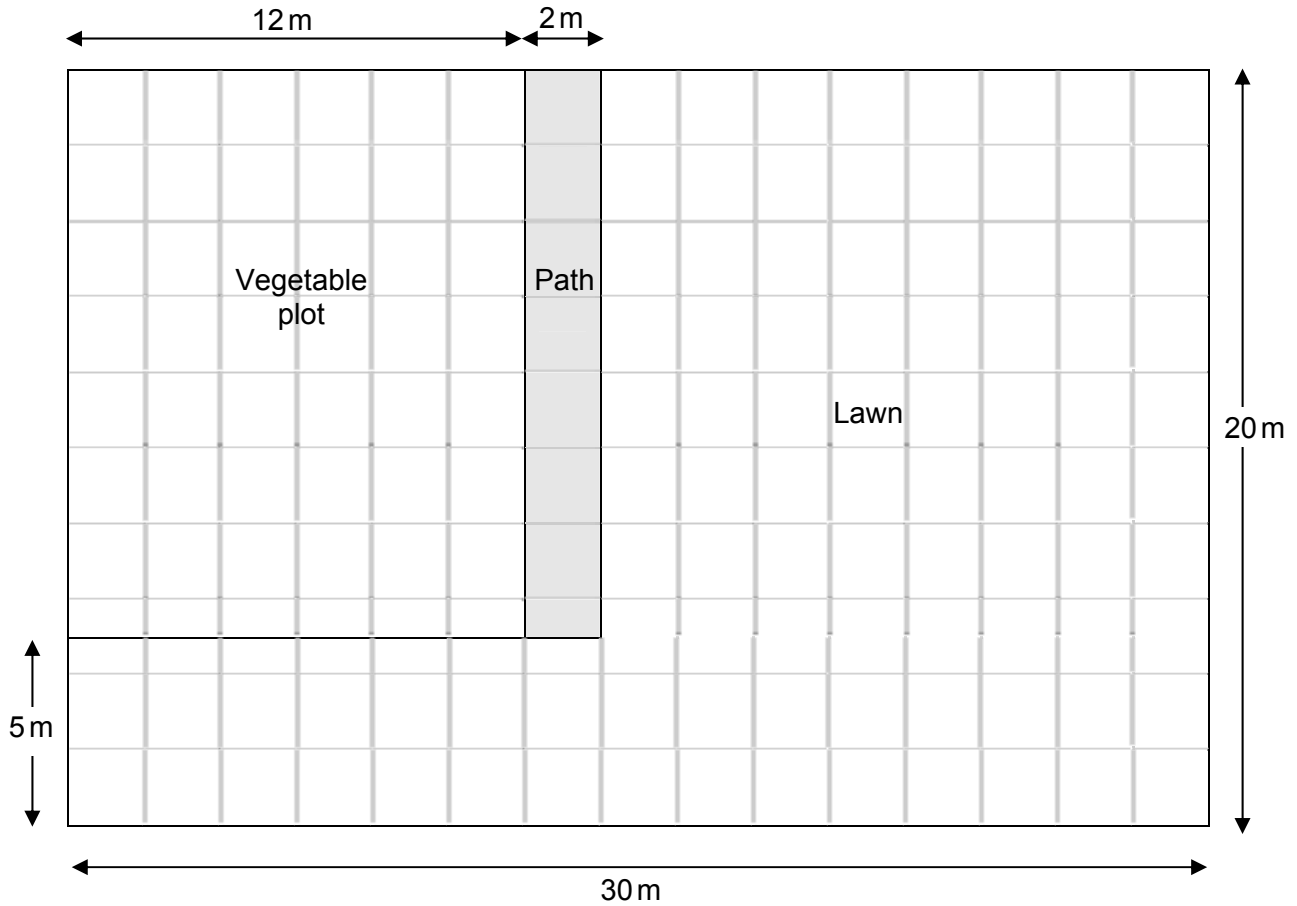

(a) Which section of the graph shows when Chung is at the 'paint-balling' event?

(a) _____ to _____ **[1]**

(b) In which section of the graph is the car travelling fastest?

(b) _____ to _____ **[1]**

Turn over

13 Chris made this scale drawing of his garden.

(a) What scale did he use for the drawing?

(a) 1 cm to _____[1]

(b) Work out the area of the real vegetable plot

(b) _____m^2 **[2]**

(c) What percentage of the whole garden is used for the vegetable plot?

(c) _____ % **[3]**

SPECIMEN

14*

$$1 \text{ litre} = 1\frac{3}{4} \text{ pints}$$

2 pints
£0·70

4 pints
£1·40

6 pints
£2·10

Sunidra estimates that she needs $1\frac{1}{2}$ litres of milk each day.

Milk is sold in 2, 4 and 6 pint bottles, as shown above.

Sunidra wants to buy enough milk to last for a week.

Advise Sunidra which bottles of milk she should buy for the whole week.

[6]

SPECIMEN

Turn over

15 Dave the cat meows every 6 minutes.
Poppy the cat meows every 8 minutes.
At 8:45, they both meow together.

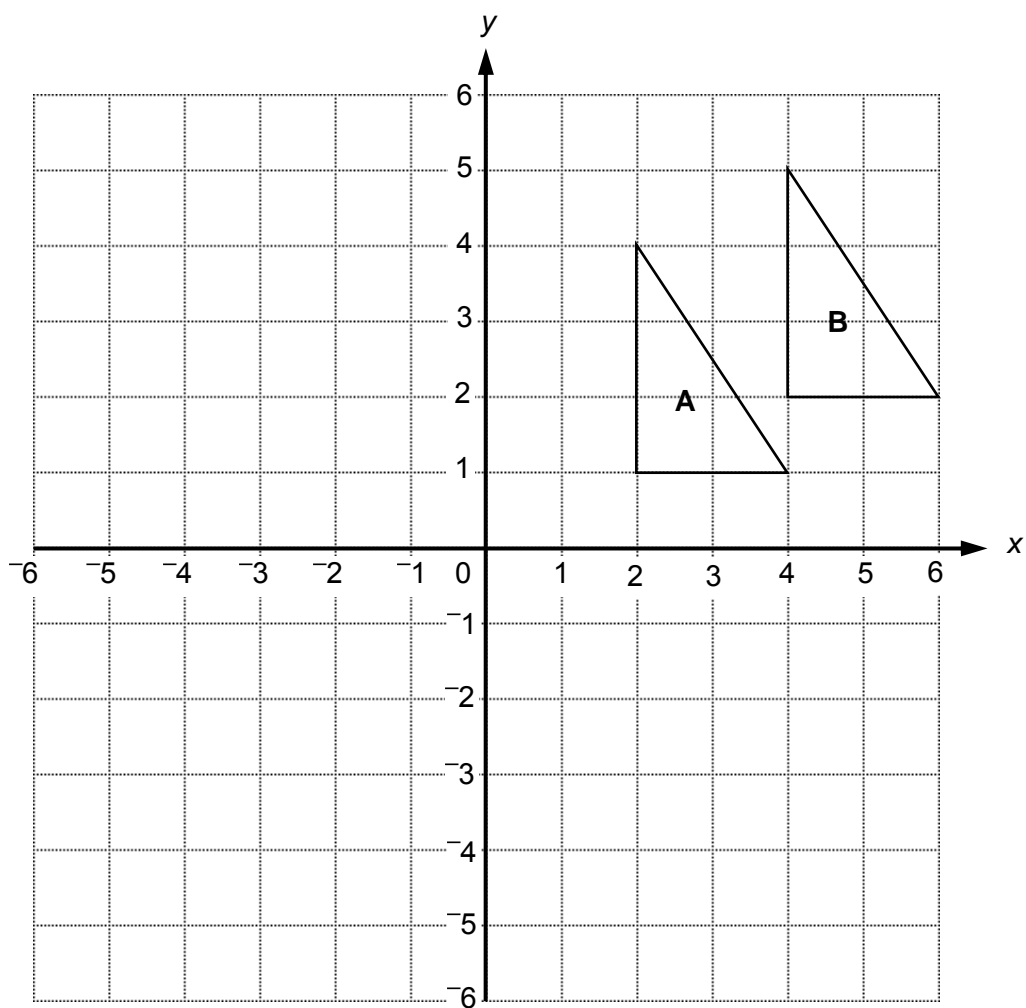At what time will they next meow together?

_____**[4]**

SPECIMEN

16 Estimate the answer to this calculation.

$$\frac{17 \cdot 5 \times 3 \cdot 8}{0 \cdot 483}$$

_____ **[2]**

17

(a) Rotate triangle **A** by 90° clockwise about the origin.
Label the image **C**. **[3]**

(b) Describe **fully** the single transformation that maps triangle **A** onto triangle **B**.
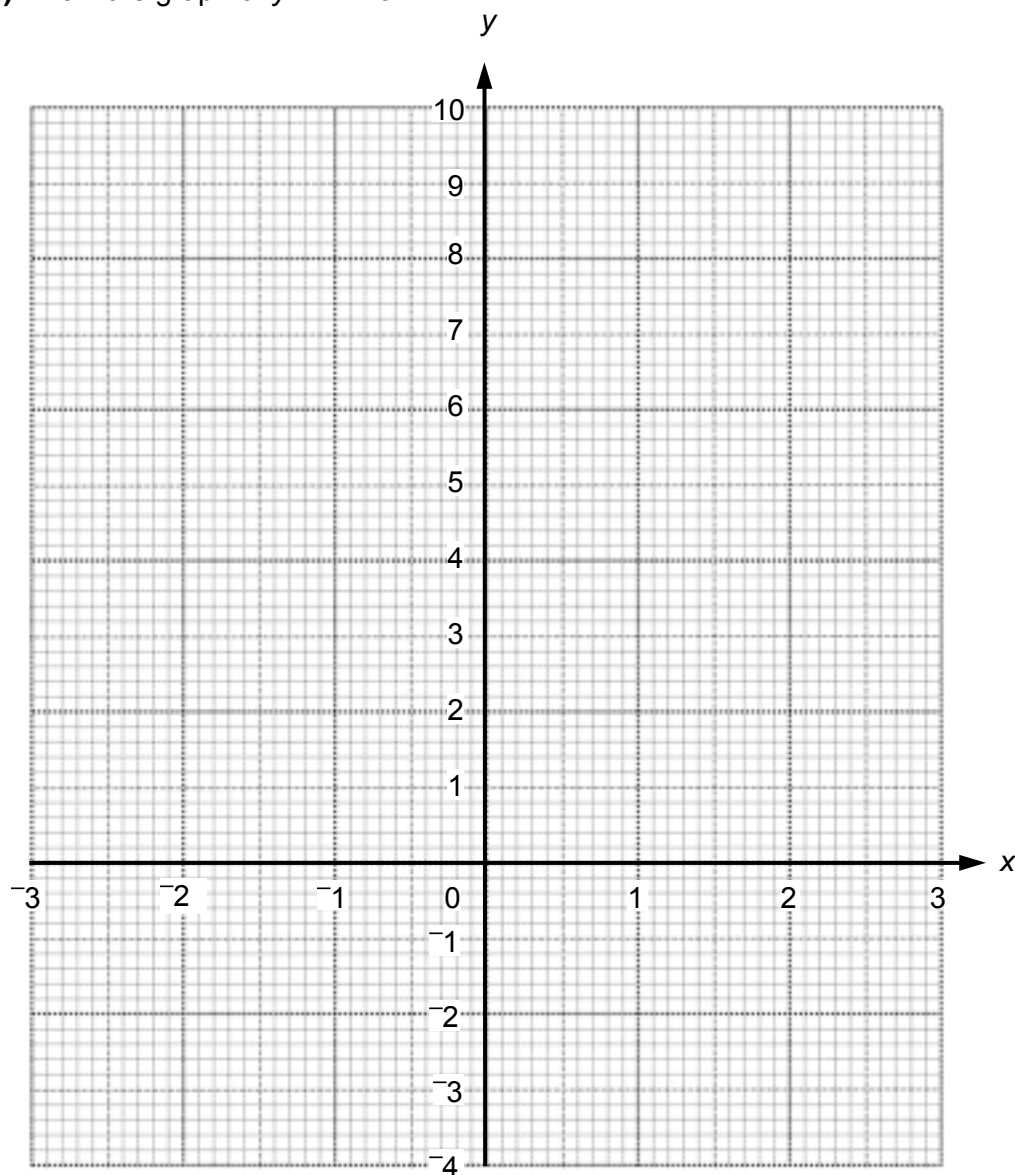
_____

_____ **[2]**

18 (a) Complete this table for the graph of $y = x^2 - 3$.

x	$^-3$	$^-2$	$^-1$	0	1	2	3
y	6	1			$^-2$	1	6

[2]

(b) Draw the graph of $y = x^2 - 3$.

[2]

(c) Use your graph to estimate both solutions to $x^2 - 3 = 0$, correct to one decimal place.

(c) _____ [2]

SPECIMEN

19 Rearrange this formula to make h the subject.

$$P = 3h - 5$$

_____ **[2]**

20 Alvita has a new job in Ayrton.
Her children will go to school in Benton.

She wants to live:
- nearer to Benton than Ayrton
- less than 12 miles from Ayrton

Using a ruler and a pair of compasses, construct and shade the region where Alvita wants to live.

Scale: 1 cm represents 2 miles

Ayrton •

• Benton

[4]

TURN OVER FOR QUESTION 21

SPECIMEN

21 Abbie is making a lottery machine for her school.
It contains five balls, numbered from 1 to 5.
It has to work so that each ball has an equal probability of being selected.
She tests the machine by using it 50 times.
Here are her results.

Number	Relative Frequency
1	0·12
2	0·28
3	0·20
4	0·24
5	0·16

(a) If Abbie repeated this test, would she get the same results?
Explain your answer.

_____

_____ **[1]**

(b) Make two comments about the results of Abbie's test.

1 _____

_____

2 _____

_____ **[2]**