

Please write clearly, in block capitals.

Centre number 

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Candidate number 

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Surname \_\_\_\_\_

Forename(s) \_\_\_\_\_

Candidate signature \_\_\_\_\_

# GCSE MATHEMATICS

# F

Foundation Tier      Paper 3

Exam Date

Morning

Time allowed: 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.
- Answer **all** questions.
- You must answer the questions in the spaces 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 you do not want to be marked.

## 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 book.

## Advice

- In all calculations, show clearly how you work out your answer.

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

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

[1 mark]

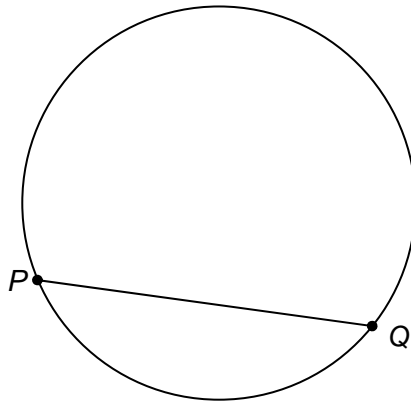
0.04

0.4

0.45

0.8

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



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

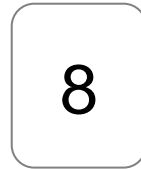
[2 marks]

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Answer \_\_\_\_\_

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



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

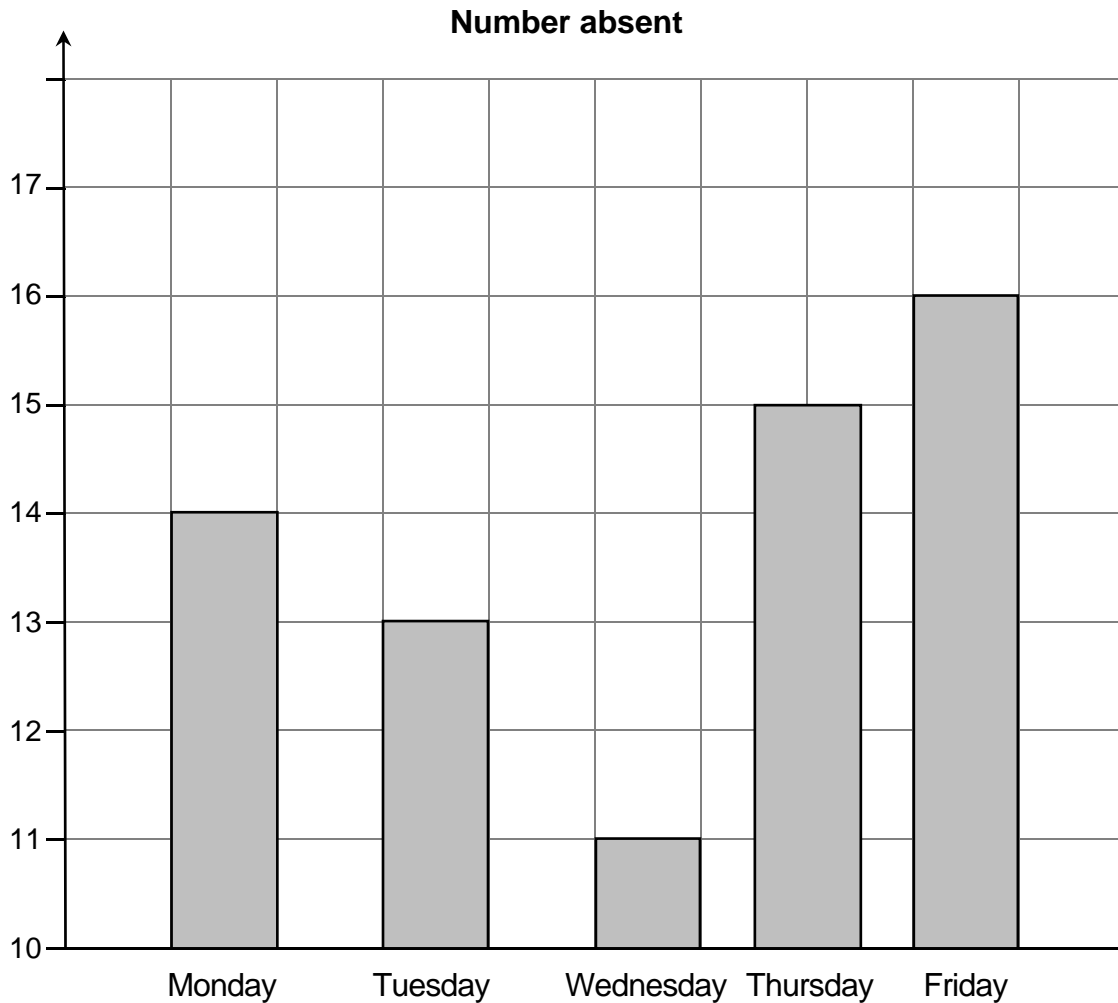
[2 marks]

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.



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

[2 marks]

Mistake 1 \_\_\_\_\_

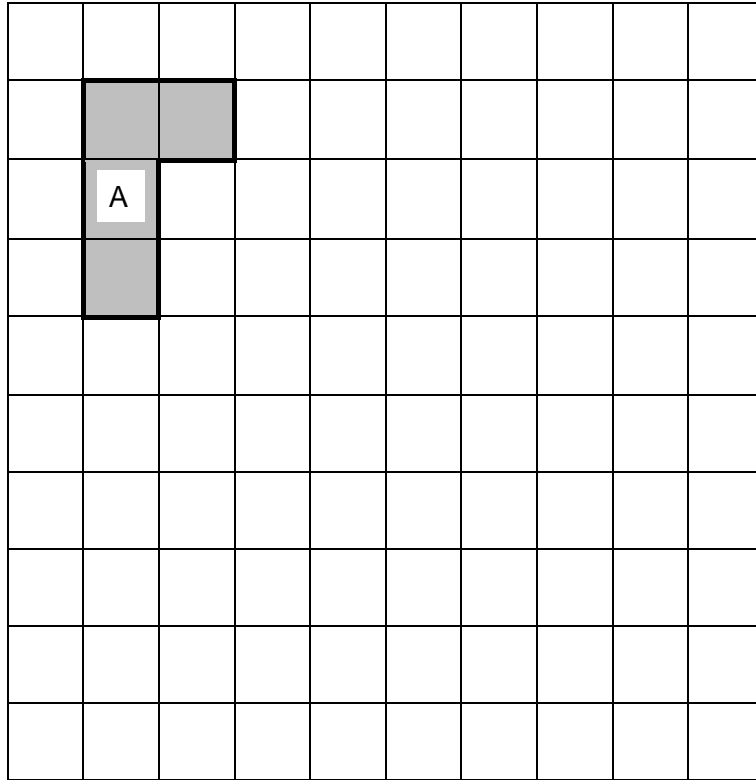
\_\_\_\_\_

Mistake 2 \_\_\_\_\_

\_\_\_\_\_

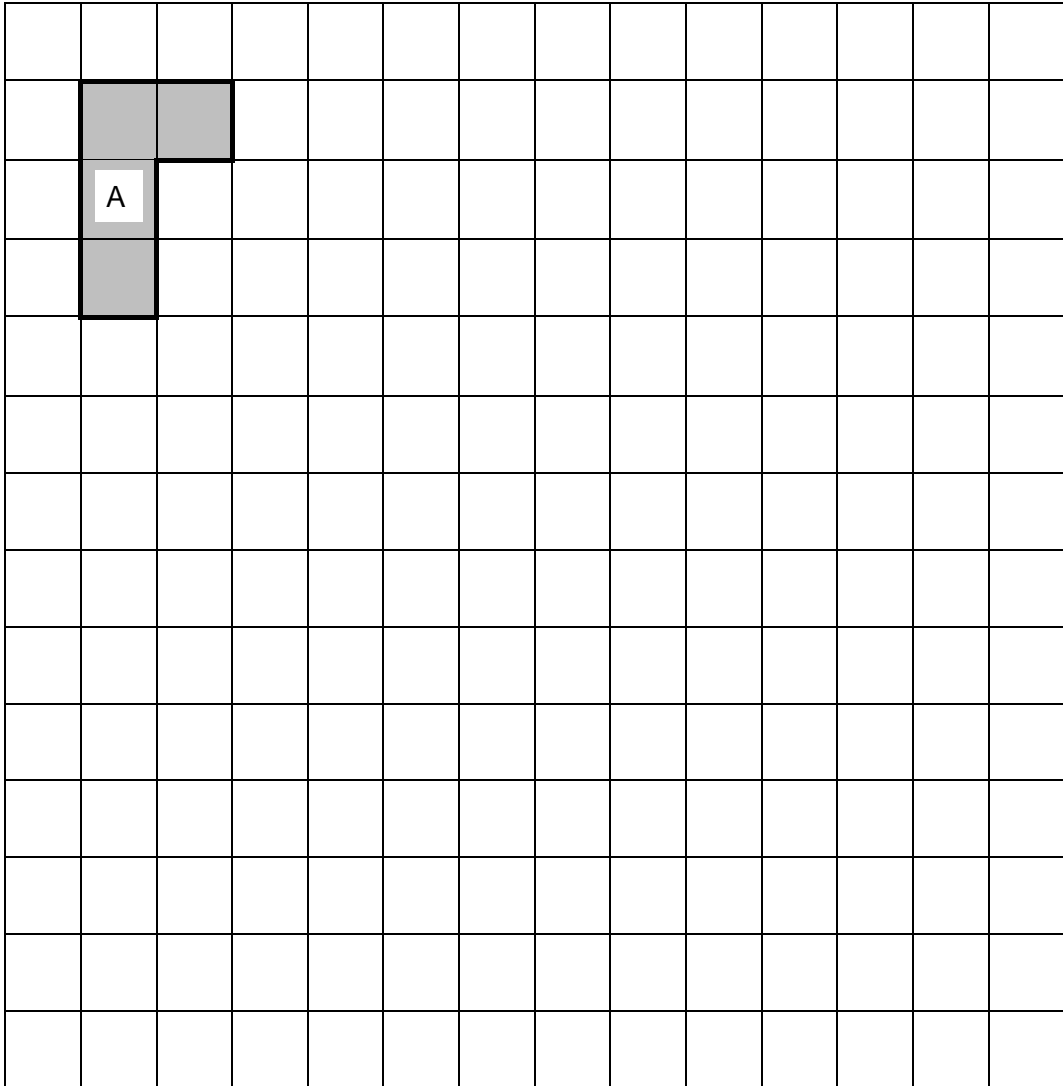
- 8 (a)** On the grid draw a shape that is a reflection of shape A.  
Show your mirror line.

**[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)



How many DVDs do you get for £35?

[3 marks]

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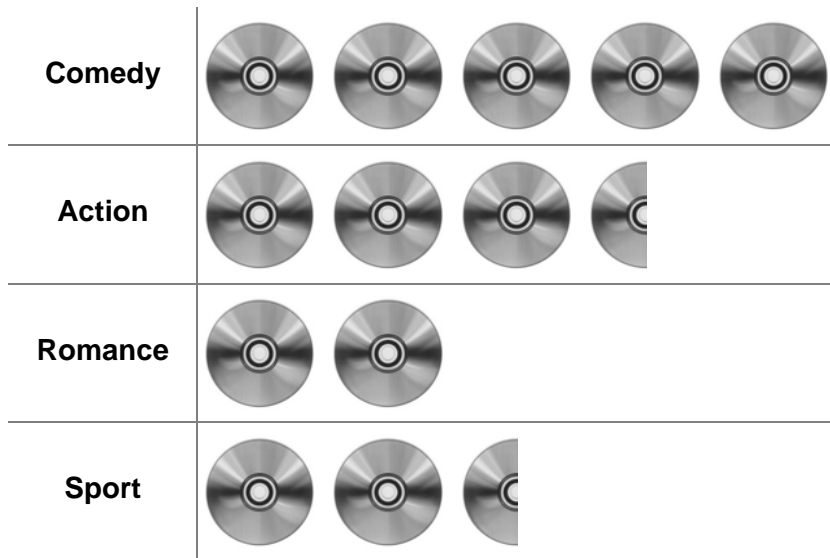
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Answer \_\_\_\_\_



- 9 (b) The pictogram shows some information about DVDs.  
The key is missing.



The total number of DVDs is 260

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

[4 marks]

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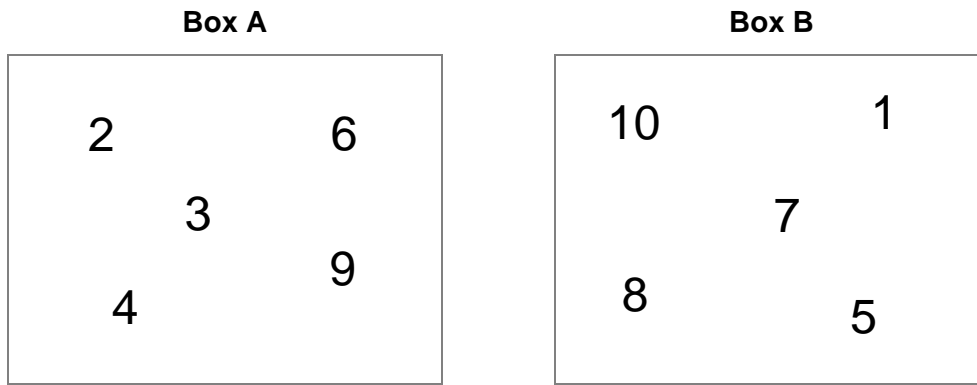
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Answer \_\_\_\_\_

10



**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]

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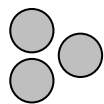
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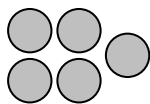
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Answer \_\_\_\_\_ and \_\_\_\_\_

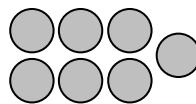
- 11 The diagram shows a sequence of patterns.



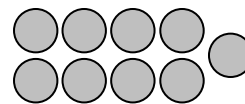
Pattern 1



Pattern 2



Pattern 3



Pattern 4

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

[1 mark]

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Answer \_\_\_\_\_

- 11 (b) Complete the rule below.

[1 mark]

$$\text{Number of circles} = \text{Pattern number} \times \square + \square$$

- 11 (c) Which Pattern number has 51 circles?

[1 mark]

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Pattern \_\_\_\_\_

**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]**

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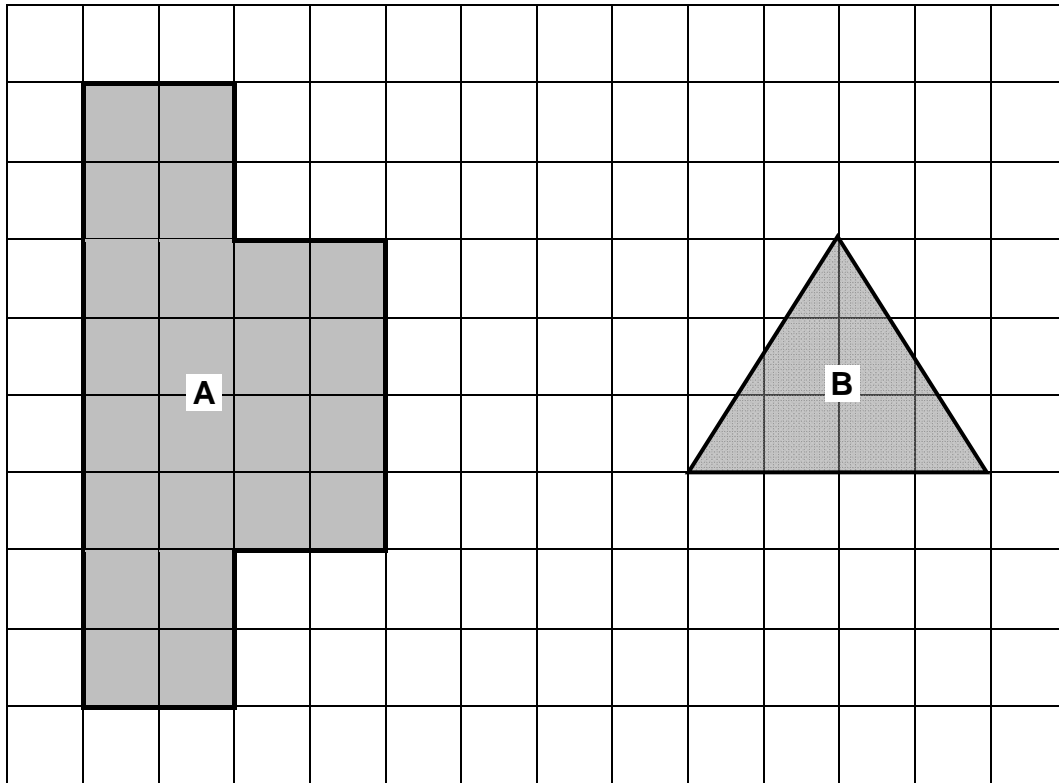
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Answer £ \_\_\_\_\_

13



Work out      area of shape A : area of shape B

Give your answer in its simplest form.

[3 marks]

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Answer \_\_\_\_\_ : \_\_\_\_\_

14 Work out 258% of 6300

[2 marks]

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Answer \_\_\_\_\_

15 You are given that

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

Tick whether each statement is true or false.

Give a reason for each answer.

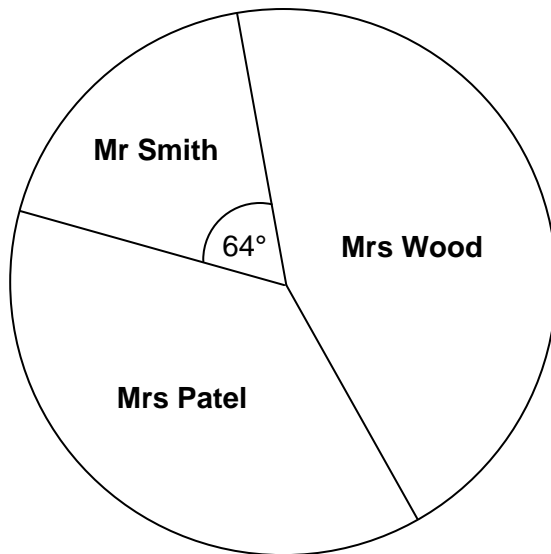
[2 marks]

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

- 16** The pie chart shows some information about the share of votes for candidates in an election.

**Election Results**

Not drawn accurately



The angle for Mrs Wood would be  $24^\circ$  more than the angle for Mrs Patel.

There were 5220 votes in total.

Work out the number of votes for Mrs Patel.

**[4 marks]**

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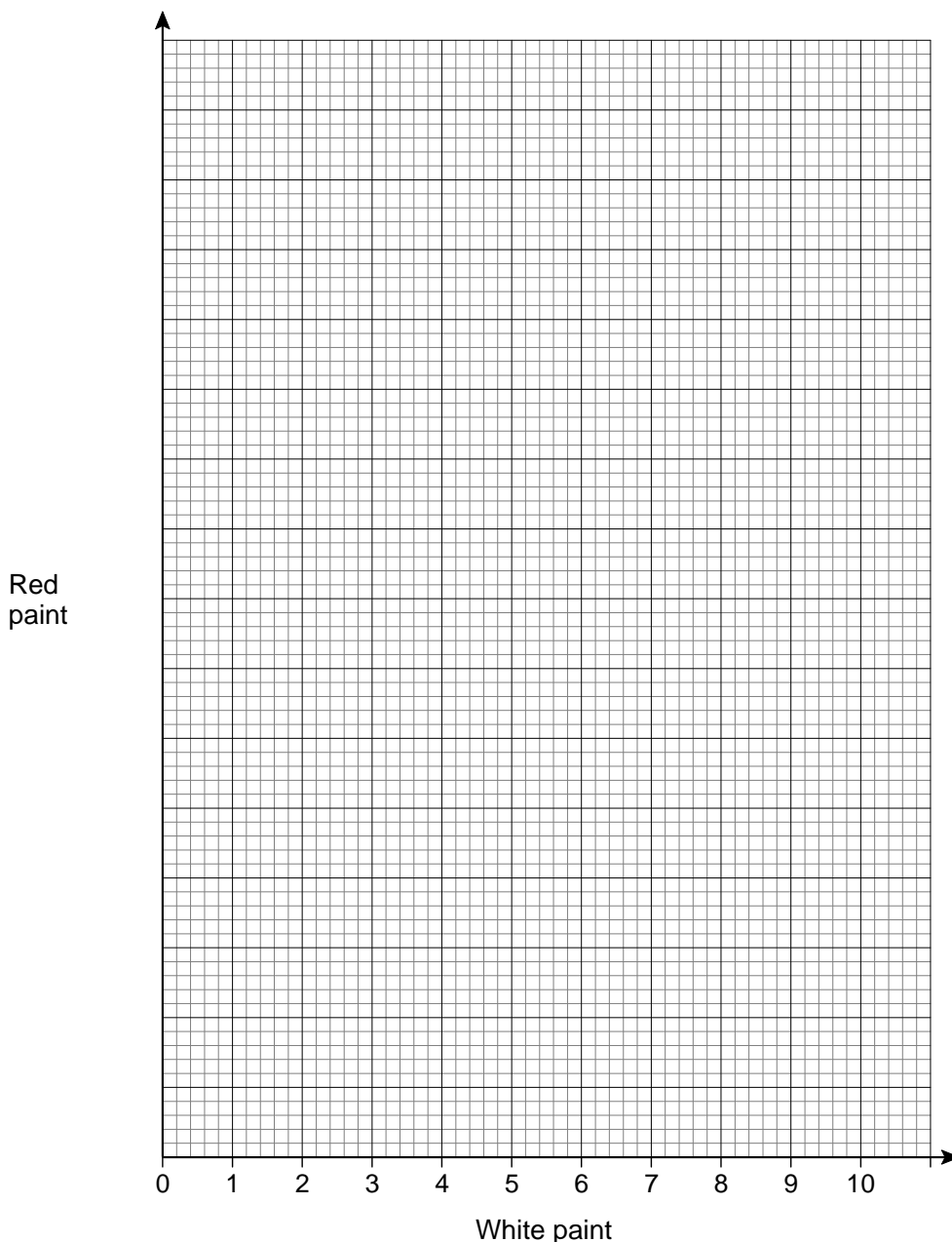
Answer \_\_\_\_\_

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

17 (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]



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

[1 mark]

Answer \_\_\_\_\_ litres



- 18** 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]**

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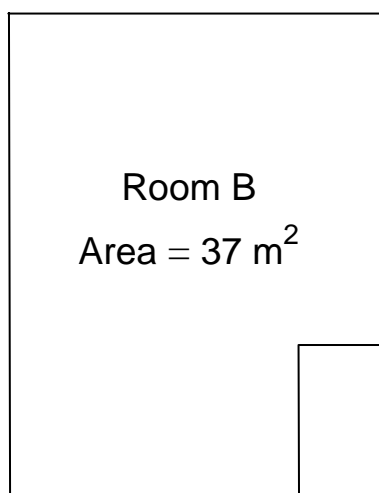
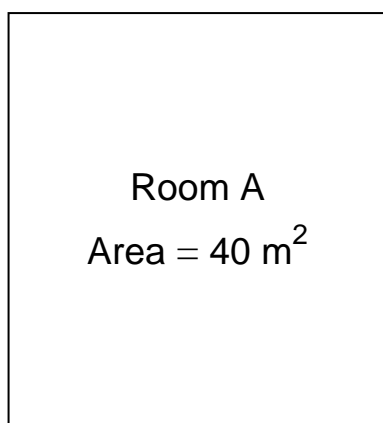
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First triangle    \_\_\_\_\_ cm    \_\_\_\_\_ cm    \_\_\_\_\_ cm

Second triangle    \_\_\_\_\_ cm    \_\_\_\_\_ cm    \_\_\_\_\_ cm

19

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



Not drawn  
accurately

Each baby needs at least  $3.5 \text{ m}^2$  of floor space.

Each toddler needs at least  $2.5 \text{ m}^2$  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]**

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**Turn over for the next question**

**20**

Work out the next term of this quadratic sequence.

**[2 marks]**

4

12

24

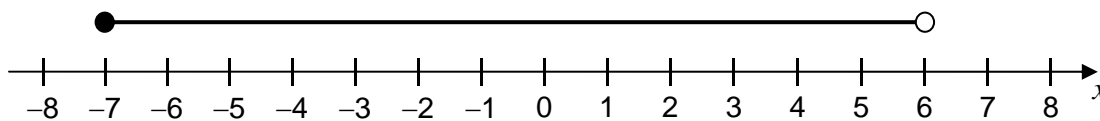
40

\_\_\_\_\_

Answer \_\_\_\_\_

21 Circle the inequality shown by the diagram.

[1 mark]



$-7 < x < 6$

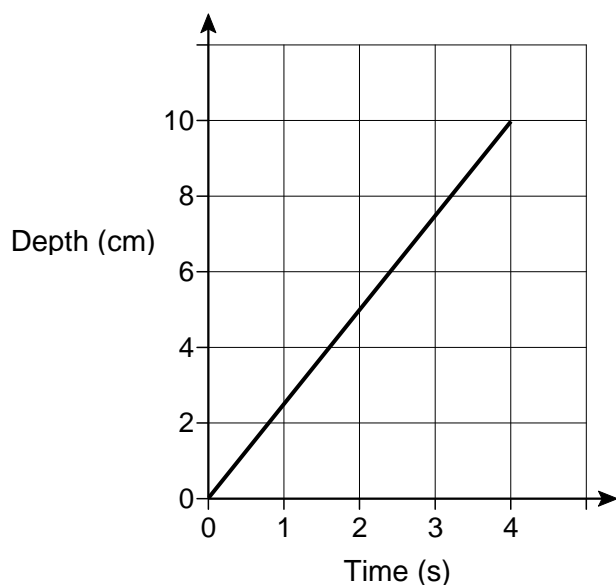
$-7 \leq x < 6$

$-7 < x \leq 6$

$-7 \leq x \leq 6$

22 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

23 Here is an ordinary dice.



23 (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]

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23 (b) Lucy throws the dice 50 times.

Her results are shown.

<b>Number thrown</b>	1	2	3	4	5	6
<b>Frequency</b>	7	4	12	5	9	13

Work out the relative frequency of throwing an odd number.

[2 marks]

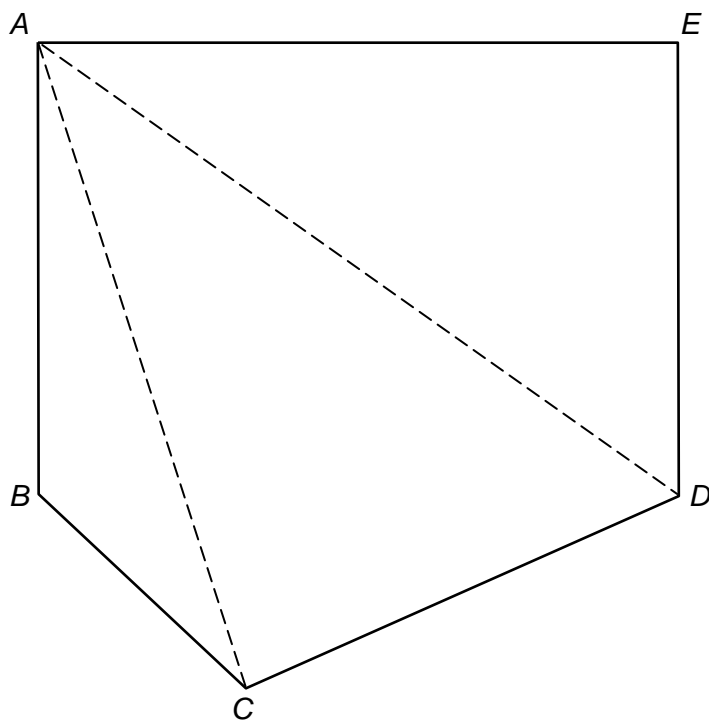
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Answer \_\_\_\_\_

- 24 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]

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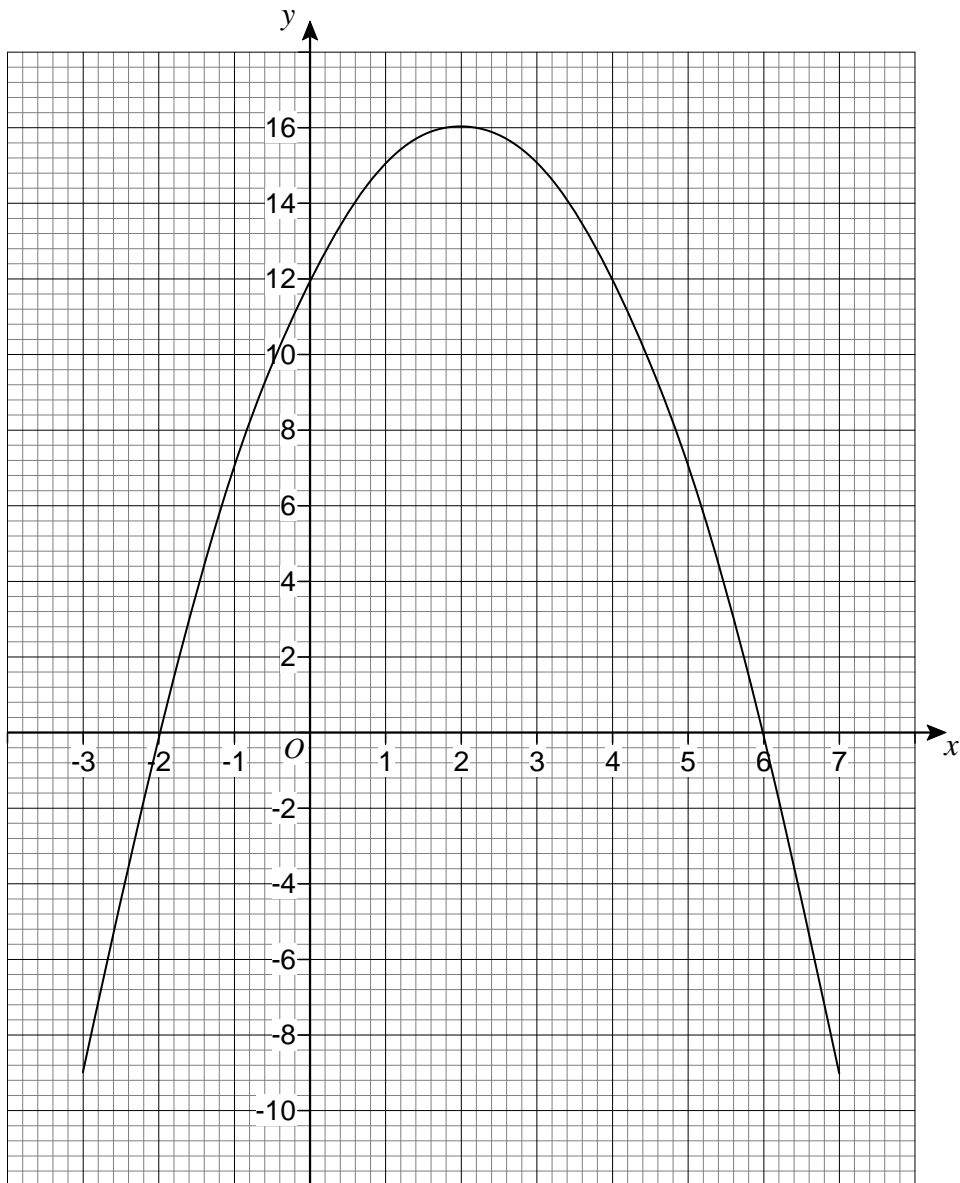
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Answer \_\_\_\_\_ degrees

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



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

[1 mark]

(-2, 0)

(0, 12)

(2, 16)

(6, 0)

25 (b) Circle the value of  $a$ .

[1 mark]

-2

12

16

6



25 (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

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]

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Answer \_\_\_\_\_ %

**Turn over for the next question**

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

[2 marks]

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Answer \_\_\_\_\_

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

[3 marks]

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Answer \_\_\_\_\_

28 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]

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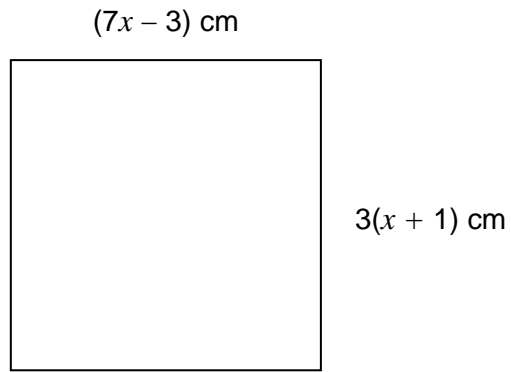
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- 29 The diagram shows a square.



Work out the length of one side of the square.

**[4 marks]**

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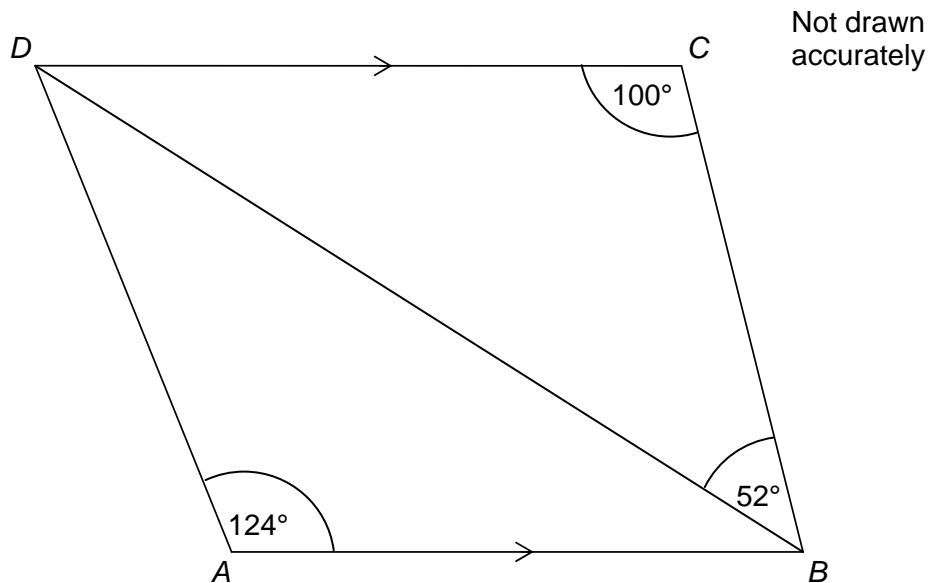
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Answer \_\_\_\_\_ cm

30

In the diagram,  $DC$  is parallel to  $AB$ .



Show that triangle  $ABD$  is isosceles.

[3 marks]

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**END OF QUESTIONS**

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