




## Easter Intervention

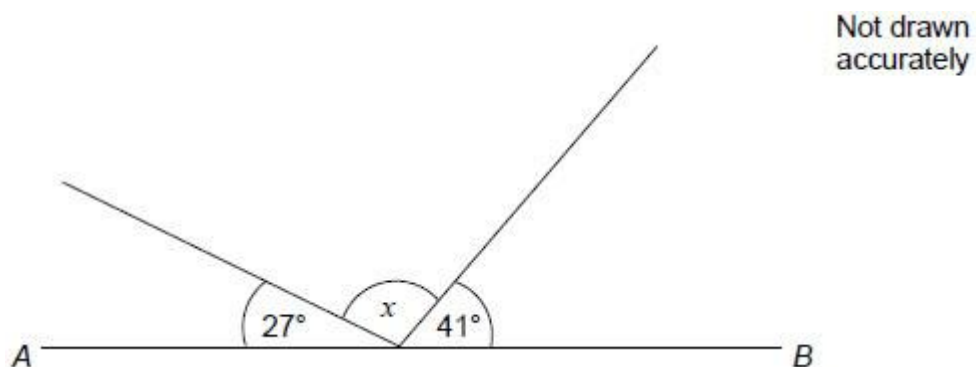
### Foundation Questions

<b>Topic</b>			
Angles			
Transformations			
Multiples, Factors, Primes			
Indices			
Algebra			
Area and Perimeter			
Fractions, Decimals and Percentages			
Ratio			
Equations			
Probability			
Averages			
Graphs and Charts			

If you have any questions, feel free to email: [bonea@ianramsey.org.uk](mailto:bonea@ianramsey.org.uk)

## Angles

Q1.



$AB$  is a straight line. Work out the size of angle  $x$

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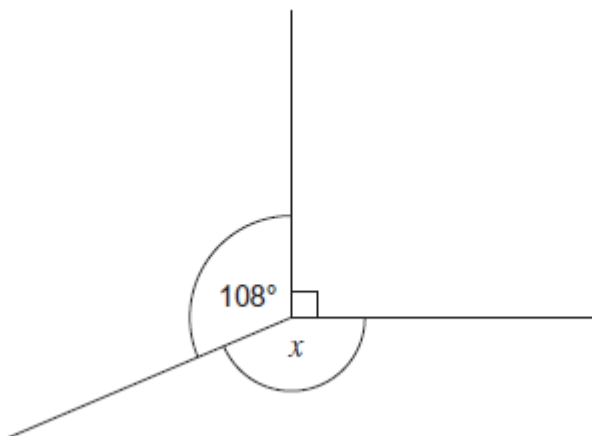
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Answer \_\_\_\_\_ degrees  
(Total 2 marks)

Q2.

(a) Work out the size of angle  $x$

Not drawn accurately



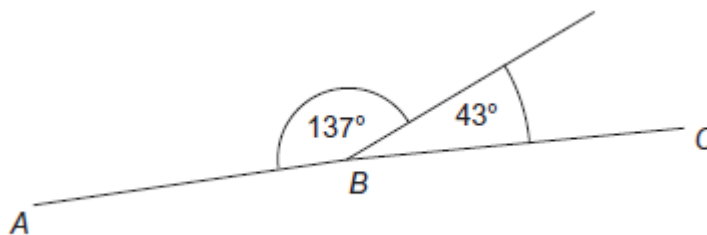
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Answer \_\_\_\_\_ degrees

(2)

(b)



Give a reason why, if drawn accurately,  $ABC$  would be a straight line.

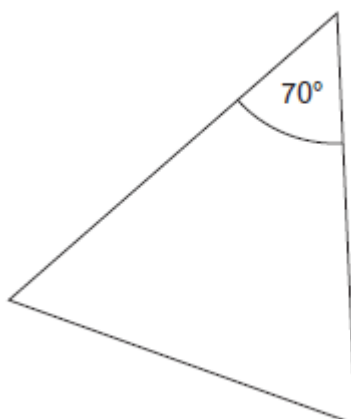
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(1)  
(Total 3 marks)

**Q3.**

This triangle is isosceles.



Work out the angles of the **two** possible triangles.

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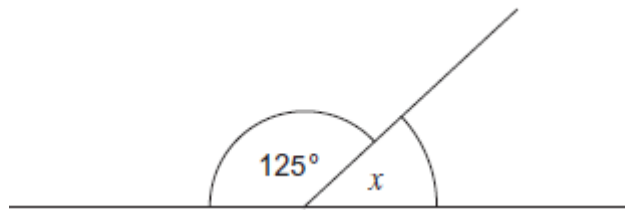
70°, \_\_\_\_\_, \_\_\_\_\_  
and 70°, \_\_\_\_\_, \_\_\_\_\_

(Total 3 marks)

**Q4.**

- (a) Work out the size of angle  $x$ .

Not drawn accurately



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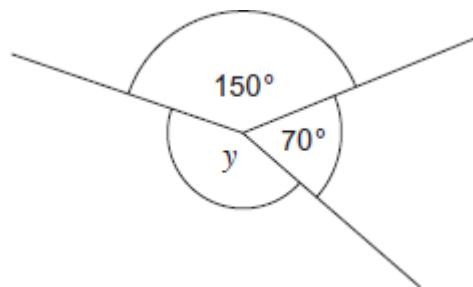
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Answer \_\_\_\_\_ degrees

(1)

- (b) Work out the size of angle  $y$ .

Not drawn accurately



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

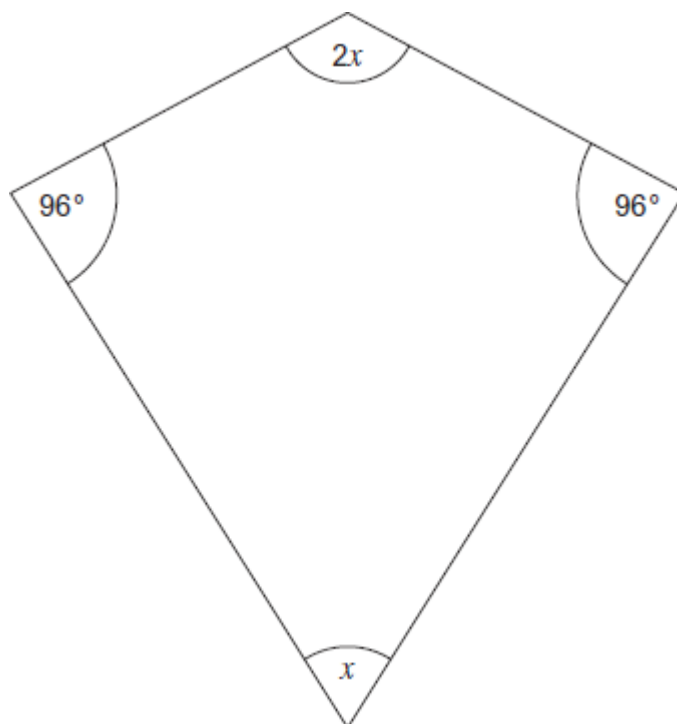
(2)

(Total 3 marks)

**Q5.**

Here is a metal badge in the shape of a kite.

Not drawn accurately



- (a) Set up and solve an equation to work out the value of  $x$ .

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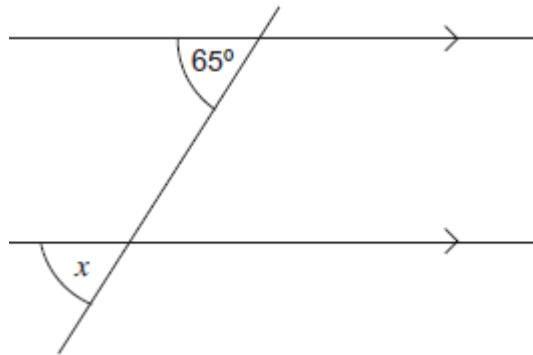
$x =$  \_\_\_\_\_

(3)

**Q6.**

Write down the size of angle  $x$ .  
Give a reason for your answer.

Not drawn accurately



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

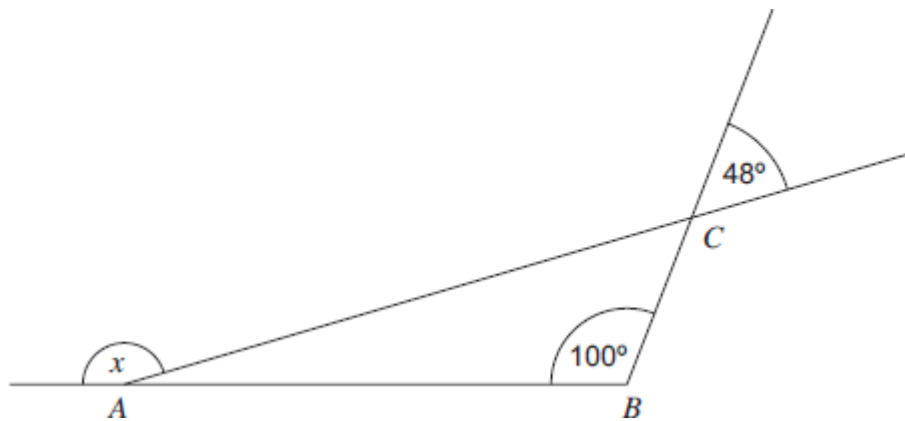
Reason \_\_\_\_\_

(Total 2 marks)

**Q7.**

The diagram shows a triangle  $ABC$  with sides extended.

Not drawn accurately



Work out the value of  $x$ .

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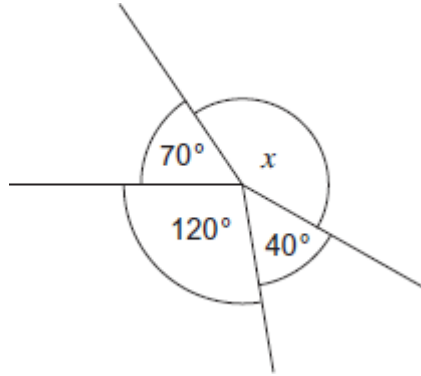
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Answer \_\_\_\_\_ degrees

(Total 3 marks)

**Q8.**

- (a) Work out the size of angle  $x$ .



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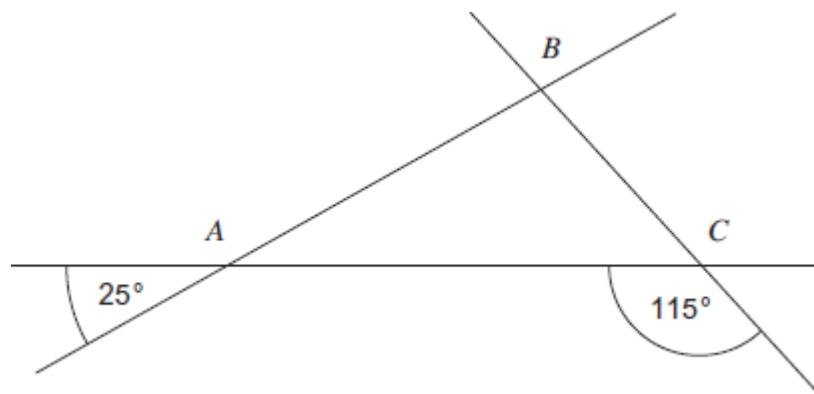
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Answer \_\_\_\_\_ degrees

(3)

- (b) Three straight lines cross as shown.

Not drawn accurately



What type of triangle is  $ABC$ ?

You **must** show your working, which may be on the diagram.

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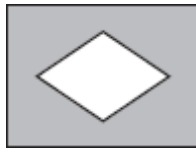
Answer \_\_\_\_\_

(4)

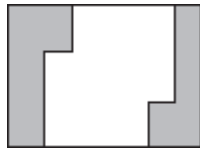
(Total 7 marks)

# Transformations

**Q1.** Here are five flags.



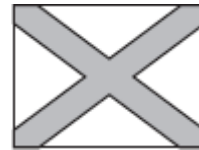
A



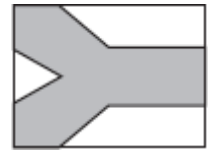
B



C



D



E

(a) Which **three** flags have line symmetry?

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

(2)

(b) Which **two** flags do **not** have rotational symmetry?

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

(2)

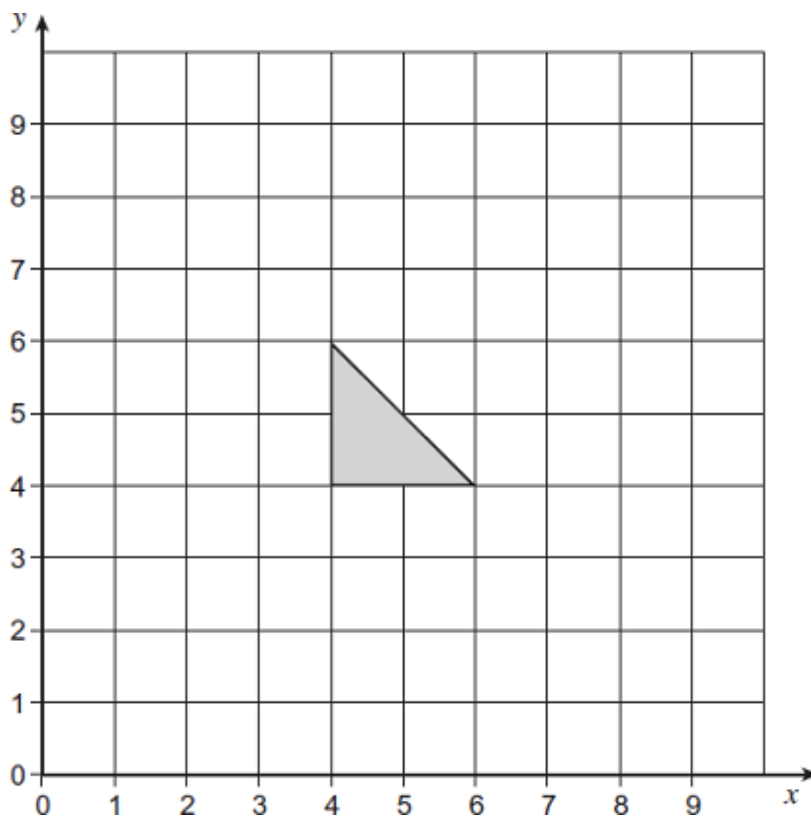
(c) Which flag has rotational symmetry but **not** line symmetry?

Answer \_\_\_\_\_

(1)

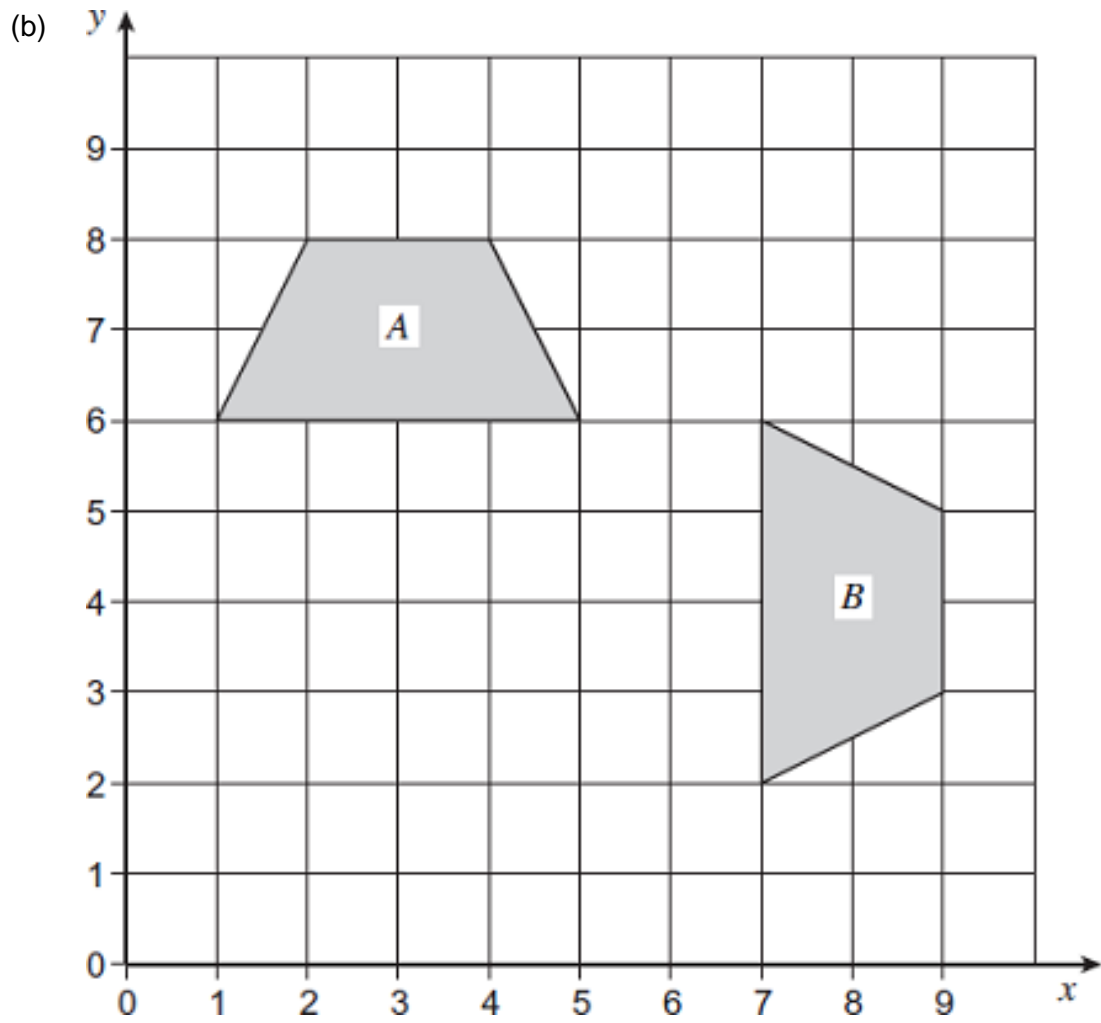
**(Total 5 marks)**

**Q2.** (a) Translate the shape by the vector  $\begin{pmatrix} 2 \\ 3 \end{pmatrix}$



(2)





Describe fully the **single** transformation that takes shape *A* to shape *B*.

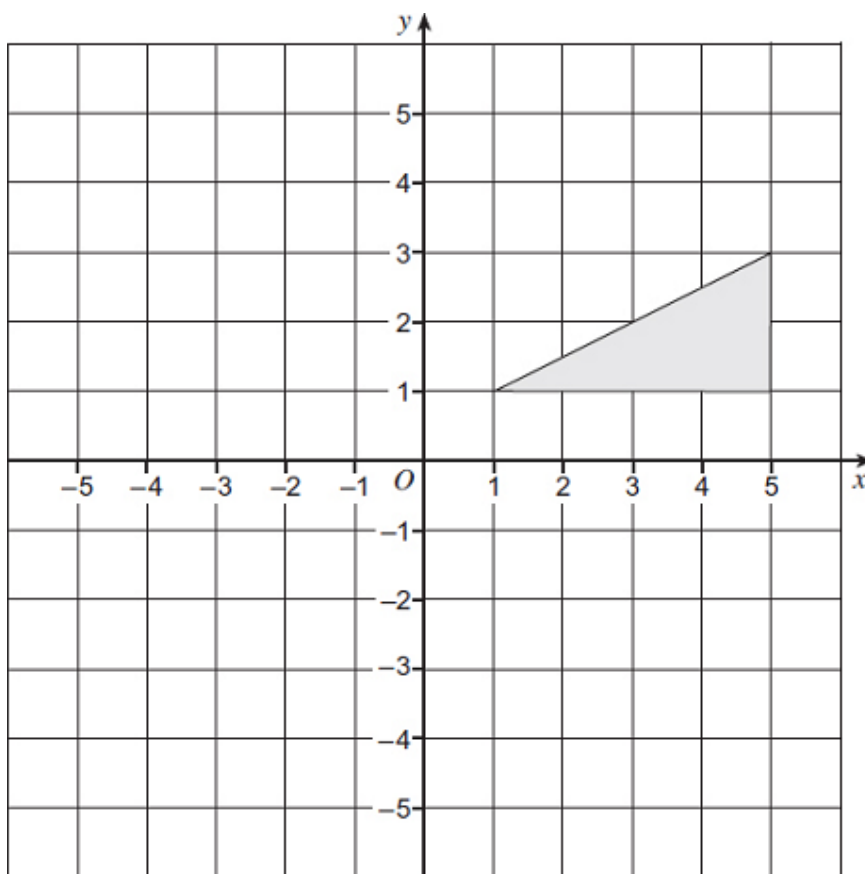
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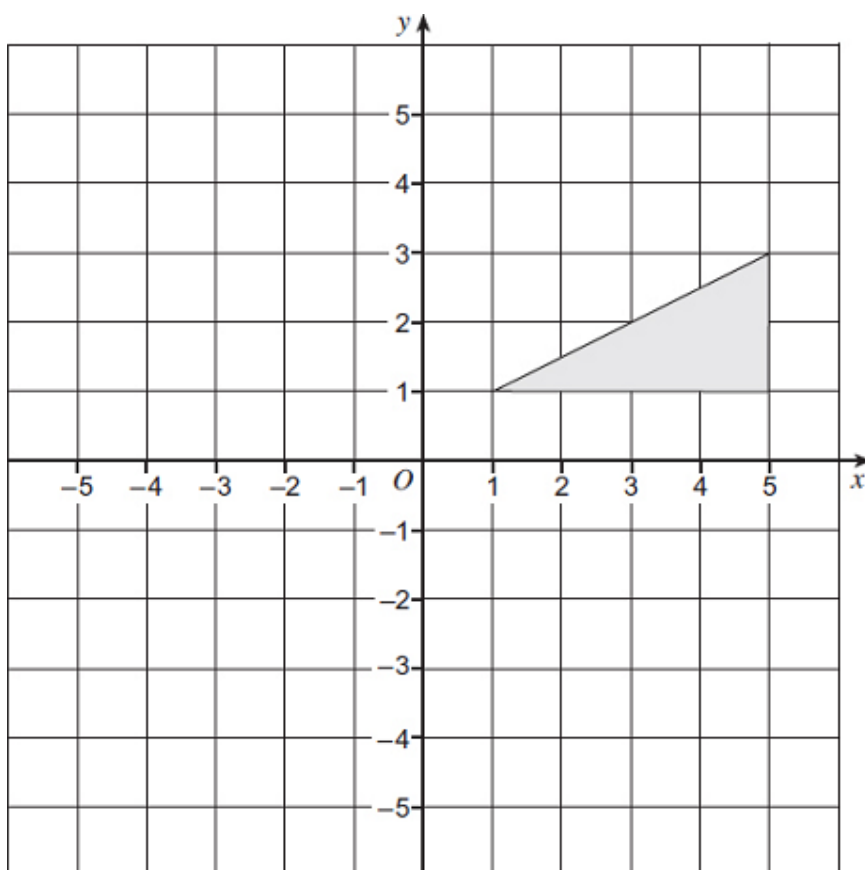
(3)  
(Total 5 marks)

**Q3.(a)** Reflect the triangle in the line  $x = 1$



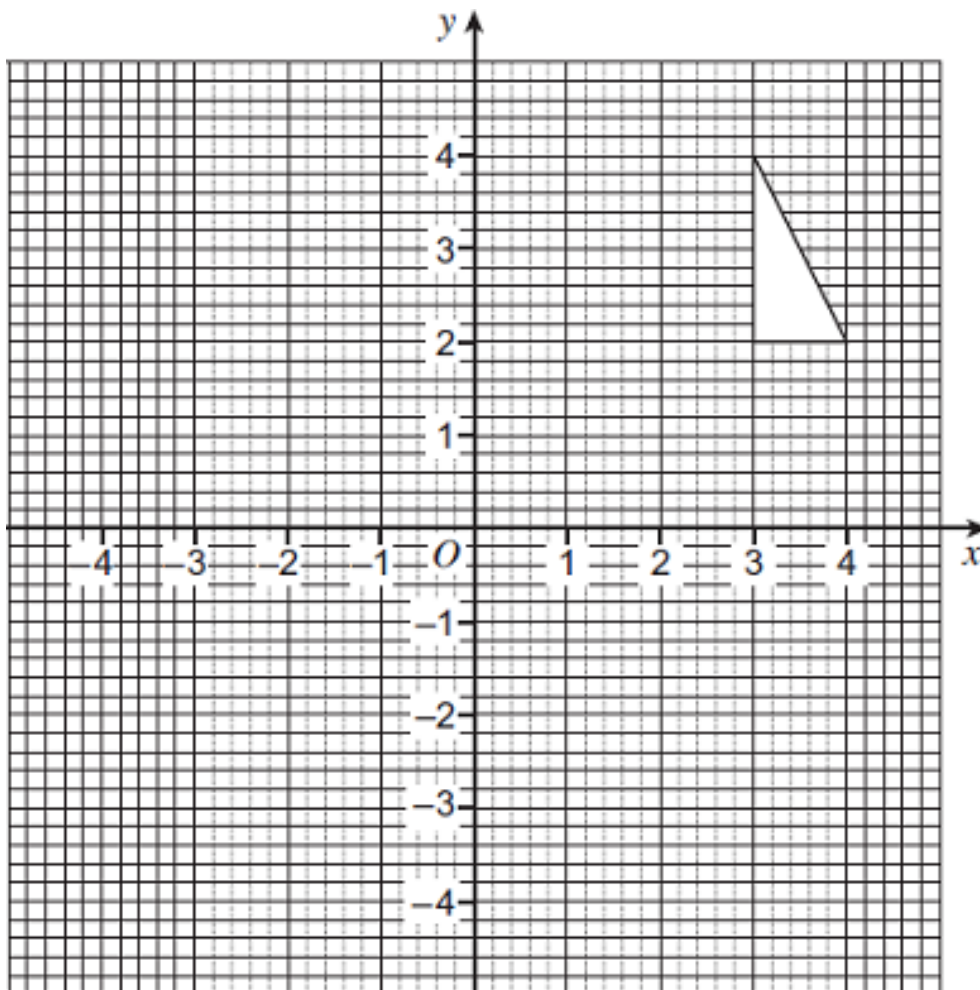
(2)

(b) Rotate the triangle through  $180^\circ$  about the origin.



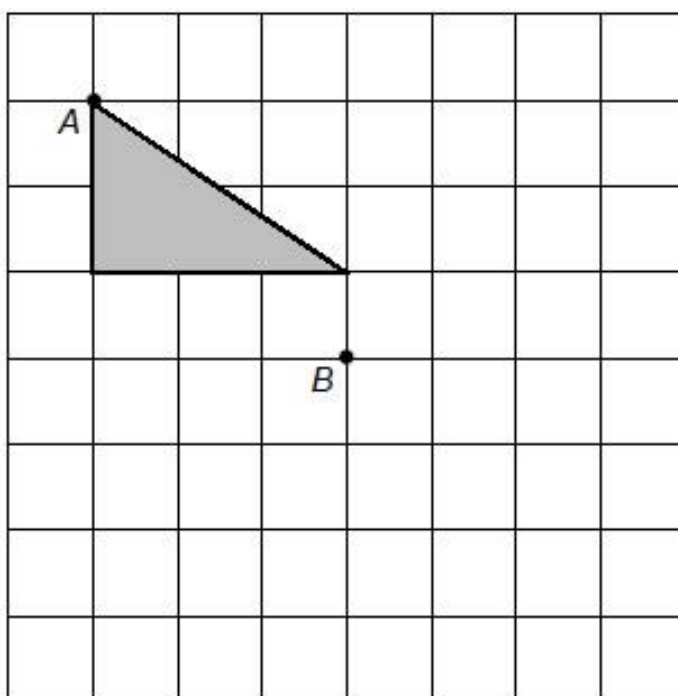
(2)

**Q4.** Reflect the triangle in the line  $y = 2$



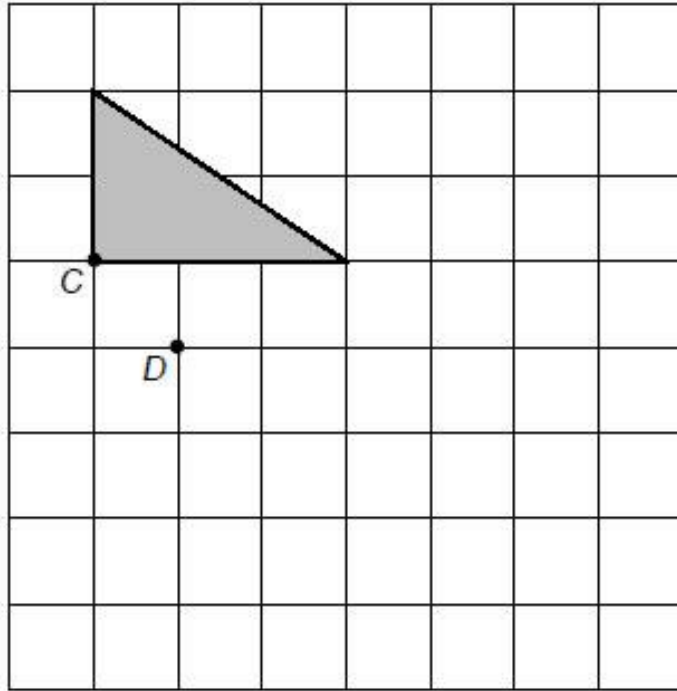
(Total 2 marks)

**Q5. (a)** Translate the triangle so that point  $A$  moves to point  $B$ .



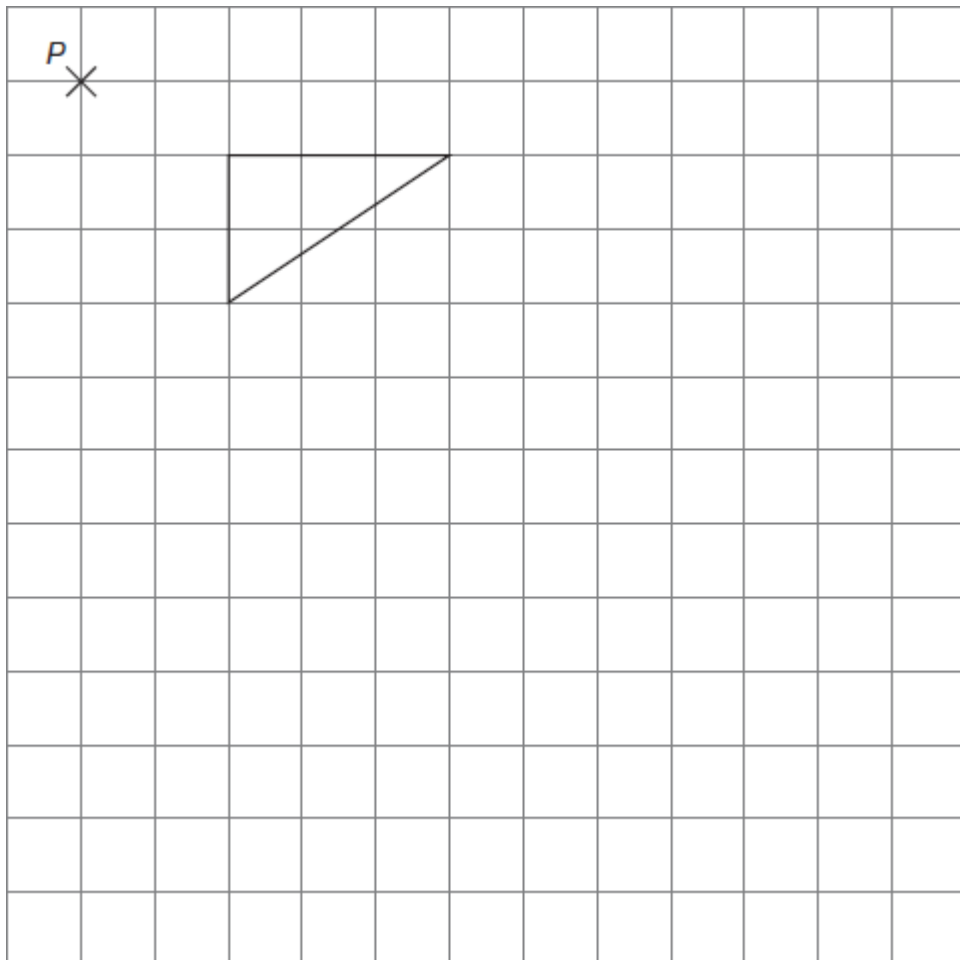
(1)

(b) Rotate the triangle **90° clockwise** so that point *C* moves to point *D*.



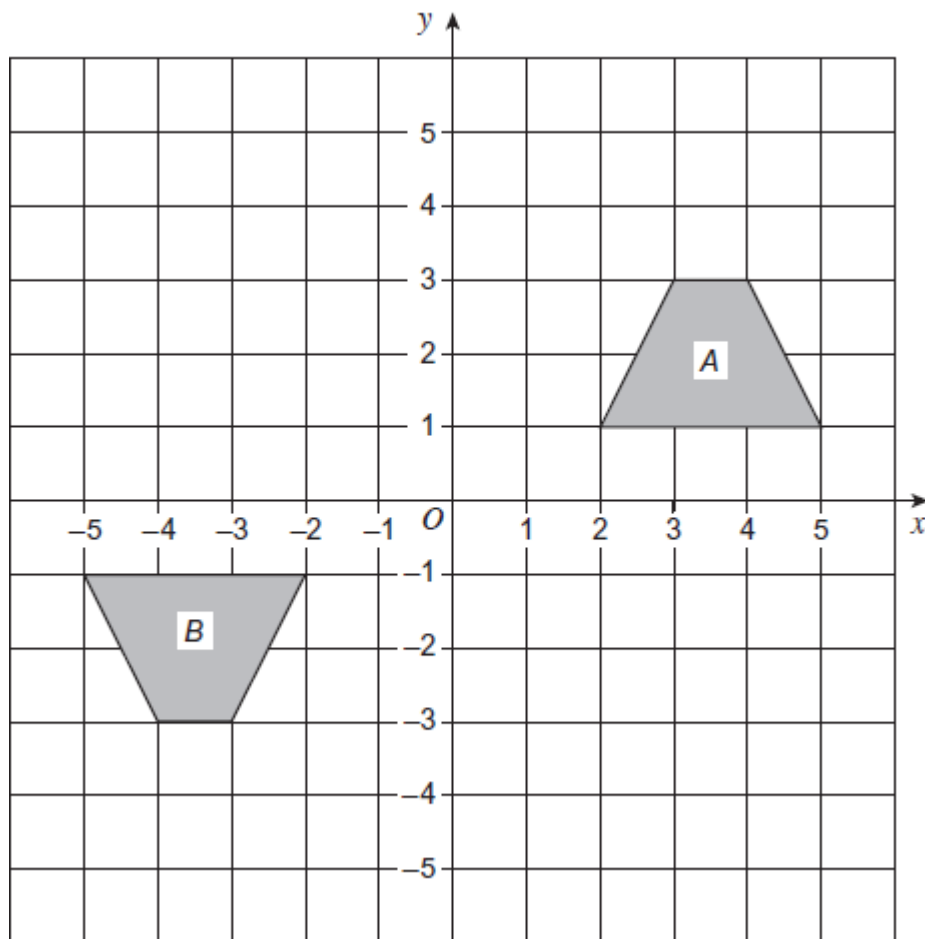
(2)  
(Total 3 marks)

**Q6.** (a) Enlarge this shape by scale factor 2 with centre of enlargement point *P*.



(3)

(b) Describe fully the **single** transformation that maps shape *A* to shape *B*.



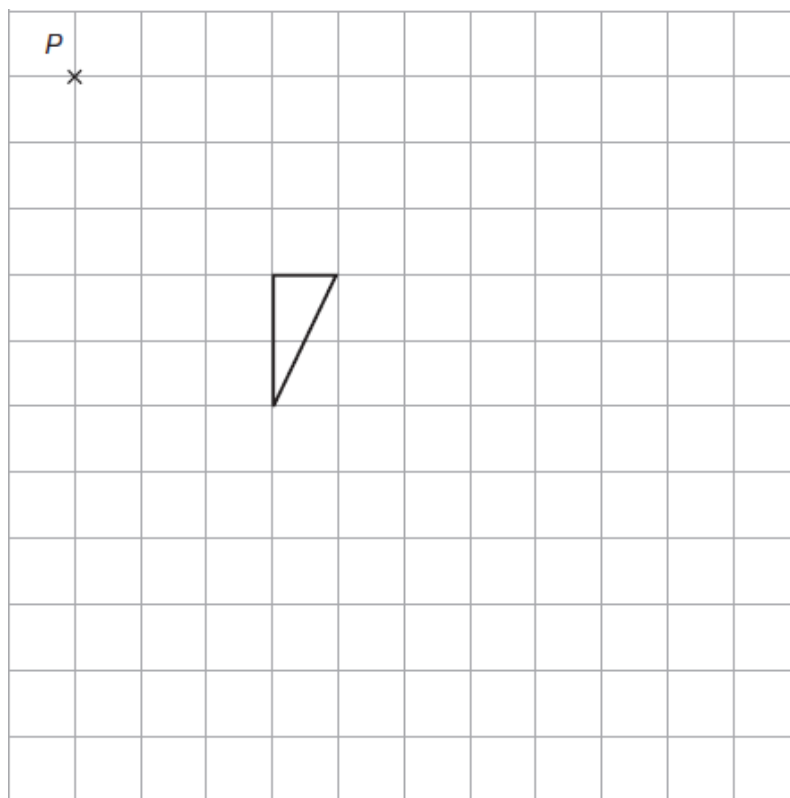
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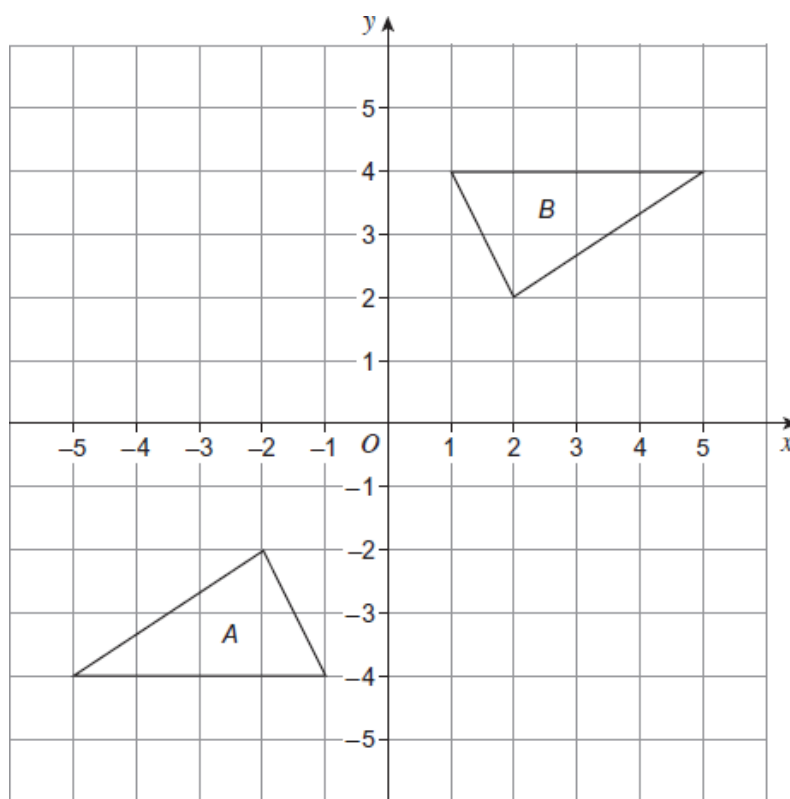
(3)  
(Total 6 marks)

**Q7. (a)** Enlarge the triangle by scale factor 2, using point  $P$  as the centre of enlargement.



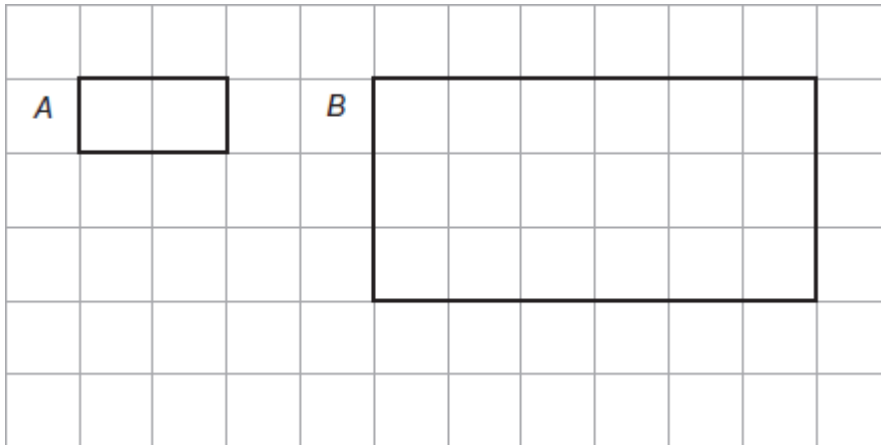
(3)

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



(3)

**Q8.** Rectangles *A* and *B* are drawn on a centimetre grid.



(a) *B* is an enlargement of *A*. What is the scale factor of the enlargement?

\_\_\_\_\_

Answer \_\_\_\_\_

(1)

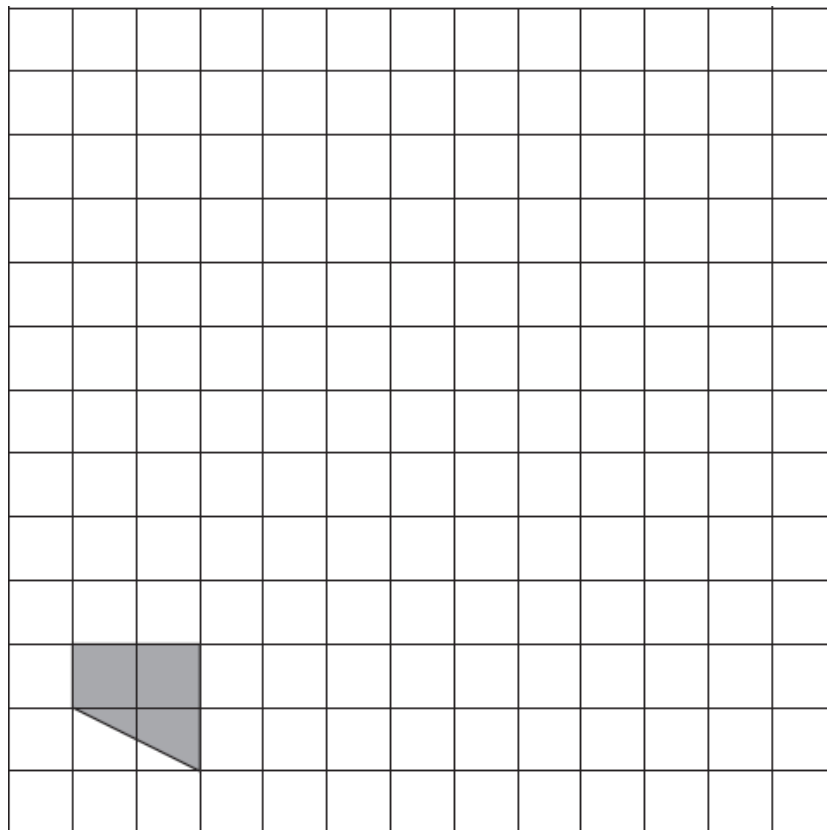
(b) How many times larger is the area of *B* than the area of *A*?

\_\_\_\_\_

\_\_\_\_\_

(2)

**Q9.** Enlarge the shape by scale factor 3



(Total 2 marks)

## Multiples, Factors and Primes

### Q1.

(a) Circle the multiple of 9

6            12            13            16            20            27

(1)

(b) Circle the factor of 40

6            12            13            16            20            27

(1)

(c) Circle the square number.

6            12            13            16            20            27

(1)

(d) Circle the prime number.

6            12            13            16            20            27

(1)

(Total 4 marks)

### Q2.

Write down all the factors of 18

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Answer \_\_\_\_\_

(Total 2 marks)



**Q3.**

Here are some properties of numbers.

- A Even
- B Odd
- C Prime
- D Square
- E Two-digit

(a) Which **two** properties does the number 4 have?

Circle the correct letters.

A          B          C          D          E

(1)

(b) Can one number have **all** of the properties?

Tick a box.

Yes

No

Cannot tell

Give a reason for your answer.

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(1)

(c) Write down a number with **three** of the properties.

State which properties it has.

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Number \_\_\_\_\_

Properties \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

(2)

(Total 4 marks)

**Q4.** I am thinking of a prime number. Its digits add up to a square number.

Write down a prime number that I could be thinking of.

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q5.** Three whole numbers have a total of 100

The first number is a multiple of 15

The second number is ten times the third number.

Work out the three numbers.

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Answer \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

**(Total 3 marks)**

**Q6.** Liam says,

“If you divide any multiple of 10 by 2 the answer **always** ends in 5”

Is he correct?

Write down a calculation to support your answer.

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**(Total 1 mark)**

**Q7.** Which of these numbers is **one more** than a multiple of 5?

Circle your answer.

15

19

26

30

**(Total 1 mark)**

**Q8.** Which of these numbers has **exactly three** factors?

Circle your answer.

3

4

5

6

(Total 1 mark)

**Q9.** Lucy says,

“3 is odd and 2 is even,  
so when you add a multiple of 3 to a multiple of 2 the answer is always odd.”

Is she correct?

Write down a calculation to support your answer.

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(Total 1 mark)

**Q10.**

Write 56 as a product of prime factors.

Answer \_\_\_\_\_

(Total 2 marks)

**Q11.**

Rashid writes down some multiples of 3 and 4

3    6    9    12    15    18    21    24    27    \_\_\_\_  
4    8    12    16    24    28    \_\_\_\_

(a) He notices that 12 and 24 are in both lists.

What will be the next number that is in both lists?

Answer \_\_\_\_\_

(1)

(b) Is 120 in both lists?  
Tick a box.

Yes

No

Give a reason for your choice.

\_\_\_\_\_  
\_\_\_\_\_

(1)

(Total 2 marks)

**Q12.**

A code is made with two 2-digit numbers.

The first 2-digit number is a square number bigger than 30

The second 2-digit number is a factor of 122

The four digits are all **different**.

What is the code?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Answer \_\_\_\_\_

(Total 3 marks)

**Q13.**

- (a) Put four **different** prime numbers into the boxes to make the calculation true.

$$\square + \square + \square = \square$$

(2)

- (b) Why can 2 never be one of the four prime numbers used in part (a)?

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(2)

(Total 4 marks)

**Q14.**

- (a) Write 200 as the product of prime factors.  
Give your answer in index form.

Answer \_\_\_\_\_

(3)

## Algebra

**Q1.** Simplify  $7x + 5 - 8 - 3x$  Circle your answer.

$x$

$4x + 3$

$4x - 3$

$10x - 3$

(Total 1 mark)

**Q2.** Simplify  $6w - 5x - 4w - 2x$

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Answer \_\_\_\_\_

(Total 2 marks)

**Q3. (a)** Simplify  $8a + 5b + 3a - 2b$

Answer \_\_\_\_\_

(2)

(b) Multiply out  $6(x + 3)$

Answer \_\_\_\_\_

(1)

(Total 3 marks)

**Q4.** Simplify  $5a - (2a + 6)$

Circle your answer.

$3a + 6$

$9a$

$-3a$

$3a - 6$

(Total 1 mark)

**Q5. (a)** Simplify fully  $4a - 3a + 2b - 8b$

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Answer \_\_\_\_\_

(2)

(b) Factorise  $m^2 - 2m$

Answer \_\_\_\_\_

(1)

(c) Multiply out  $5x(x - 3)$

Answer \_\_\_\_\_

(2)

(Total 5 marks)

**Q6.** (a) Multiply out  $10(3x + 1)$

Answer \_\_\_\_\_

(1)

(b) Factorise  $4x - 12$

Answer \_\_\_\_\_

(1)

(c) Factorise  $x^2 + 5x$

Answer \_\_\_\_\_

(1)

(Total 3 marks)

**Q7.** (a) Simplify  $2a + 3a + 4a$

Answer \_\_\_\_\_

(1)

(b) Solve  $x + 4 = 9$

$x =$  \_\_\_\_\_

(1)

(c) Solve  $3x = 18$

$x =$  \_\_\_\_\_ (1)

(d) Solve  $\frac{x}{10} = 2$

$x =$  \_\_\_\_\_ (1)  
(Total 4 marks)

**Q8.**(a) Simplify  $3 \times 2m$

Answer \_\_\_\_\_ (1)

(b) Simplify  $9x + 2y - 3x + 6y$

Answer \_\_\_\_\_ (2)  
(Total 3 marks)

**Q9.** Keith buys

$x$  cans of cola

2 fewer cans of lemonade than cola

6 more cans of orange than cola

Write an expression in terms of  $x$  for the total number of cans he buys.  
Simplify your answer.

\_\_\_\_\_

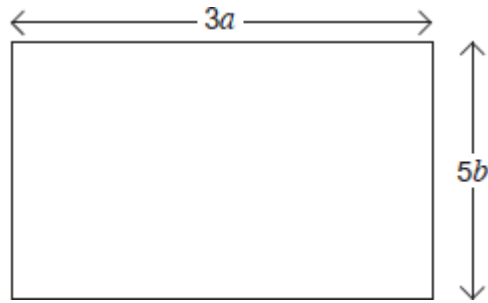
\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_ (Total 3 marks)



**Q10.** The diagram shows a rectangle.



- (a) Write down an expression for the **perimeter** of the rectangle.

Simplify your answer.

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

- (b) Write down an expression for the **area** of the rectangle.

Simplify your answer.

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

**Q11.**

- (a) Simplify fully  $6x + 4y - x - 7y$

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

- (b) Matt knows the value of  $a$  is 6 or 7 and the value of  $b$  is 4 or 5.

Work out the largest and smallest possible values of  $3a - 2b$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Largest \_\_\_\_\_

Smallest \_\_\_\_\_

(4)

(Total 6 marks)

**Q12.**

(a) Solve  $\frac{y}{3} = 8$

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Answer  $y =$  \_\_\_\_\_

(1)

(b) Simplify fully  $3c + 5d + 4c - 2d$

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Answer \_\_\_\_\_

(2)

(c) Given that  $P = 3e + 5f$

work out the value of  $P$  when  $e = 4$  and  $f = -2$

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Answer \_\_\_\_\_

(2)

(Total 5 marks)

**Q13.**

(a) Solve  $a + 5 = 9$

$a =$  \_\_\_\_\_

(1)

(b) Simplify fully  $4x + 5y + 2x + 3y$

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Answer \_\_\_\_\_

(2)

(c) Work out the value of  $5f - 4g$  when  $f = 3$  and  $g = 2$

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Answer \_\_\_\_\_

(2)

(Total 5 marks)

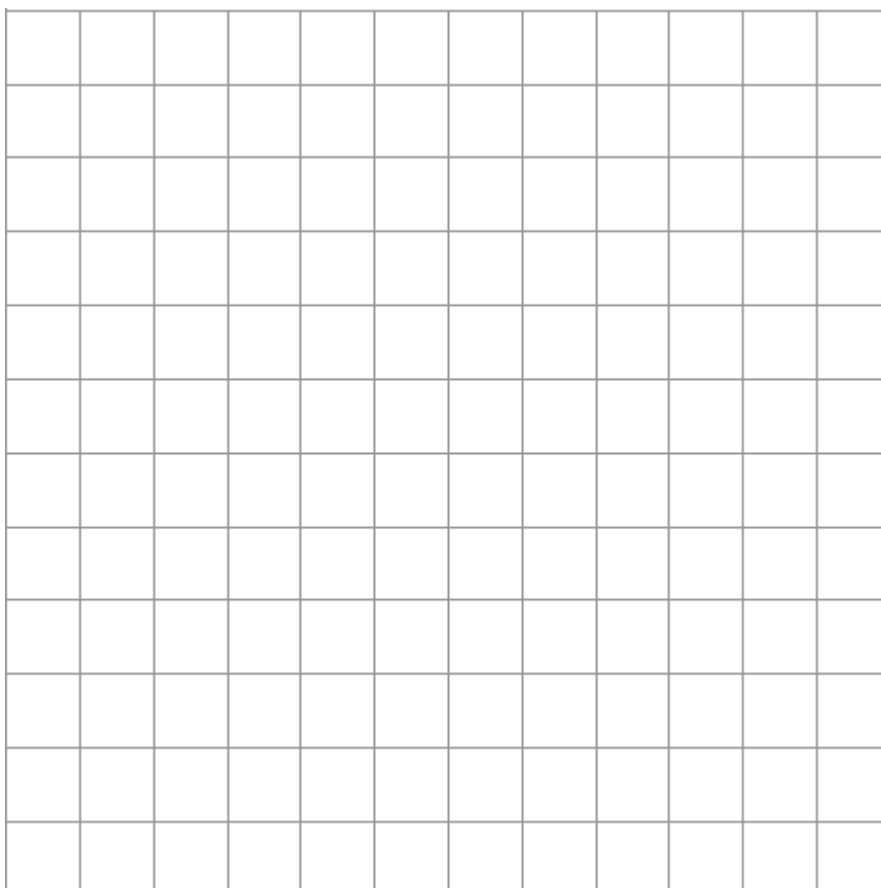
## Area

**Q1.**

On this centimetre grid, draw **one** rectangle with

$$\text{Perimeter} = 20 \text{ cm}$$

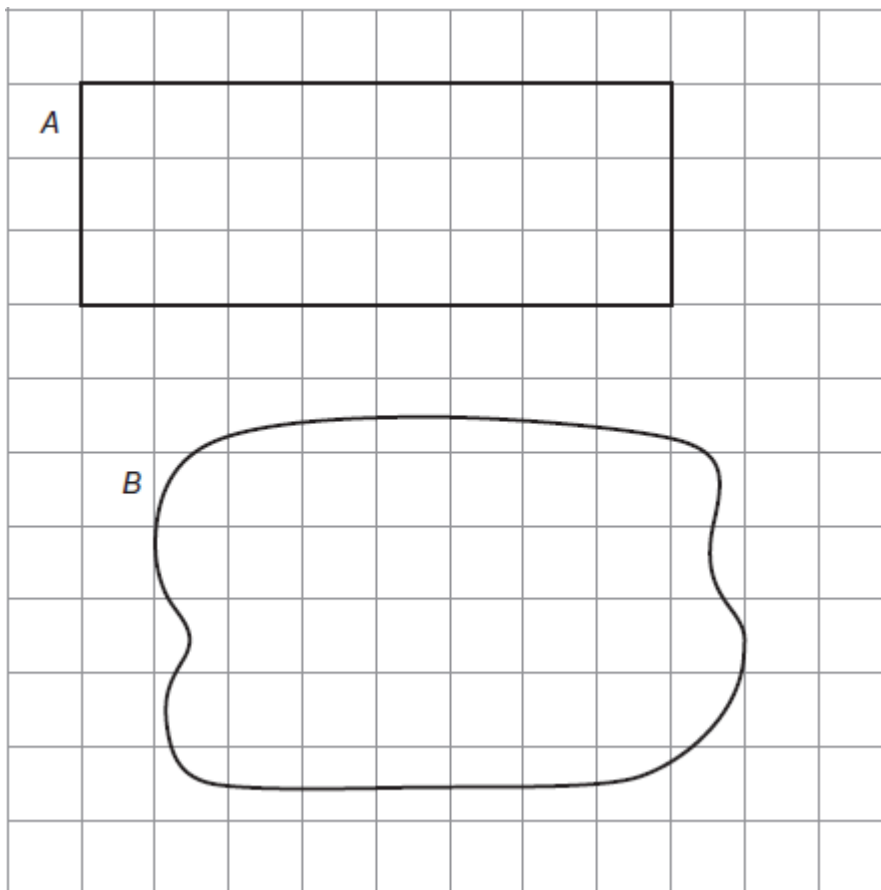
and  $\text{Area} = 24 \text{ cm}^2$



**(Total 2 marks)**

**Q2.**

Two shapes, *A* and *B*, are drawn on a centimetre grid.



Which of the two shapes has the greater area?  
You **must** show your working.

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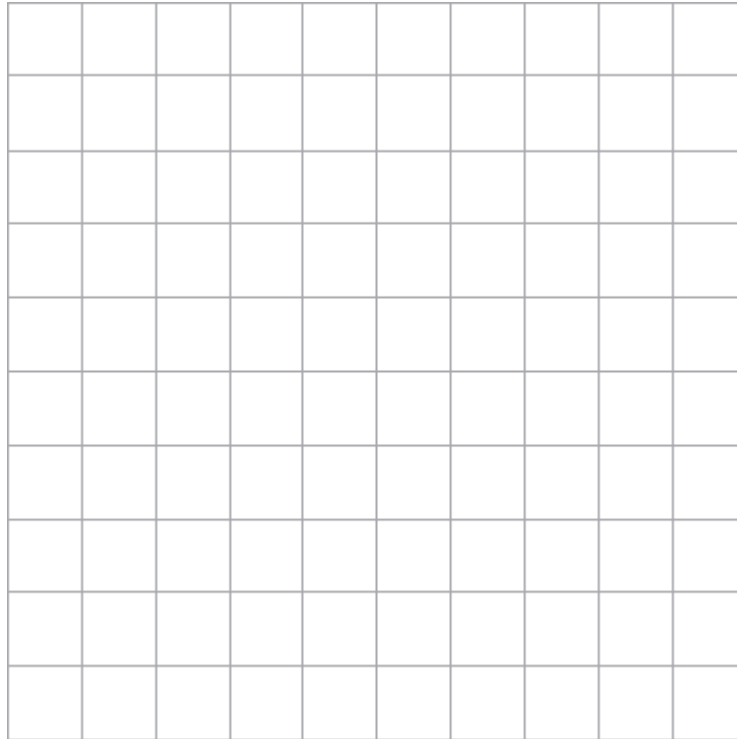
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**(Total 3 marks)**

**Q3.**

Here is a centimetre grid.



On the grid, draw a rectangle with

Perimeter = 18 cm

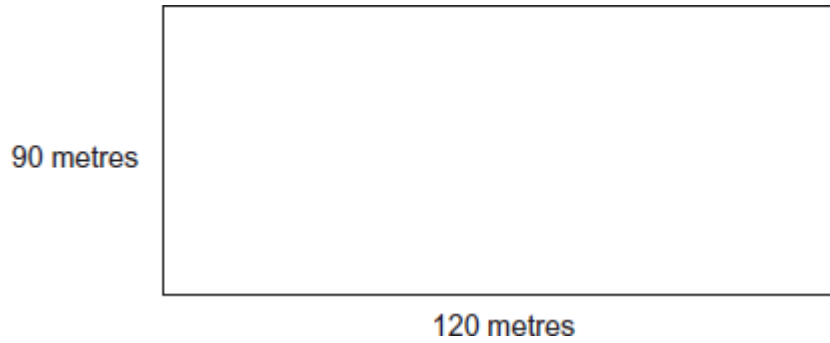
**and**

Area = 20 cm<sup>2</sup>

**(Total 2 marks)**

**Q4.**

Here is a rectangular school playing field.



- (a) The field is to have a new fence around the perimeter.

Work out the perimeter of the field.

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Answer \_\_\_\_\_ m

(2)

- (b) The field is covered with turf. The cost of the turf is £4.15 per square metre.

Work out the total cost. Give your answer to the nearest £1000

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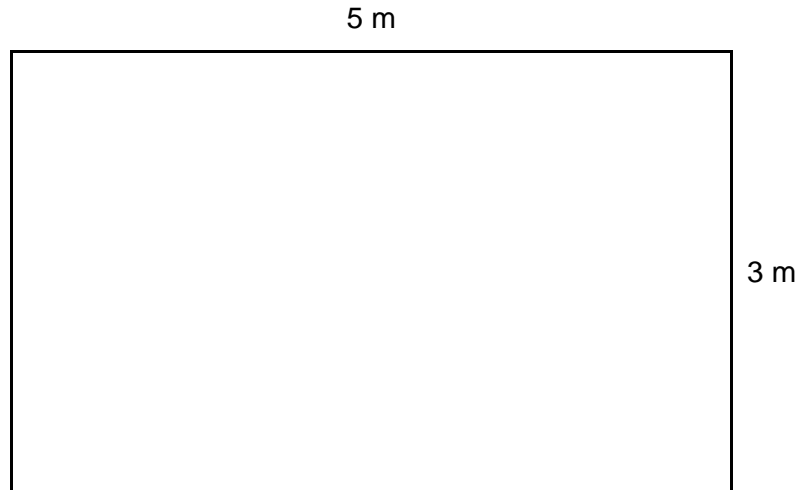
£ \_\_\_\_\_

(4)

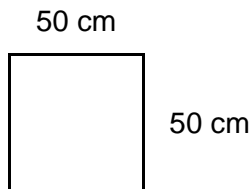
(Total 6 marks)

**Q5.**

(a) This rectangular patio is tiled using 50 cm by 50 cm square tiles.



Not drawn accurately



How many tiles are used?

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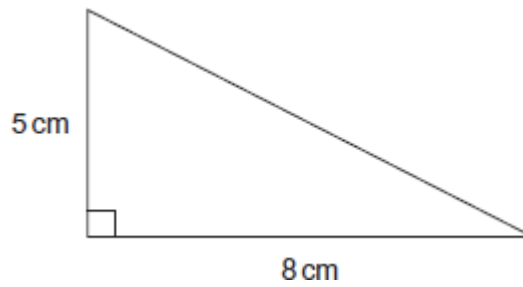
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Answer \_\_\_\_\_

(3)

**Q6.**

Calculate the area of the triangle.



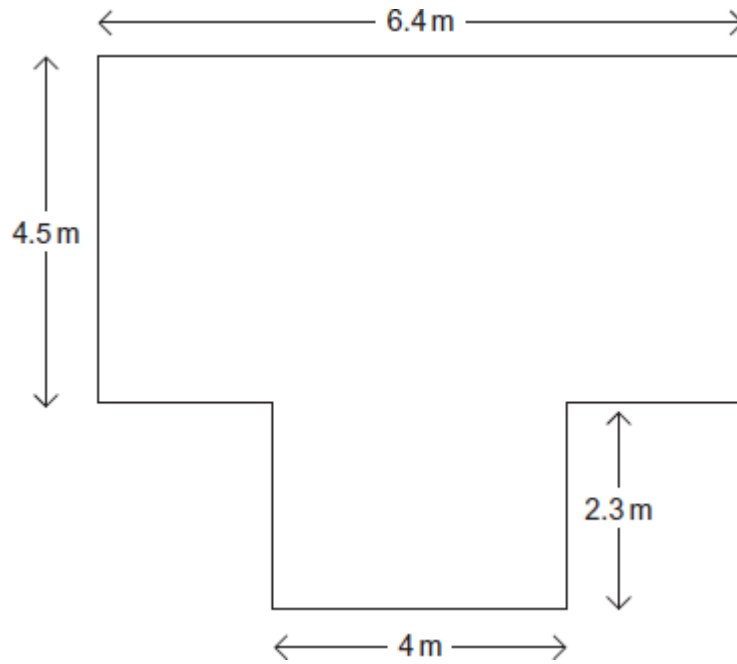
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Answer \_\_\_\_\_ cm<sup>2</sup>

(Total 2 marks)

**Q7.** This diagram shows Adam's garden.  
It is in the shape of two rectangles joined together.



(a) Work out the area of the garden.

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Answer \_\_\_\_\_ m<sup>2</sup>

(2)

(b) Adam makes a flower bed.  
It is a circle of radius 1.7 m.

Work out the area of the flower bed.

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Answer \_\_\_\_\_ m<sup>2</sup>

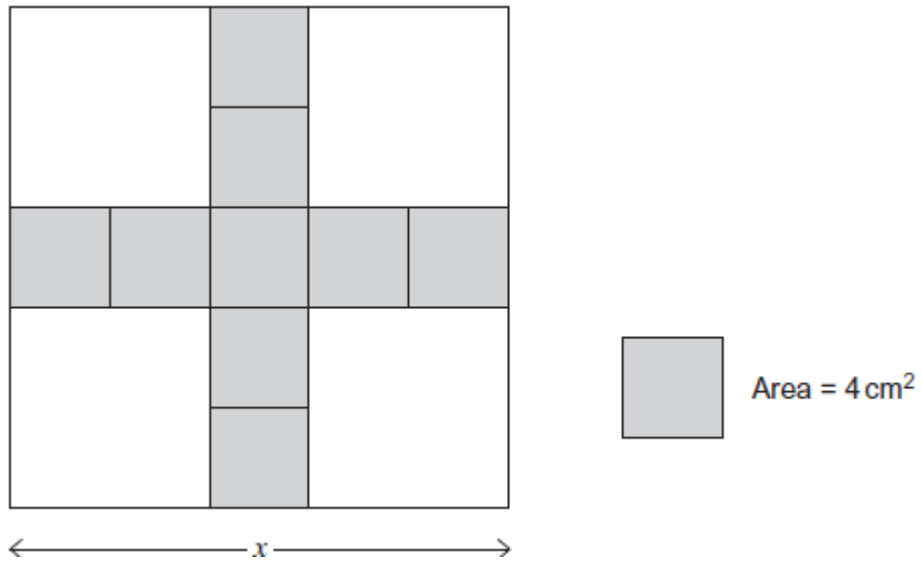
(2)

(Total 4 marks)



**Q8.**

Each small shaded square has an area of  $4 \text{ cm}^2$ .



Work out the length  $x$ .

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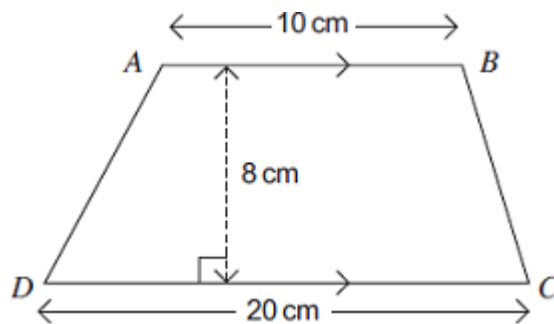
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Answer \_\_\_\_\_ cm

(Total 3 marks)

**Q9.**

$ABCD$  is a trapezium.



Calculate the area of  $ABCD$ .  
State the units of your answer.

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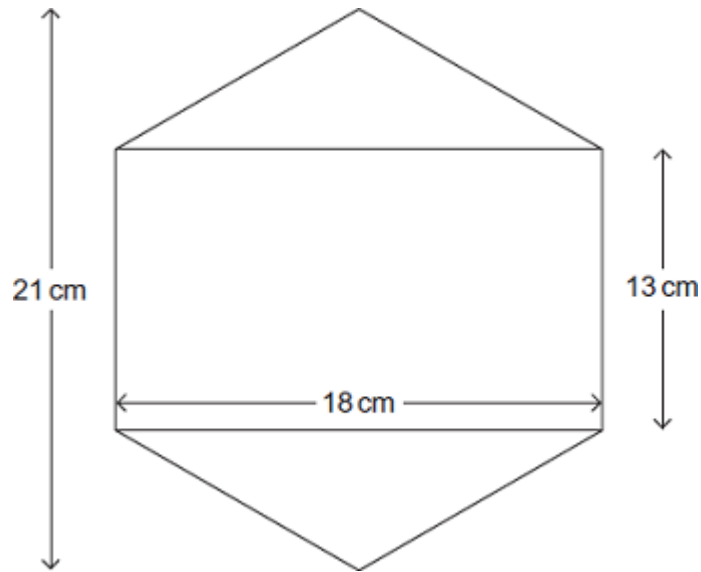
Answer \_\_\_\_\_

(Total 3 marks)

**Q10.**

The hexagon is made from a rectangle and two congruent triangles.

Not drawn accurately



Work out the area of the hexagon.

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Answer \_\_\_\_\_ cm<sup>2</sup>

**(Total 5 marks)**

**Q11.**

Work out the area of a circle of radius 6 m.

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Answer \_\_\_\_\_ m<sup>2</sup>

**(Total 2 marks)**

## Fractions, Decimals and Percentages

**Q1.**

(a) What is  $\frac{1}{5}$  as a percentage? Circle your answer.

1.5%

5%

15%

20%

(1)

(b) What is 0.9 as a percentage? Circle your answer.

0.009%

0.09%

9%

90%

(1)

(Total 2 marks)

**Q2.** There are 20 students. 12 are boys.

What fraction are boys? Circle your answer.

$\frac{2}{3}$

$\frac{2}{5}$

$\frac{3}{5}$

$\frac{3}{4}$

(Total 1 mark)

**Q3.** Circle the decimal that has the same value as  $\frac{4}{5}$

0.04

0.4

0.45

0.8

(Total 1 mark)

**Q4.**

Work out  $\frac{3}{5}$  of 900

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Answer \_\_\_\_\_

(Total 2 marks)

**Q5.** Three shops sell the same washing machine.

**Shop A**



£150 deposit  
plus  
£60 a month for 6 months

**Shop B**



Usual price £600  
20% off

**Shop C**



Usual price £720  
 $\frac{1}{4}$  off

In which shop is the washing machine cheapest? You **must** show your working.

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Answer \_\_\_\_\_

**(Total 5 marks)**

**Q6.** Put these in order starting with the smallest value.

$$\frac{13}{4}$$

$$3\frac{1}{2}$$

$$3.15$$

$$\sqrt{9}$$

You **must** show your working.

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**(Total 3 marks)**

**Q7.**

(a) Write 30% as a fraction.

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Answer \_\_\_\_\_

(1)

(b) Write 80% as a decimal.

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Answer \_\_\_\_\_

(1)

(c) Circle the **two** values that are equivalent to  $\frac{2}{3}$

$\frac{66}{100}$

$0.\dot{6}$

60%

$\frac{66}{99}$

0.6

(2)

(Total 4 marks)

**Q8.**

Write these values in order, starting with the smallest.

$\frac{1}{10}$

0.2

11%

You **must** show your working.

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Answer \_\_\_\_\_

(Total 3 marks)

**Q9.**

Complete the table.

Fraction	Decimal	Percentage
$\frac{1}{4}$	0.25	
$\frac{2}{5}$		40%
	0.9	90%

**(Total 3 marks)**

**Q10.**

Work out 51% of 400

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q11.**

A gym has 275 members.

40% are bronze members.

28% are silver members.

The rest are gold members.

Work out the number of gold members.

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Answer \_\_\_\_\_

**(Total 3 marks)**

**Q12.**

Work out which distance is longer,

20% of 320 miles    or     $\frac{1}{2}$  of 130 miles.

You **must** show your working.

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Answer \_\_\_\_\_

**(Total 4 marks)**

## Ratio

**Q1.** Divide 270 in the ratio 3 : 2 : 1

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

**(Total 3 marks)**

**Q2.** Here is some information about a group of children.

	Boys	Girls
Left-handed	3	8
Right-handed	12	20

(a) Write down the number of left-handed girls to right-handed girls as a ratio.

Give your answer in its simplest form.

\_\_\_\_\_

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

**(1)**

(b) What percentage of the boys are left-handed?

\_\_\_\_\_

\_\_\_\_\_

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

**(2)**

**(Total 3 marks)**

**Q3.** A drink is mixed in the ratio

lemonade : orange : cranberry = 6 : 3 : 2

What fraction is orange? Circle your answer.

$\frac{3}{8}$

$\frac{2}{11}$

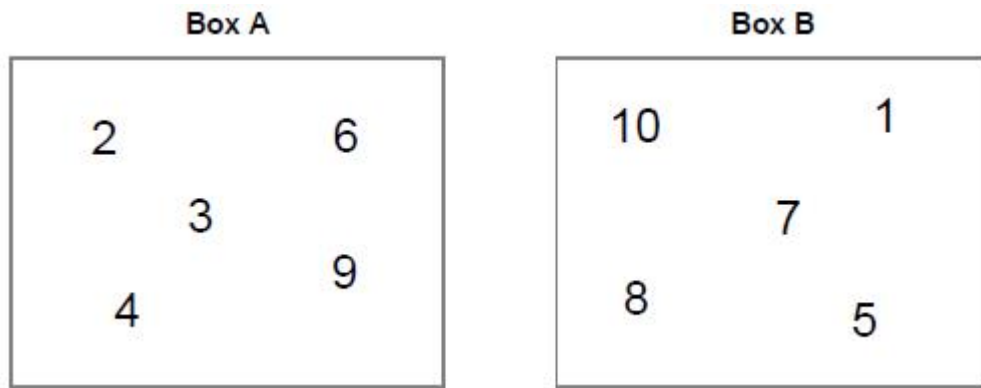
$\frac{3}{11}$

$\frac{6}{11}$

**(Total 1 mark)**



**Q4.**



**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?

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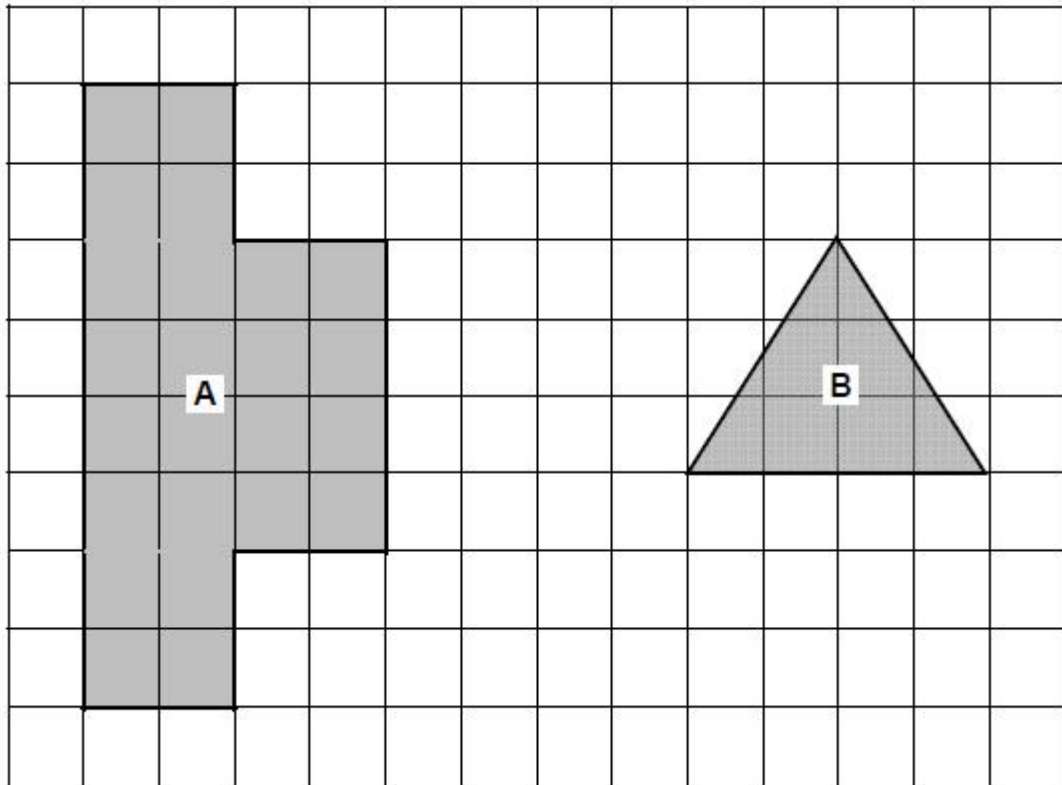
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Answer \_\_\_\_\_ and \_\_\_\_\_

**(Total 2 marks)**

**Q5.**



Work out area of shape A : area of shape B

Give your answer in its simplest form.

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

**(Total 3 marks)**

**Q6.** The table shows the ratio of teachers to children needed for two activities.

	teachers : children
Climbing	1 : 4
Walking	1 : 9

(a) There are 7 teachers to take children climbing.

What is the greatest number of children that can go climbing?

---

Answer \_\_\_\_\_

**(1)**

(b) 49 children want to go walking. What is the smallest number of teachers needed?

\_\_\_\_\_

Answer \_\_\_\_\_

(1)

(Total 2 marks)

**Q7.** Jon and Nik share some money in the ratio 5 : 2

Jon gets £150 more than Nik.

How much money do they share altogether?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Answer £ \_\_\_\_\_

(Total 3 marks)

**Q8.**

A shop makes juice by mixing cranberry and orange in the ratio

cranberry : orange = 1 : 3

1 litre of cranberry costs 60p

1 litre of orange costs 40p

(a) Show that the cost of 20 litres of juice is £9

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(2)

**Q9.**

A builder mixes sand and cement in the ratio 4 : 1

- (a) Altogether he mixes 250 kg

How much sand and cement does he use?

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Sand \_\_\_\_\_ kg

Cement \_\_\_\_\_ kg

(2)

**Q10.**

- (a) Divide £720 in the ratio 5 : 1

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Answer £ \_\_\_\_\_ and £ \_\_\_\_\_

(2)

- (b) Sarah has £135  
Gemma has £70  
Beth has £35

Sarah gives some money to Gemma and Beth.

The ratio of the amount of money Sarah, Gemma and Beth have **now** is 3 : 2 : 1

How much money did Sarah give to Gemma?

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Answer £ \_\_\_\_\_

(4)

(Total 6 marks)

## Equations

**Q1.(a)** Solve  $6x = 54$

\_\_\_\_\_

$x =$  \_\_\_\_\_

(1)

(b) Solve  $3y + 15 = 9$

\_\_\_\_\_

\_\_\_\_\_

$y =$  \_\_\_\_\_

(2)

(c) Solve  $4w + 2 = 2w + 7$

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

$w =$  \_\_\_\_\_

(3)

(Total 6 marks)

**Q2.(a)** Solve  $x - 7 = 18$

\_\_\_\_\_

$x =$  \_\_\_\_\_

(1)

(b) Write an equation which has 8 as its solution.

\_\_\_\_\_

Answer \_\_\_\_\_

(1)

**Q3.**Solve  $8x - 10 = 30$

\_\_\_\_\_

\_\_\_\_\_

$x =$  \_\_\_\_\_

(Total 2 marks)

**Q4.(a)** Simplify  $2a + 3a + 4a$

Answer \_\_\_\_\_ (1)

(b) Solve  $x + 4 = 9$

$x =$  \_\_\_\_\_ (1)

(c) Solve  $3x = 18$

$x =$  \_\_\_\_\_ (1)

(d) Solve  $\frac{x}{10} = 2$

$x =$  \_\_\_\_\_ (1)  
(Total 4 marks)

**Q5.**

In the table,  $a$ ,  $b$  and  $c$  represent numbers.  
The total for each row is given.

Work out the **numbers** for the column totals.

			Row totals	
	$a$	$a$	$a$	12
	$b$	$b$	$a$	24
	$2a$	$2c$	$b$	30
Column totals				

(Total 4 marks)

**Q6.**

(a) Solve  $6x - 5 = 28$

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$x =$  \_\_\_\_\_

(2)

(b) Simplify fully  $3a + 5b - a + 2b$

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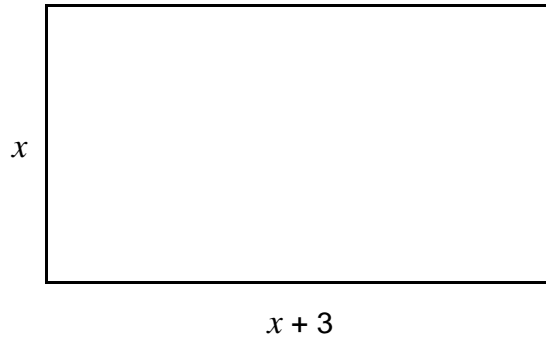
Answer \_\_\_\_\_

(2)

(Total 4 marks)

**Q7.**

The perimeter of the rectangle is 37 cm.



Work out the value of  $x$ .

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$x =$  \_\_\_\_\_ cm

**(Total 3 marks)**

**Q8.**

(a) Solve  $5(x - 2) = 35$

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$x =$  \_\_\_\_\_

**(3)**

(b) Solve  $9y + 1 = 6y + 13$

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$y =$  \_\_\_\_\_

**(3)**



**Q9.**

Solve  $8(x + 3) = 36$

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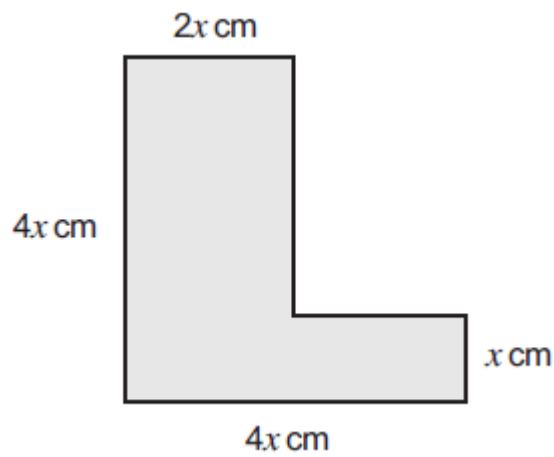
$x =$  \_\_\_\_\_

**(Total 3 marks)**

**Q10.**

The perimeter of this L-shape is 56 cm.

Not drawn accurately



Set up and solve an equation to work out the value of  $x$ .

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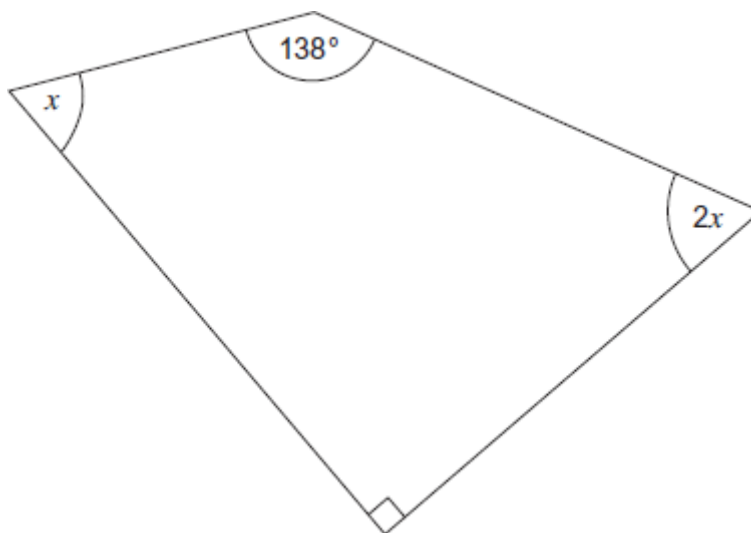
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$x =$  \_\_\_\_\_

**(Total 4 marks)**

**Q11.** Work out the value of  $x$ .



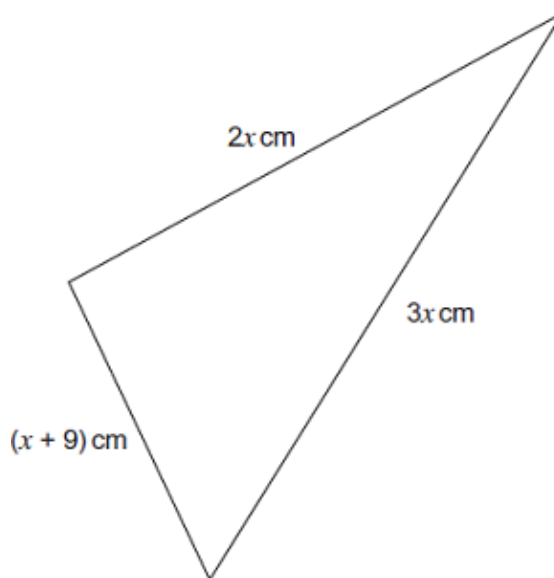
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Answer \_\_\_\_\_ degrees  
(Total 4 marks)

**Q12.** The perimeter of this triangle is 48 cm.



Work out the value of  $x$ .

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$x =$  \_\_\_\_\_ cm

(Total 4 marks)

## Probability

### Q1.

These cards are put into a hat.



One card is chosen at random.

- (a) What is the probability of choosing the card with the number 7?

Answer \_\_\_\_\_ (1)

- (b) What is the probability of choosing a card that has a digit 3 on it?

Answer \_\_\_\_\_ (1)

- (c) What is the probability of choosing a card that does **not** have a digit 3 on it?

Answer \_\_\_\_\_ (1)

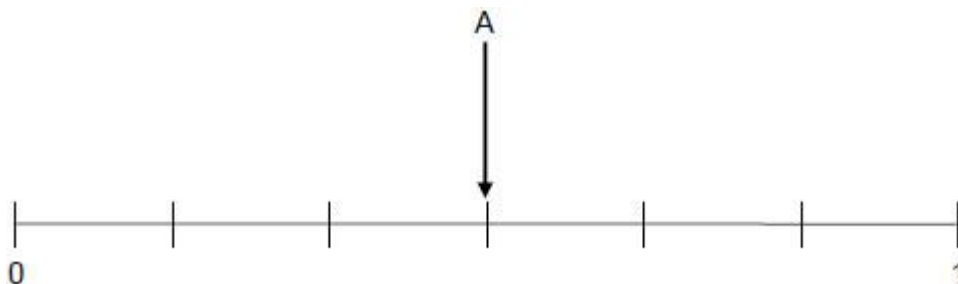
**(Total 3 marks)**

### Q2.

Here are three events for an ordinary fair dice.

- A Roll an odd number
- B Roll a number greater than 6
- C Roll an even number less than 3

Draw and label arrows to show the probabilities of events B and C on the probability scale.

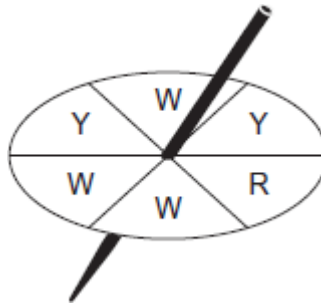


**(Total 2 marks)**

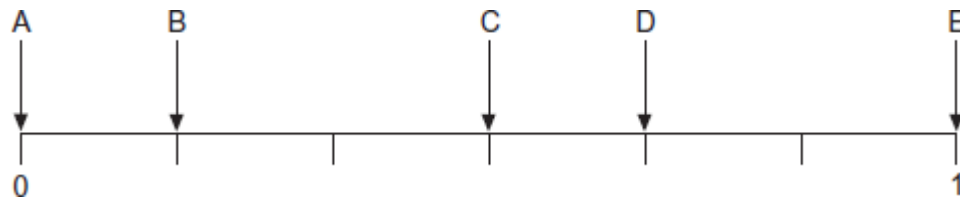
**Q3.**

Here is a fair 6-sided spinner.

One section is red (R), two sections are yellow (Y), and three sections are white (W).



Five probabilities are shown on this probability scale.



(a) Circle the letter that matches each of these events.

(i) The spinner lands on red.

A                      B                      C                      D                      E

(1)

(ii) The spinner lands on white.

A                      B                      C                      D                      E

(1)

(iii) The spinner does **not** land on yellow.

A                      B                      C                      D                      E

(1)

(iv) The spinner lands on purple.

A                      B                      C                      D                      E

(1)

**Q4.**

- (a) A bag contains 20 counters.  
8 of the counters are yellow.

A counter is picked at random.

What is the probability that it is yellow?  
Give your answer as a fraction in its simplest form.

Answer \_\_\_\_\_

(2)

- (b) A different bag contains only black and white counters.  
The probability that a counter is black is 0.14

A counter is picked at random.

What is the probability that it is white?

Answer \_\_\_\_\_

(2)

(Total 4 marks)

**Q5.**

An ordinary fair dice is rolled 120 times.

How many times would you expect to roll a 6?

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Answer \_\_\_\_\_

(Total 2 marks)

**Q6.**

Sweets come in four flavours.

<b>Flavour</b>	Lime	Orange	Melon	Cherry
<b>Probability</b>	0.2	0.15	0.3	

- (a) What is the probability that a sweet is **cherry** flavour?

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Answer \_\_\_\_\_

(2)

- (b) What is the probability that a sweet is **lime** or **melon** flavour?

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Answer \_\_\_\_\_

(1)

- (c) There are 200 sweets altogether.

How many are **orange** flavour?

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Answer \_\_\_\_\_

(2)

(Total 5 marks)



**Q8.**

200 raffle tickets are sold.  
The tickets are numbered 1 to 200.  
There is one prize.

- (a) Harry has one ticket.

What is the probability that he wins?

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Answer \_\_\_\_\_

**(1)**

- (b) Kate has ticket numbers 51 to 70.

What is the probability that she wins?

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Answer \_\_\_\_\_

**(2)**

**(Total 3 marks)**



## Averages

**Q1.** Here are seven numbers.

13      6      12      7      6      4      8

(a) Work out the range of the seven numbers. Circle your answer.

5                  6                  7                  8                  9

(b) What is the mode of the seven numbers? Circle your answer.

5                  6                  7                  8                  9

**(Total 2 marks)**

**Q2.** Here is a list of numbers.

0                  3                  5                  7                  12                  29

(a) Write down **three** numbers from the list with a median of 7.

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

(b) Write down **three** numbers from the list with a range of 7.

\_\_\_\_\_  
\_\_\_\_\_

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

(c) Find **three** numbers from the list with a mean that is a whole number.

\_\_\_\_\_  
\_\_\_\_\_

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

(d) Find **three** numbers from the list with the range double the median.  
Write down the values of the range and median.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

Range = \_\_\_\_\_ Median = \_\_\_\_\_

**(3)**

**(Total 7 marks)**

**Q3.** Six whole numbers have

- a median of 10
- a mode of 11
- a range of 4

Work out a possible set of six numbers. Write the numbers in order.

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Answer \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

**(Total 3 marks)**

**Q4.** Lilly rolls four ordinary six-sided dice.

She records the numbers rolled.

The mode of the numbers is one more than the median.

Work out a possible set of four numbers she could have rolled.

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q5.** Here are five numbers.

5            9            10            7            9

(a) What is the mode?

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Answer \_\_\_\_\_

**(1)**

(b) Show clearly that the median is 9.

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**(1)**

**(Total 2 marks)**

**Q6.**A, B and C are sets of three cards.

- (a) Set B has the same **total** as Set A. Set B has the same **median** as Set A.

Complete the cards in Set B.

Set A	12	18	15
Set B	20		

(2)

- (b) Set C has the same **total** as Set A.  
Set C has the same **range** as Set A.

Complete the cards in Set C.

Set A	12	18	15
Set C	17		

(2)

(Total 4 marks)

**Q7.**Mrs Shah buys pepper plants. Here are the numbers of peppers she grows from 10 plants.

10    13    11    10    12    15    13    12    11    10

- (a) Work out the median.

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

- (b) Work out the mean.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_

(3)

- (c) Mrs Shah buys some more pepper plants.  
She says,

“On average, I should get about 12 peppers from each plant.”

Give a reason why her data shows she is correct.

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(1)

(Total 6 marks)

**Q8.**

Here are nine numbers.

23 25 23 31 20 25 21 24 25

- (a) Work out the median.

---

Answer \_\_\_\_\_

(2)

- (b) Write down the mode.

Answer \_\_\_\_\_

(1)

(Total 3 marks)

**Q9.**

- (a) Lilly rolls four ordinary six-sided dice.

She records the numbers rolled.

The mode of the numbers is one more than the median.

Work out a possible set of four numbers she could have rolled.

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Answer \_\_\_\_\_

(2)

- (b) Meg has one ordinary six-sided dice.  
She rolls it 50 times and records each score in this table.

Score	Frequency	
1	10	
2	7	
3	9	
4	5	
5	8	
6	11	

Work out the mean score.

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Answer \_\_\_\_\_

(3)

(Total 5 marks)

**Q10.**

Class A had a spelling test of ten words.  
The table shows their marks.

**Class A**

Mark	Frequency	
5	4	
6	2	
7	8	
8	10	
9	6	

- (a) How many students are in Class A?

---

Answer \_\_\_\_\_

(1)

(b) Write down the range of the marks.

\_\_\_\_\_

Answer \_\_\_\_\_

(1)

(c) Show that the mean mark is 7.4

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(3)

(d) Class B had the same test.

The range of marks for Class B is 6

The mean mark for Class B is 4.3

Compare the marks of Class A and Class B.

Comparison 1 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Comparison 2 \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(2)

(Total 7 marks)

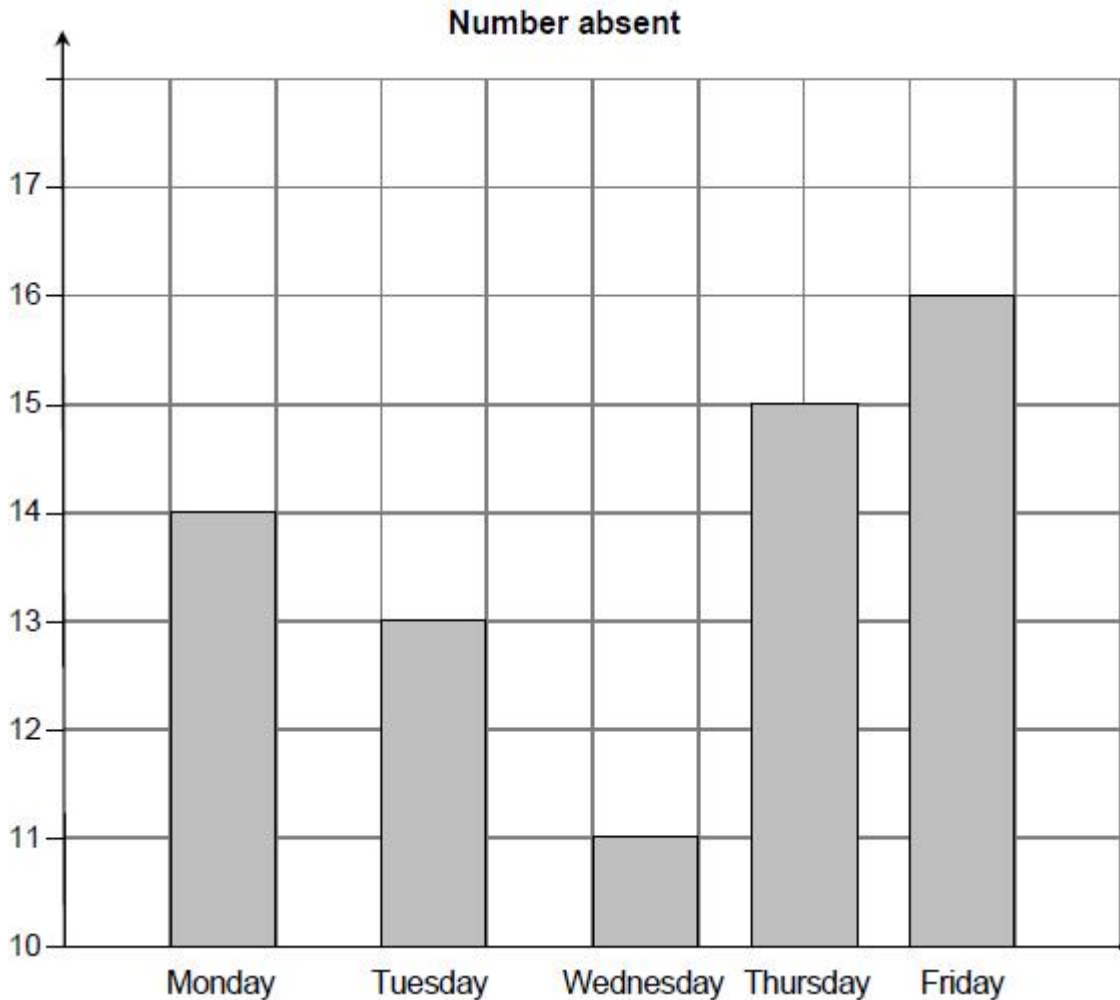
## Graphs and Charts

**Q1.**

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.

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

\_\_\_\_\_

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

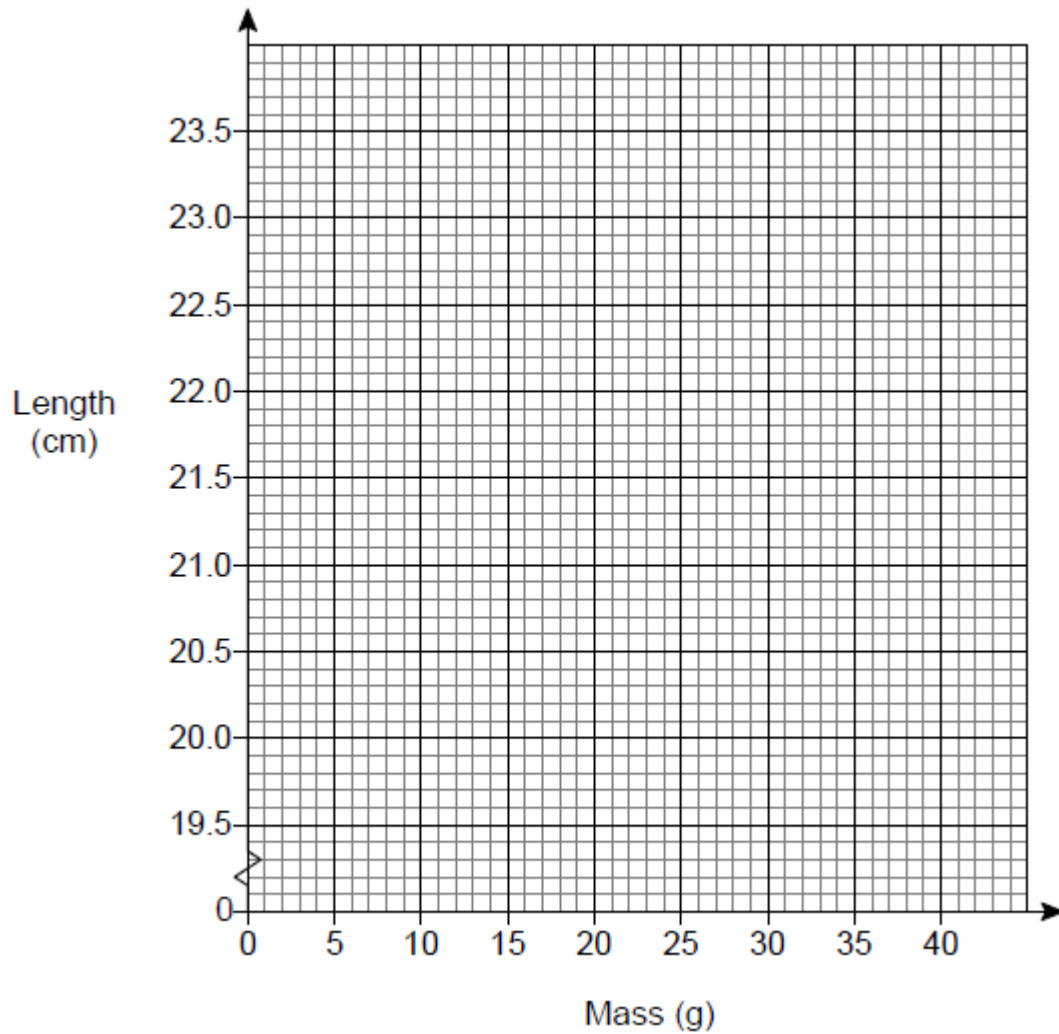
\_\_\_\_\_

**(Total 2 marks)**

**Q2.** In an experiment, different masses are hung on a spring.  
The length of the spring is measured for each mass.

<b>Mass (g)</b>	10	20	30	40
<b>Length (cm)</b>	20.8	21.6	22.4	23.2

(a) Draw a graph to show the length of the spring for masses from 10 g to 40 g



(2)

(b) Estimate the length of the spring with no mass hung on it.

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

(1)

(c) How much longer is the spring with a 35 g mass than with a 15 g mass?

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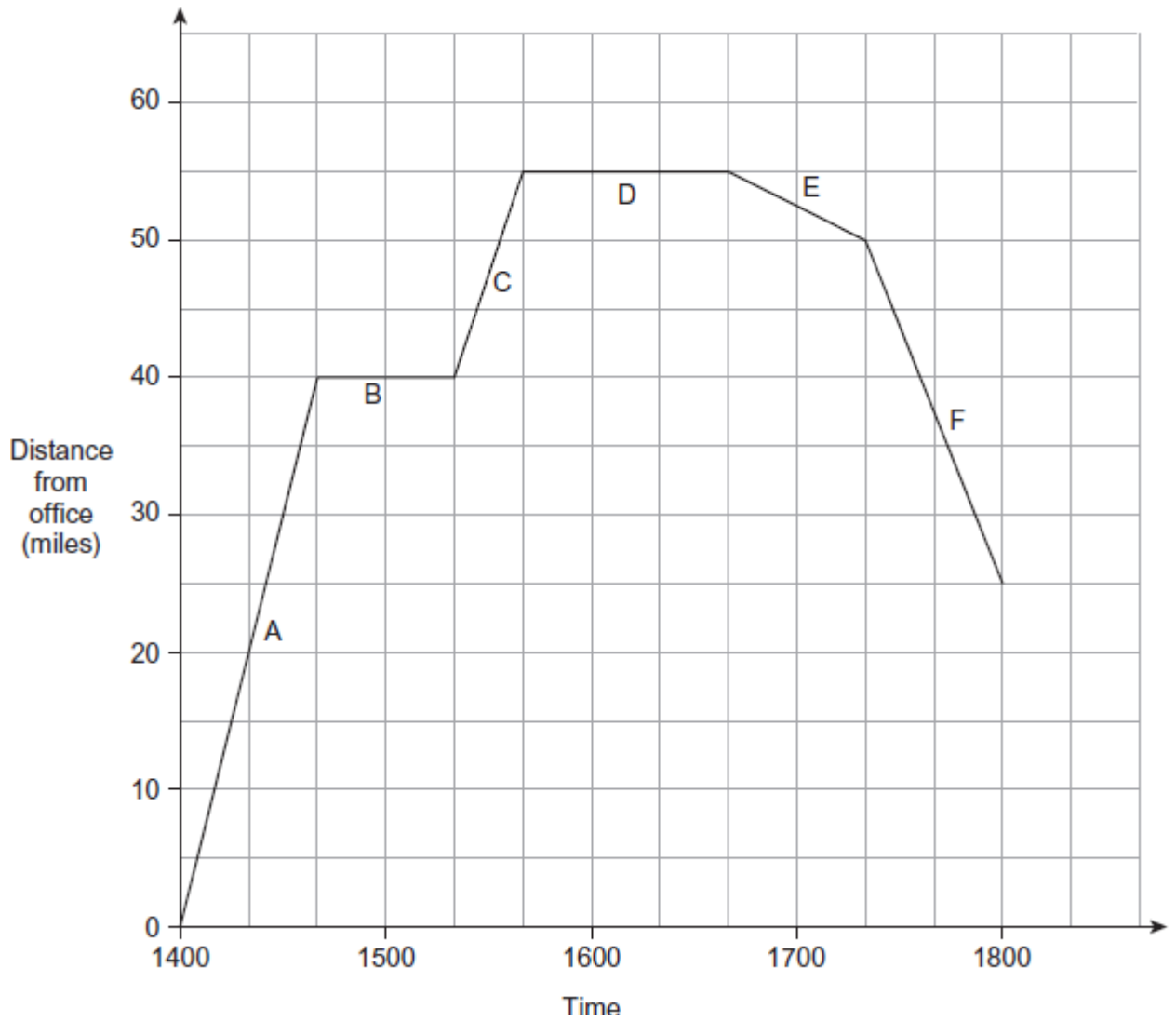
Answer \_\_\_\_\_ cm

(2)

(Total 5 marks)



**Q3.** Ruth left her office at 1400. She drove to two meetings and then drove home.



(a) How many minutes was she stopped altogether?

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Answer \_\_\_\_\_ minutes

(1)

(b) How many miles did she drive altogether?

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Answer \_\_\_\_\_ miles

(1)

(c) On which part of the journey was her speed the fastest?  
Circle your answer.

A                      C                      E                      F

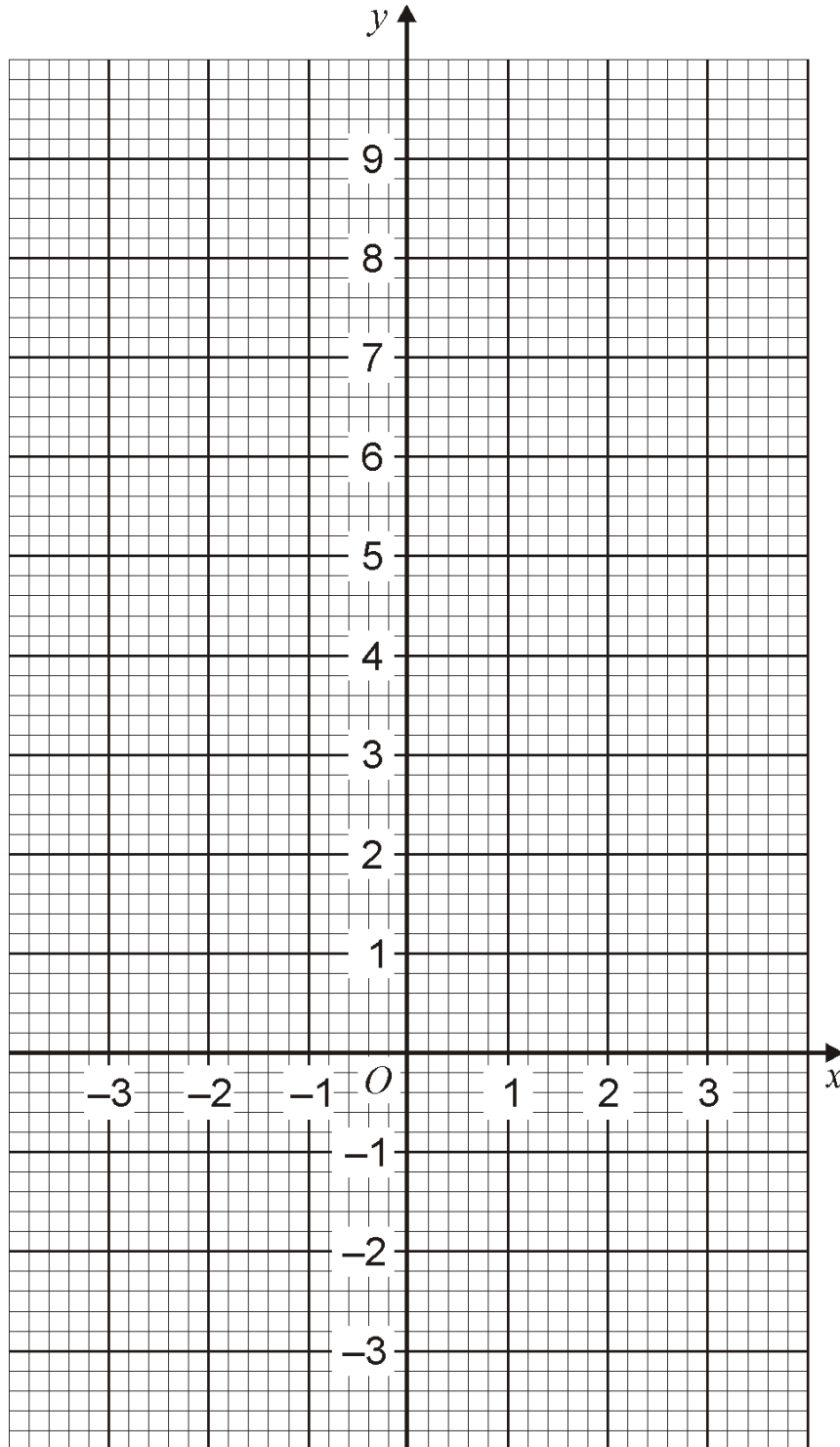
(1)

(Total 3 marks)

**Q4.**

Use this table of values to draw the graph of  $y = 2x + 3$  for values of  $x$  from  $-3$  to  $3$

$x$	$-3$	$0$	$3$
$y$	$-3$	$3$	$9$



**(Total 2 marks)**

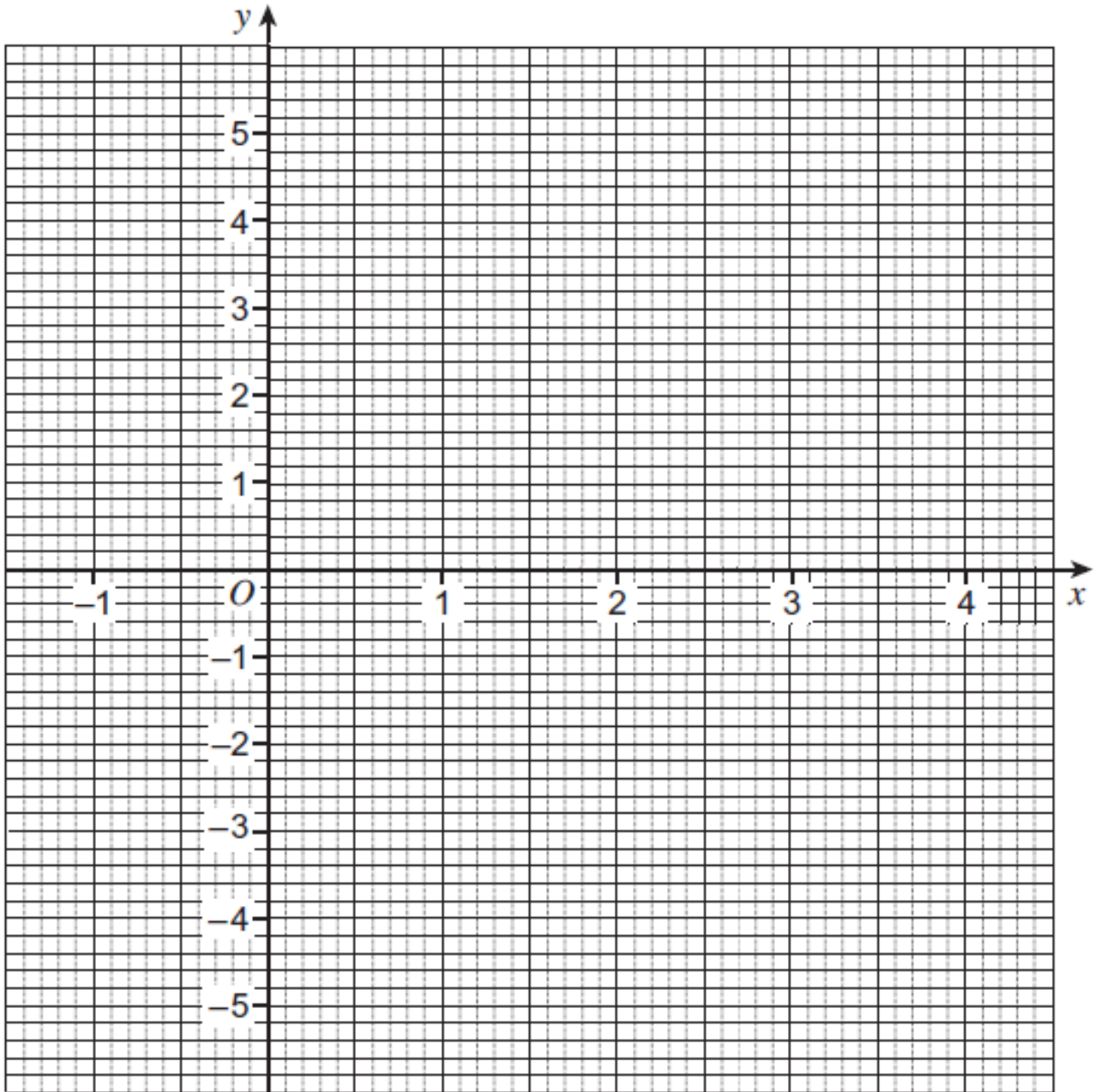
**Q5.**

(a) Complete the table of values for  $y = 2x - 3$

$x$	-1	0	1	2	3	4
$y$		-3		1		5

(2)

(b) On the grid draw the graph of  $y = 2x - 3$  for values of  $x$  from -1 to 4.



(2)

(Total 4 marks)

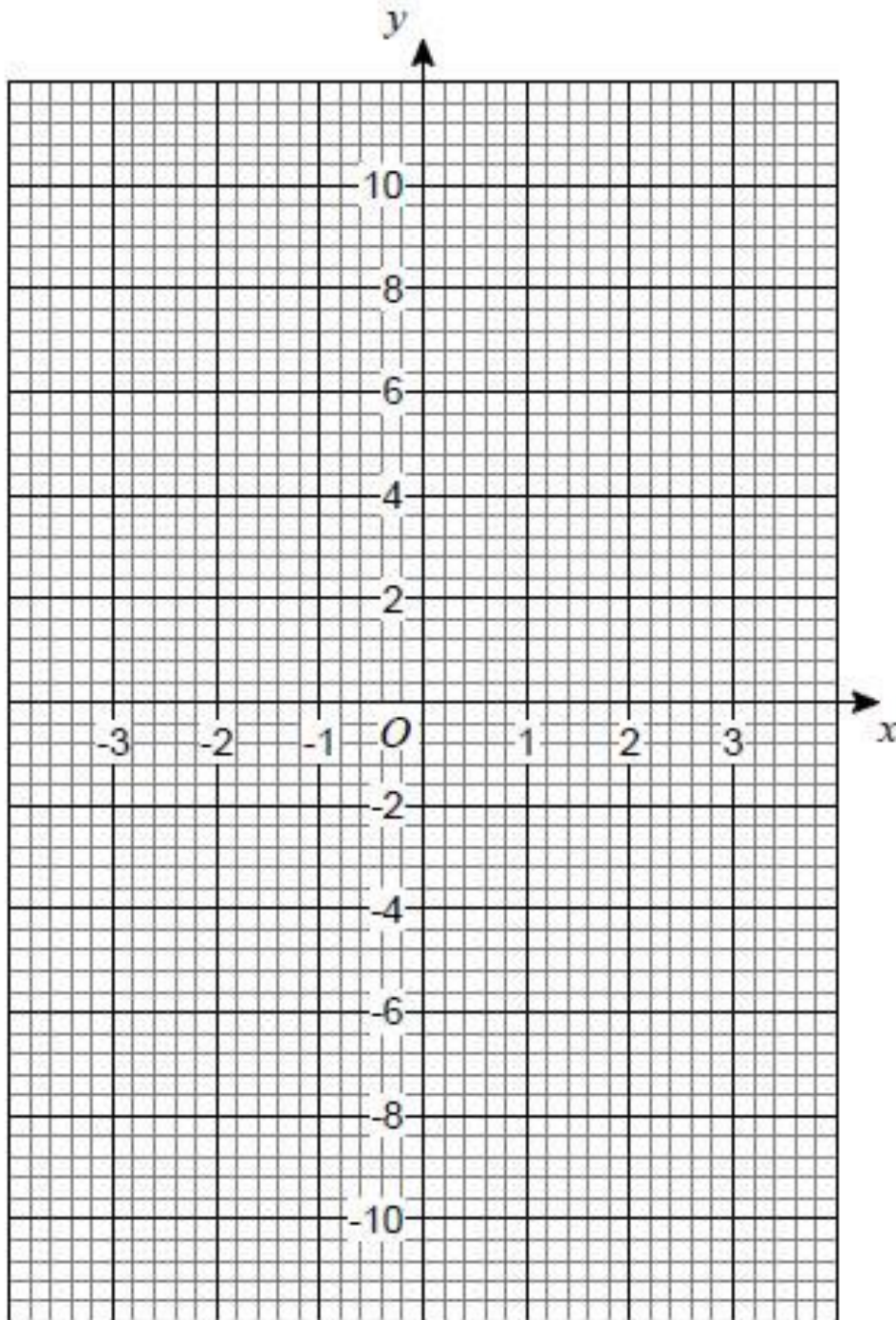
**Q6.**

(a) Complete the table for  $y = 3x + 1$

$x$	-3	-2	-1	0	1	2	3
$y$	-8		-2		4		

(2)

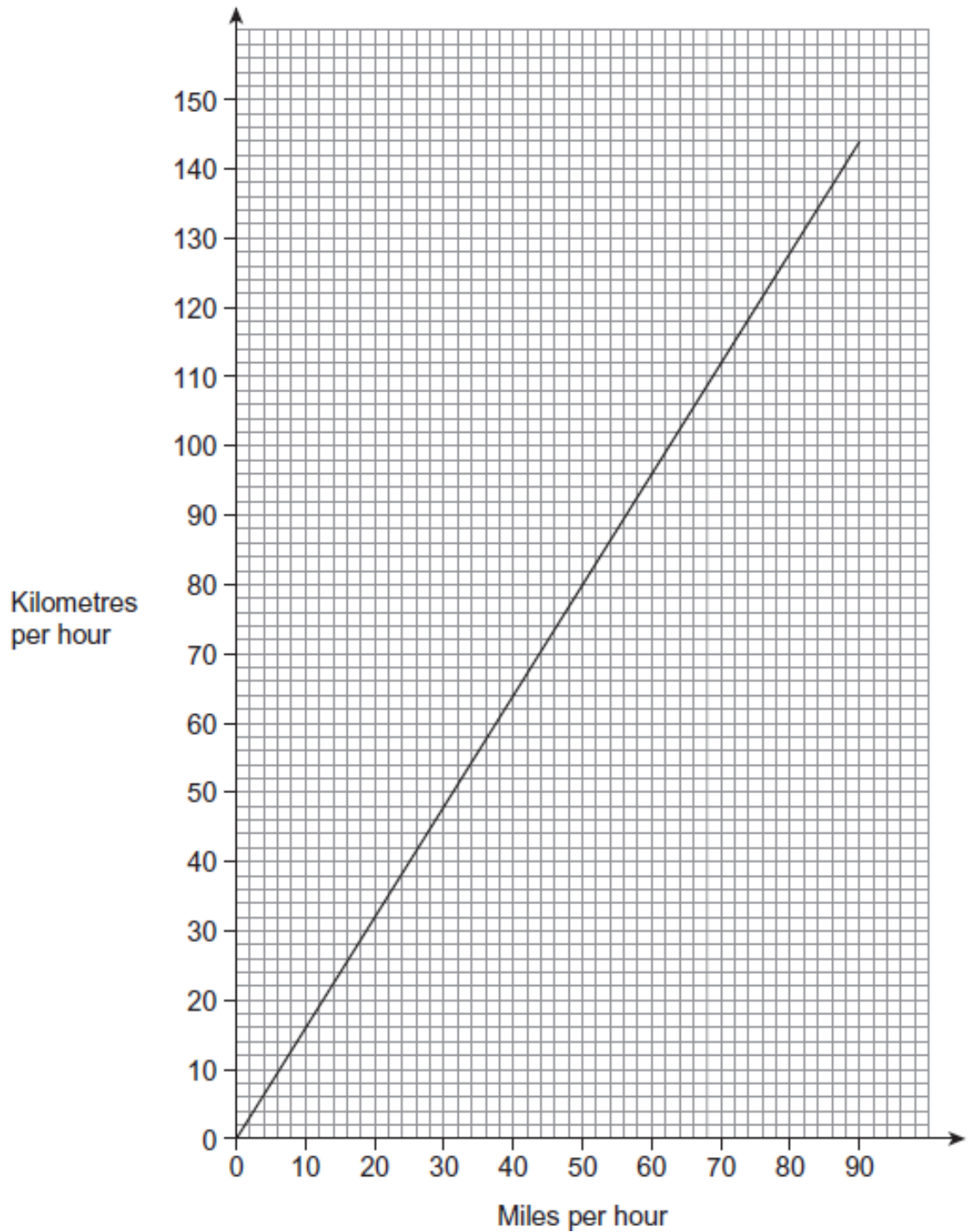
(b) On the grid draw the graph of  $y = 3x + 1$  for values of  $x$  from -3 to 3



(2)

**Q7.**

A conversion graph for speeds is shown.



- (a) In France the motorway speed limit is 130 kilometres per hour.  
In the UK the motorway speed limit is 70 miles per hour.

In which country is the motorway speed limit higher?  
You **must** show your working, which may be on the graph.

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Answer \_\_\_\_\_

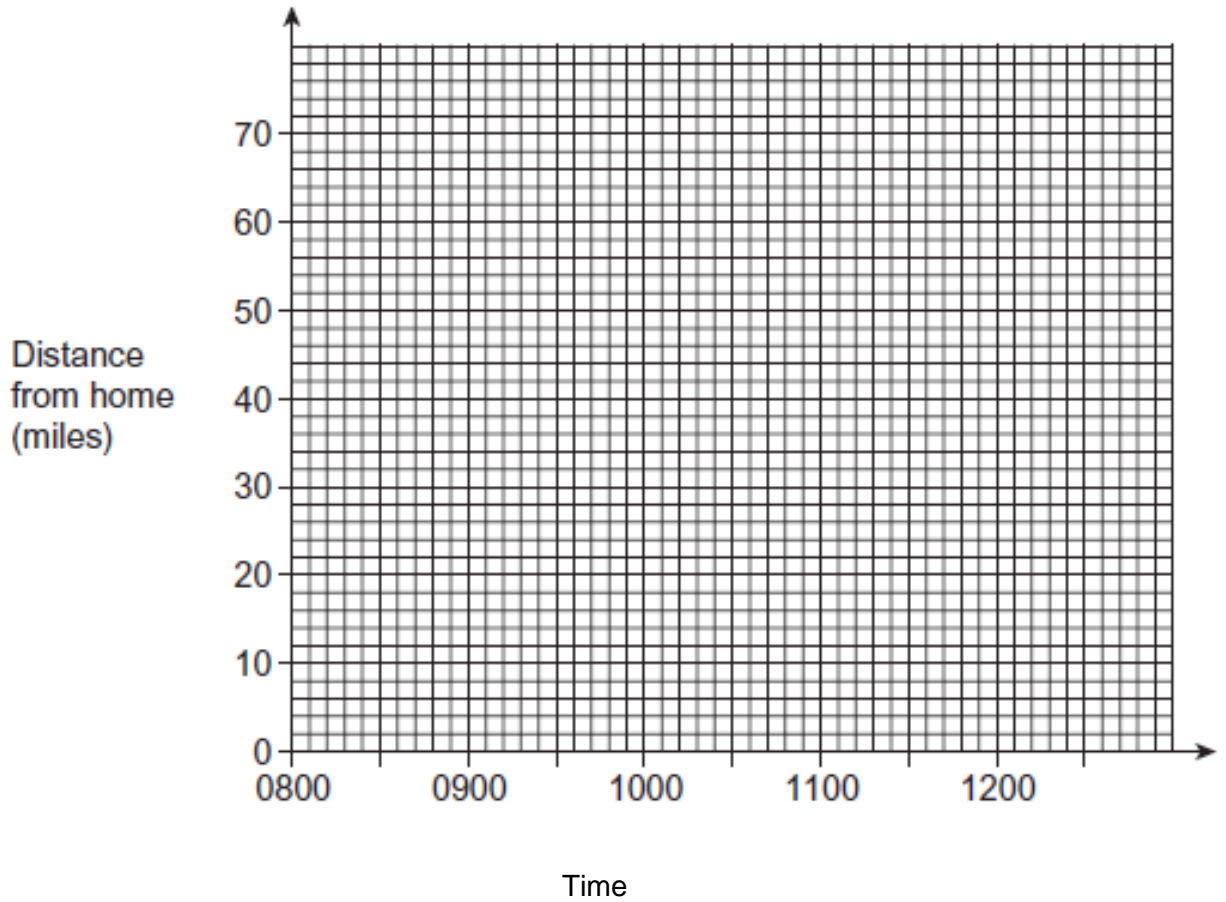
**Q8.**

Dan leaves home at 0800.

He drives 60 miles from home in the first 90 minutes.

He stops for 30 minutes.

He then drives home at an average speed of 50 mph.



- (a) Draw a distance-time graph to show Dan's journey.

(3)

- (b) A TV programme starts at 1130.

Does Dan get home in time for the start?  
Show how you decide.

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(1)

(Total 4 marks)