AQA

GCSE
Mathematics
Specification (8300/3F)

Paper 3 Foundation tier

F

Date	Morning	1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments.

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the bottom of this page.
- Answer **all** questions.
- You must answer the questions in the space provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work that you do not want to be marked.
- In all calculations, show clearly how you work out your answer.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer booklet.

Please write clearly, in block capitals, to allow character computer recognition.

Centre number ☐☐☐☐☐   Candidate number ☐☐☐☐

Surname ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Forename(s) ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Candidate signature _____

8300/3F

Answer **all** questions in the spaces provided.

1   Circle the decimal that has the same value as $\frac{4}{5}$

[1 mark]

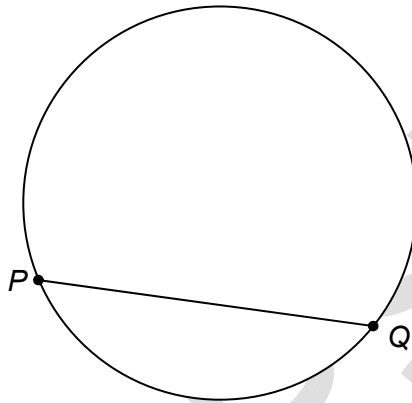   0.04   0.4   0.45   0.8

2   Circle the word that describes the straight line *PQ*.

P

Q

[1 mark]

    chord   diameter   radius   tangent

3 x = 2500 to the nearest 100

Circle the smallest possible value of x.

[1 mark]

2449   2450   2495   2499

4   What is one quarter of 5 hours?

Tick a box.

[1 mark]

1 hour 15 minutes   ☐

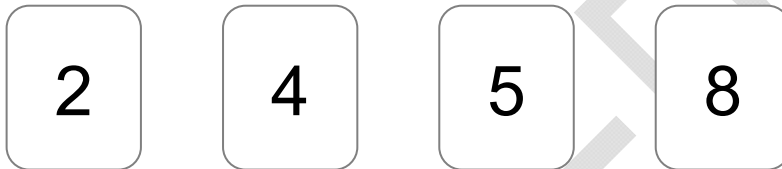115 minutes   ☐

1 hour 25 minutes   ☐

125 minutes   ☐

Turn over for the next question

5 Simplify $6w - 5x - 4w - 2x$

[2 marks]

Answer _____

6 Beth uses these four cards to make 4-digit numbers.

| 2 | 4 | 5 | 8 |

How many **different** 4-digit numbers can she make that are greater than 8000?
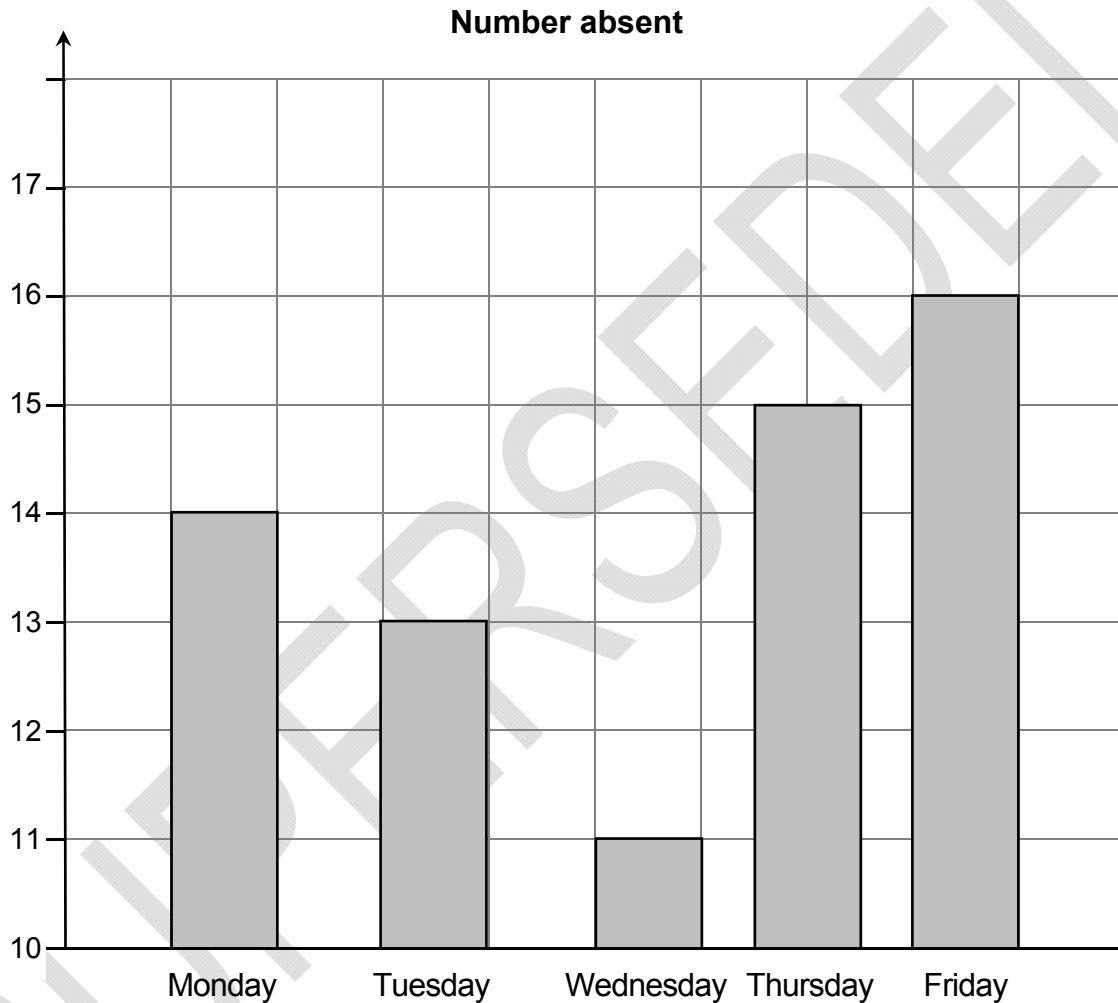
[2 marks]

Answer _____

7   The table shows the number of Year 11 students who were absent in one week.

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Number absent	14	13	11	15	16

Jack uses this information to draw a bar chart.

Number absent

Write down **two** mistakes that he has made.

[2 marks]

Mistake 1 _____

_____
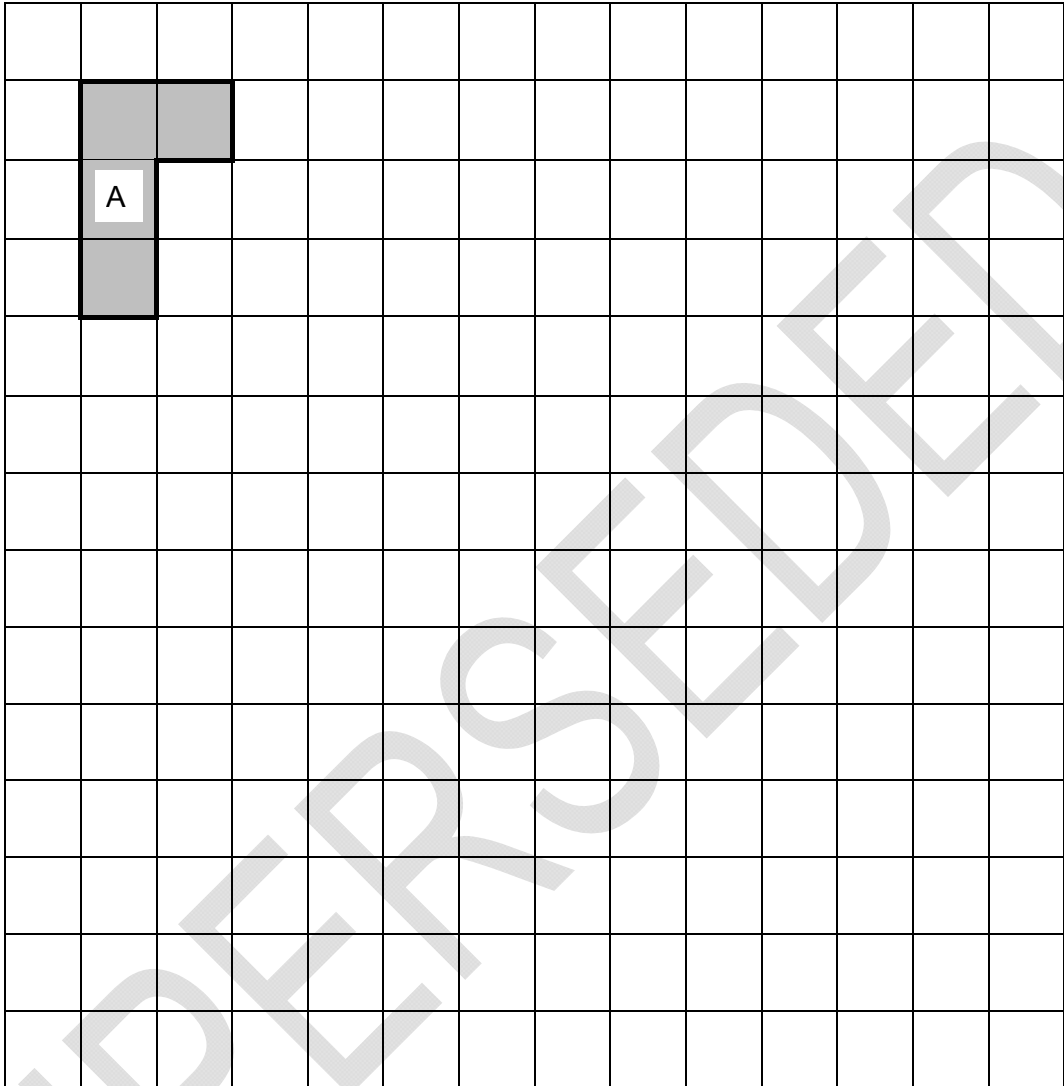
Mistake 2 _____

_____

Turn over ▶

8 **(a)** On the grid draw a shape that is a reflection of shape A.

Show your mirror line.

[1 mark]
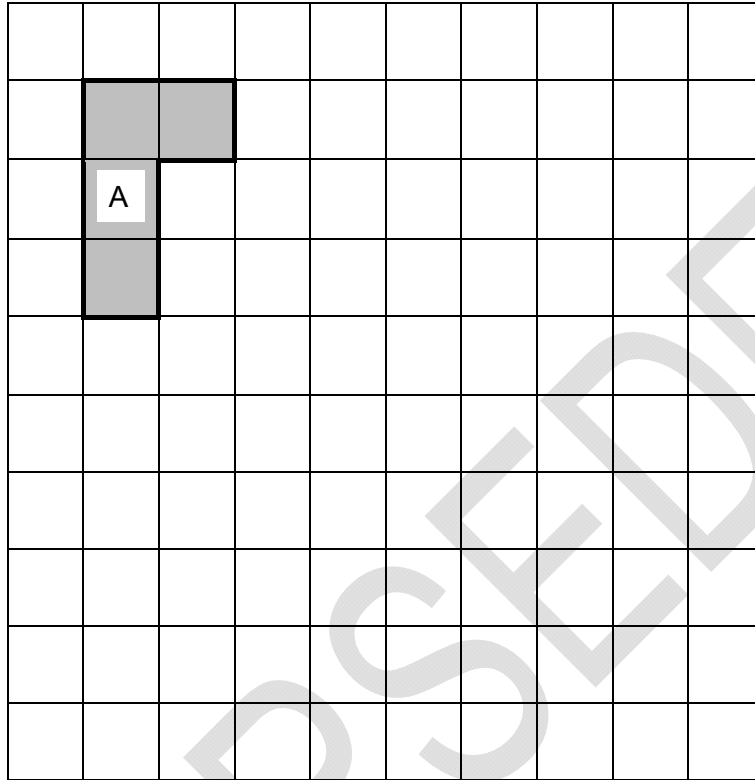
8 (b) On this grid draw a shape that is an enlargement of shape A.

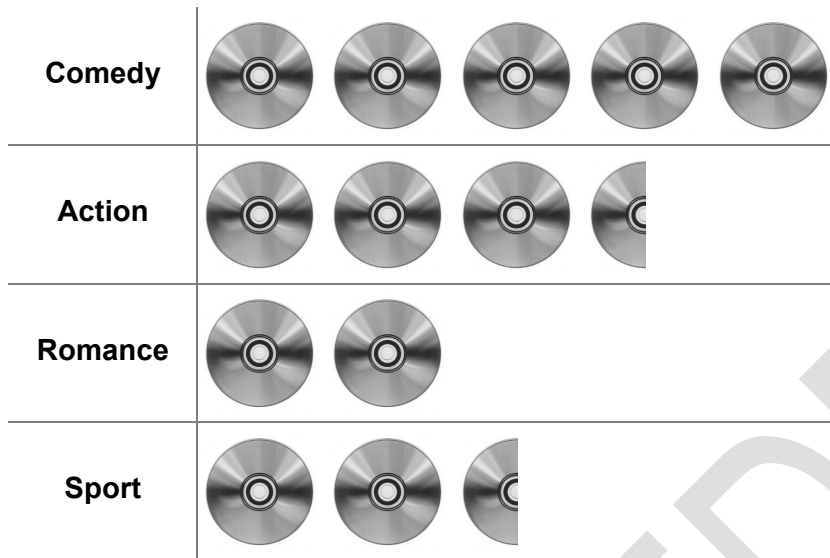**[1 mark]**

Turn over for the next question

9 **(a)**

DVDs

£5 each

Buy 2 get 1 free

How many DVDs do you get for £35?

[3 marks]

Answer _____

9 **(b)** The pictogram shows some information about DVDs.

The key is missing.

Comedy	
Action	
Romance	
Sport	

The total number of DVDs is 260

Work out the number of **Sport** DVDs.

[4 marks]

Answer _____

Turn over ▶

10

Box A

```
  2        6
     3
        9
  4
```

Box B

```
10        1
     7
  8
        5
```
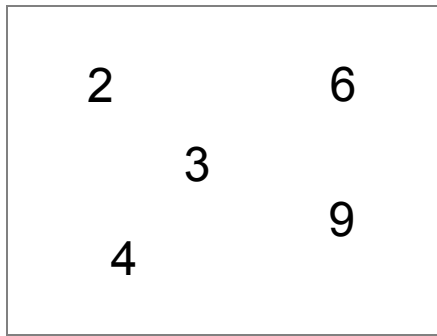
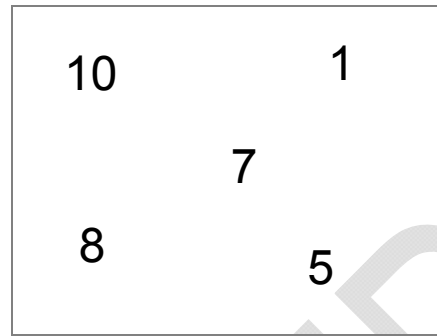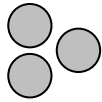**Two** of the numbers move from Box A to Box B.

The total of the numbers in Box B is now **four** times the total of the numbers in Box A.
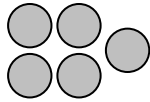
Which **two** numbers move?

[2 marks]

_____

_____

_____

_____

_____

_____

_____

_____
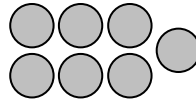
Answer _____ and _____

11 The diagram shows a sequence of patterns.

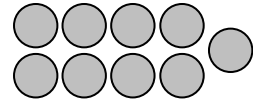Pattern 1   Pattern 2   Pattern 3   Pattern 4

11 (a) Work out the number of circles in Pattern 6

[1 mark]

Answer _____

11 (b) Complete the rule below.

[1 mark]

Number of circles = Pattern number × ☐ + ☐

11 (c) Which Pattern number has 51 circles?

[1 mark]

Pattern _____

Turn over ▶

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12 In 2012 electricity cost 15p per unit.
A family used 3729 units.

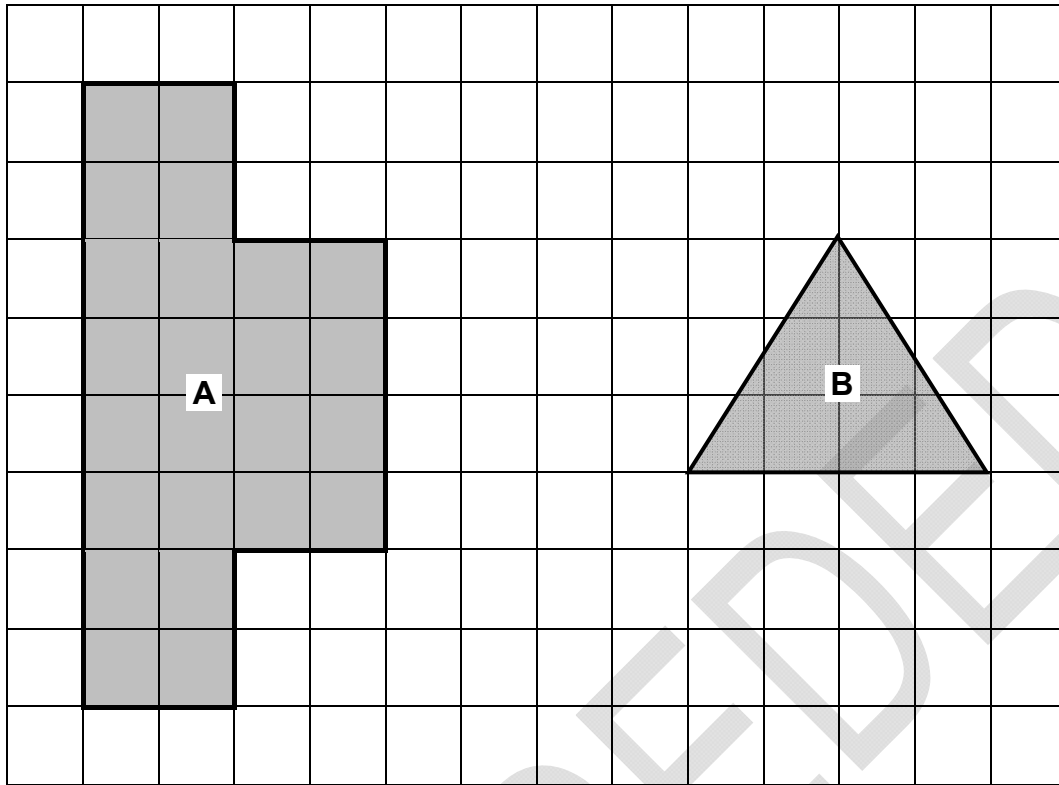In 2013 electricity cost 17p per unit.
The family used 3506 units.

How much **more** did the family pay for electricity in 2013?

[3 marks]

Answer £ _____

13

Work out   area of shape A : area of shape B

Give your answer in its simplest form.

[3 marks]

Answer _____ : _____

Turn over ▶

8300/3F

14   Work out 258% of 6300

[2 marks]

_____

_____

_____

_____

Answer _____

15   You are given that

$$a = 3 \quad \text{and} \quad b = 5$$

Tick whether each statement is true or false.

Give a reason for each answer.

[2 marks]

Statement	True	False	Reason
$ab = 35$			
$2b^2 = 100$			

16 Joe says,

"There are only two numbers between 160 and 200 that have 15 as a factor."
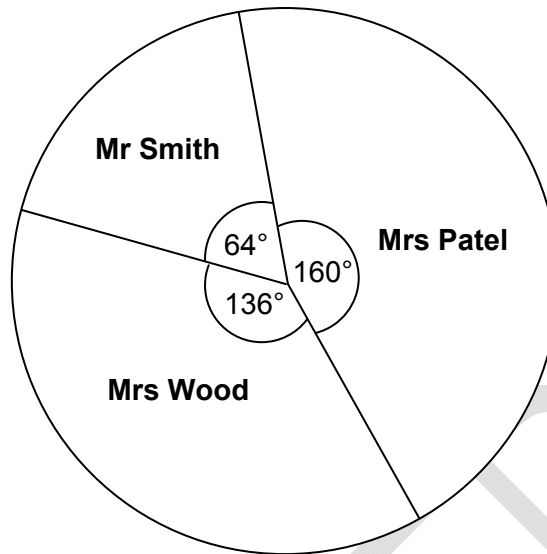
Show that he is wrong.

[2 marks]

Turn over for the next question

17   The pie chart shows the share of votes for candidates in a council election.

Council Election Results

There were 5220 votes in total.

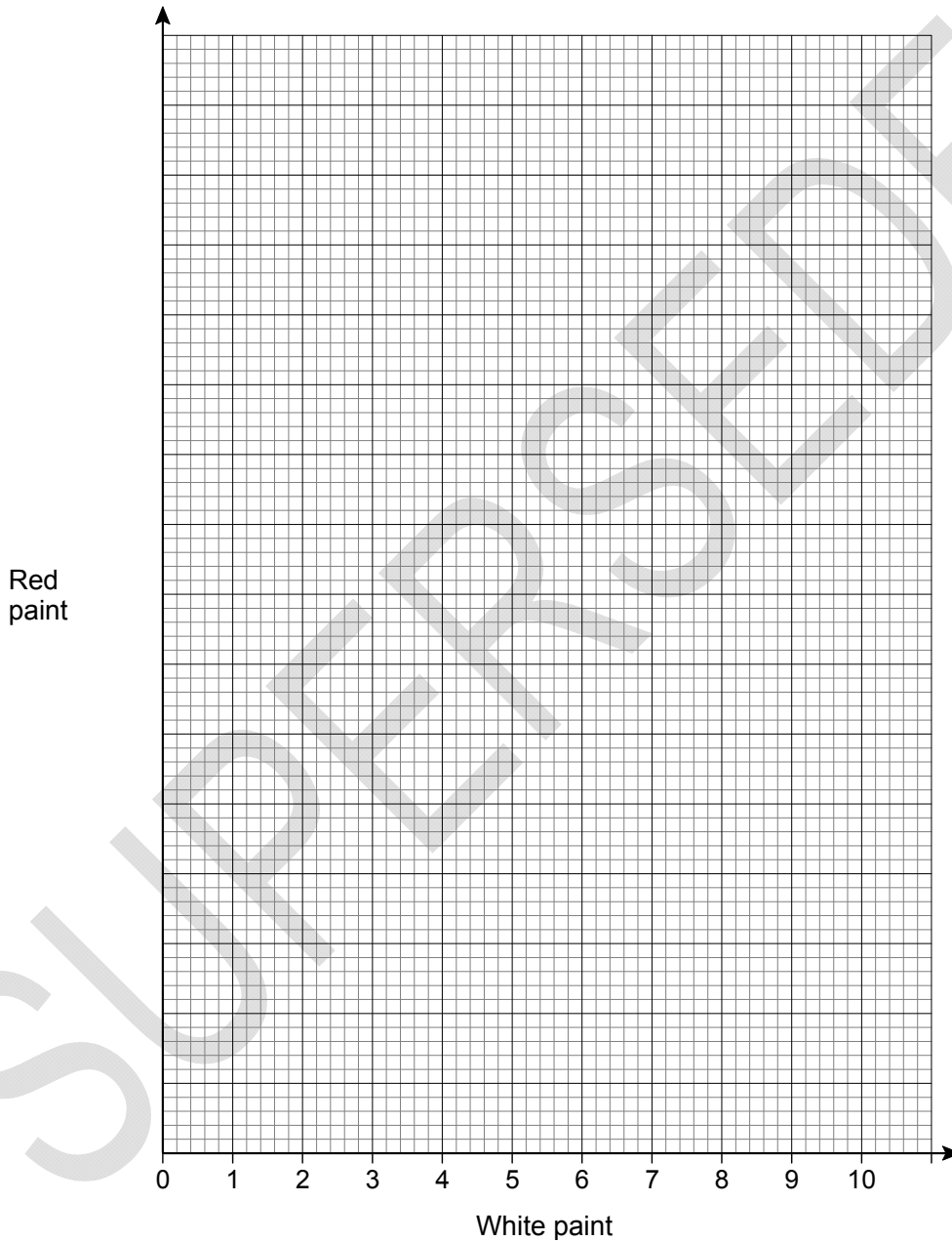Work out the number of votes for Mrs Patel.

[2 marks]

Answer _____

18 White paint and red paint are mixed together in the ratio 2 : 3

18 (a) Draw a graph that can be used to work out the amount of red paint needed given the amount of white paint.

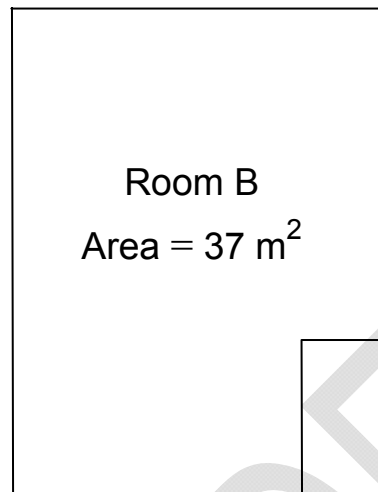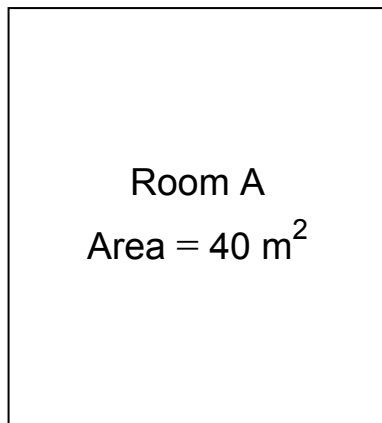Your graph **must** show up to 10 litres of white paint.

[3 marks]

Red paint

White paint

18 (b) How much red paint needs to be mixed with 9 litres of white paint?

[1 mark]

Answer _____ litres

Turn over ▶

19   A children's nursery uses one room for babies and one room for toddlers.

Not drawn
accurately

Room A
Area $= 40$ m^2

Room B
Area $= 37$ m^2

Each baby needs at least 3.5 m^2 of floor space.

Each toddler needs at least 2.5 m^2 of floor space.

Show that the **total** number of children allowed is larger if

the toddlers are in Room A

and   the babies are in Room B.

[4 marks]

Turn over for the next question

20 Work out the next term of this quadratic sequence.

[2 marks]

4   12   24   40   _____

Answer _____

21   The perimeter of an isosceles triangle is 25 cm

The length of each side, in cm, is a prime number.

Work out the lengths of the sides of the **two** possible isosceles triangles.
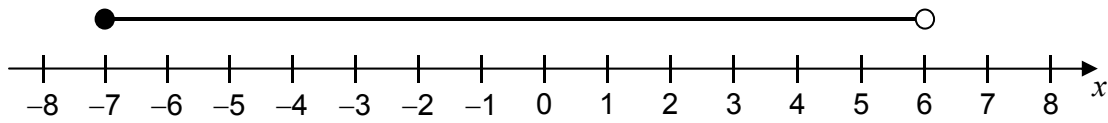
[4 marks]

First triangle _____ cm _____ cm _____ cm

Second triangle _____ cm _____ cm _____ cm

Turn over ▶
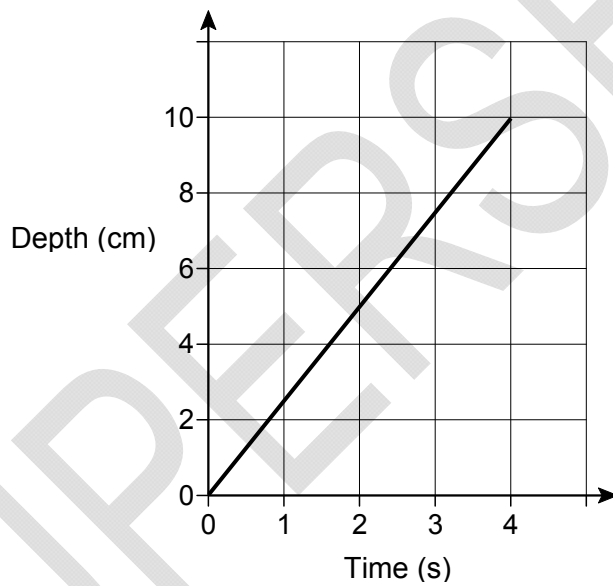
22 Circle the inequality shown by the diagram.

[1 mark]

$$-7 < x < 6 \qquad -7 \leqslant x < 6 \qquad -7 < x \leqslant 6 \qquad -7 \leqslant x \leqslant 6$$

23 Water is poured into a glass for 4 seconds.

The graph shows the depth of the water in the glass.

What is the rate of change of the depth of the water?

Circle your answer.

[1 mark]

0.4 cm/s   1.25 cm/s   2.5 cm/s   10 cm/s

24 Here is an ordinary dice.

24 (a) Ali is going to throw the dice six times.

He says,

"I will get one of each number."

Give a reason why he could be wrong.

[1 mark]

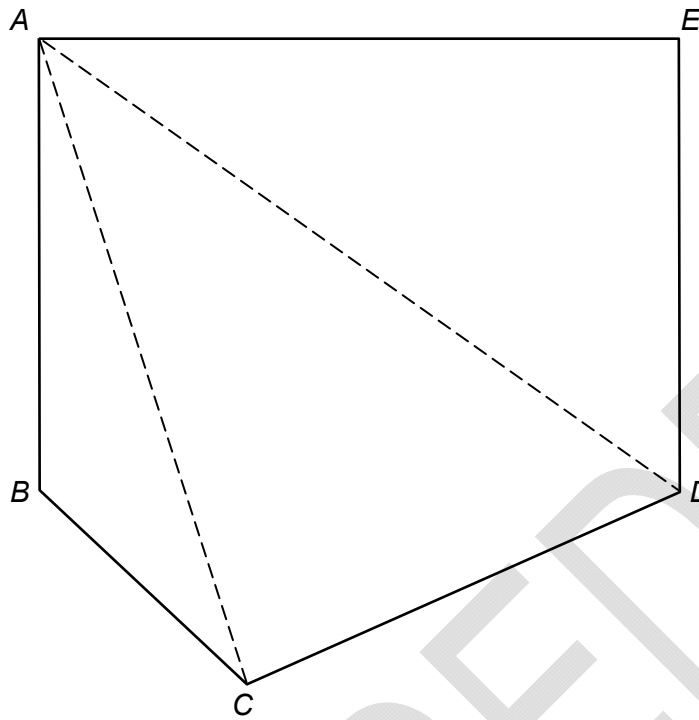**24 (b)** Lucy throws the dice 50 times.
Her results are shown.

Number thrown	1	2	3	4	5	6
Frequency	7	4	12	5	9	13

Work out the relative frequency of throwing an odd number.

[2 marks]

Answer

25 Polygon *ABCDE* is divided into triangles as shown.

Not drawn accurately

Use the triangles to work out the sum of the interior angles of polygon *ABCDE*.

You **must** show your working.

[2 marks]

_____

_____

_____

_____

_____

Answer _____ degrees

26   In a school, 60% of the students are girls.

50% of the girls walk to school.

20% of the boys walk to school.

What percentage of the students walk to school?

[3 marks]

Answer _____ %
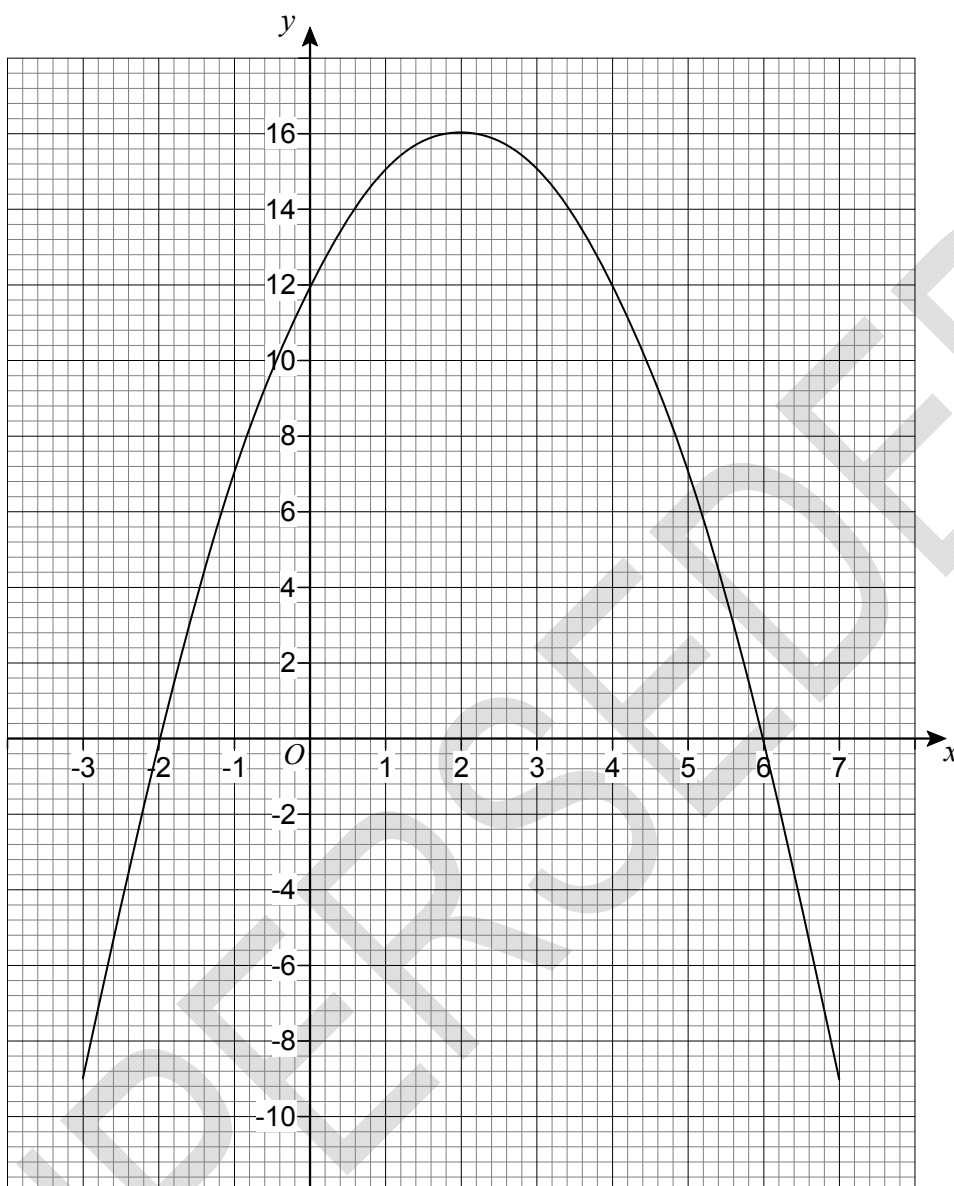
27 (a)   Factorise fully $9a^2 - 6a$

[2 marks]

Answer _____

27 (b)   Solve $x^2 - 12x + 20 = 0$

[3 marks]

Answer _____

28   The graph $y = a + bx - x^2$ is shown.

28 (a)   Circle the coordinates of the turning point of the curve.

[1 mark]

(−2, 0)   (0, 12)   (2, 16)   (6, 0)

28 (b)   Circle the value of a.

[1 mark]

−2   12   16   6

28 (c) Circle the two roots of $a + bx - x^2 = 0$

[1 mark]

−2 and 6   2 and −6   2 and 6   −2 and −6

29 Adam and six other men ran a race.

The times, in seconds, of the six other men are shown.

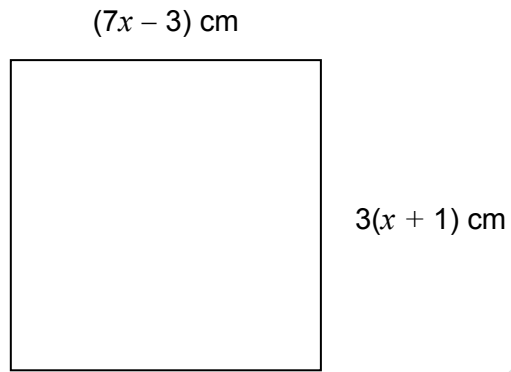9.75   9.79   9.80   9.88   9.94   9.98

The mean time for **all** seven men was 9.83 seconds.

Did Adam win the race?

You **must** show your working.

[3 marks]

_____

_____

_____

_____
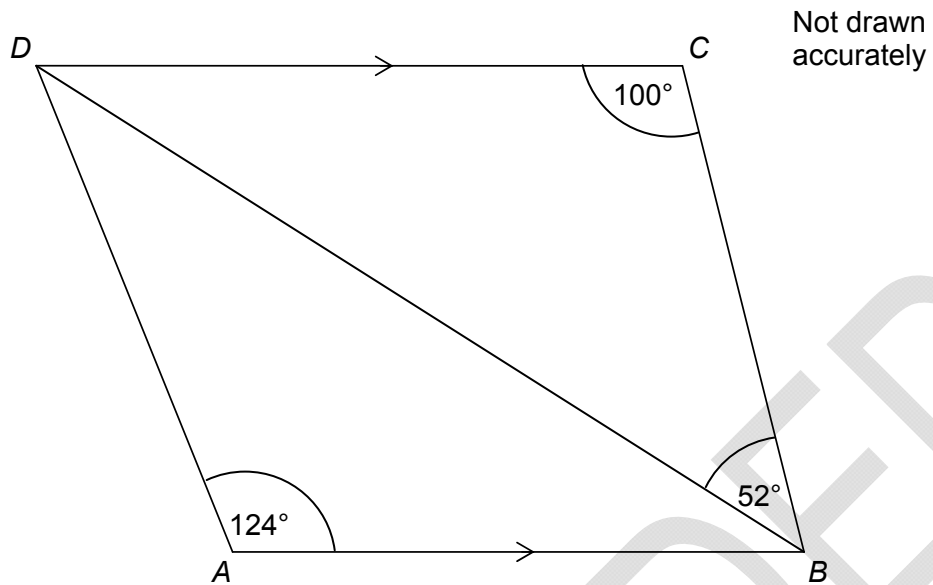
_____

_____

_____

_____

30 The diagram shows a square.

(7x – 3) cm

3(x + 1) cm

Work out the length of one side of the square.

[4 marks]

Answer _____ cm

31 In the diagram, *DC* is parallel to *AB*.

Not drawn accurately

Show that triangle *ABD* is isosceles.

[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

END OF QUESTIONS

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED