Version 1.1

Centre Number					Candidate Number					

Surname

Other Names

Candidate Signature

AQA / General Certificate of Secondary Education
Foundation Tier

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

Time allowed
- 1 hour 45 minutes

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top 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.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 105.
- The quality of your written communication is specifically assessed in questions 3, 4, 14 and 18.
  These questions are indicated with an asterisk (✳)
- You may ask for more answer paper and graph paper.
  These must be tagged securely to this answer booklet.
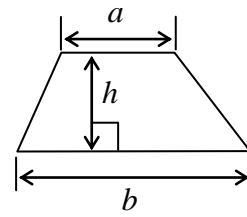
Advice
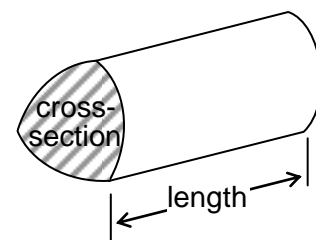- In all calculations, show clearly how you work out your answer.

4365/2F

Formulae Sheet: Foundation Tier

Area of trapezium = $\frac{1}{2}(a + b)h$

Volume of prism = area of cross-section $\times$ length

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

1   A supermarket advertises sale offers.

1 (a)   Darren wants three tins of baked beans.

> Baked Beans
>
> Normal Price 57 p
>
> Offer: Buy two get third free

How much should he pay?

....

....

Answer £ .... *(2 marks)*

1 (b)   Steph wants two loaves.

> Bread
>
> Normal Price £1.08
>
> Offer: Buy two loaves and get 2nd for half price

How much should she pay?

....

....

Answer £ .... *(2 marks)*

1 (c)   Pat wants two cartons of milk.

> Milk (4 litre carton)
>
> Normal Price £1.64
>
> Offer: Buy two for £2.50

How much will she save using the offer?

....

....

Answer £ .... *(2 marks)*

6

Turn over ▶

2   *A*, *B*, *C* and *D* are four points on a circle centre *O*.
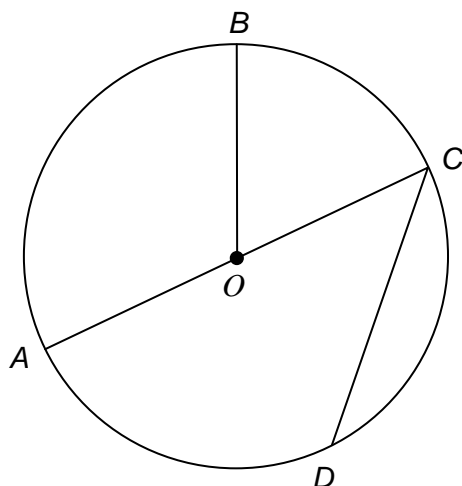
2 (a)   Here are five words that are used with circles.

circumference   **radius**   **chord**   **diameter**   **sector**

Use **one** of these words to complete the following sentences.

2 (a) (i) The straight line *AC* is a .... of the circle.

(1 mark)

2 (a) (ii) The straight line *CD* is a .... of the circle.

(1 mark)

2 (a) (iii) The straight line *OB* is a .... of the circle.

(1 mark)

2 (b)   On the diagram below draw a tangent to the circle at point *A*.
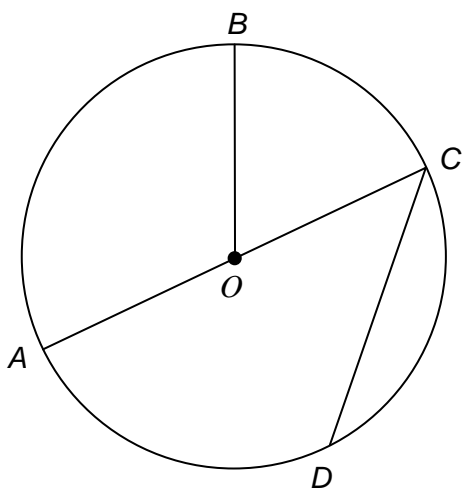
(1 mark)

✳ **3** Greg goes shopping with £20.

He spends £5.60 on his lunch.

He needs £1.30 for his bus fare.

He sees this advert for shoes.

Shoes

Normal Price £15

Sale price 10% off normal price

Does he have enough money to buy them?

You **must** show your working

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(4 marks)

Turn over for the next question

8

✳ **4**   Kia is sorting shapes.
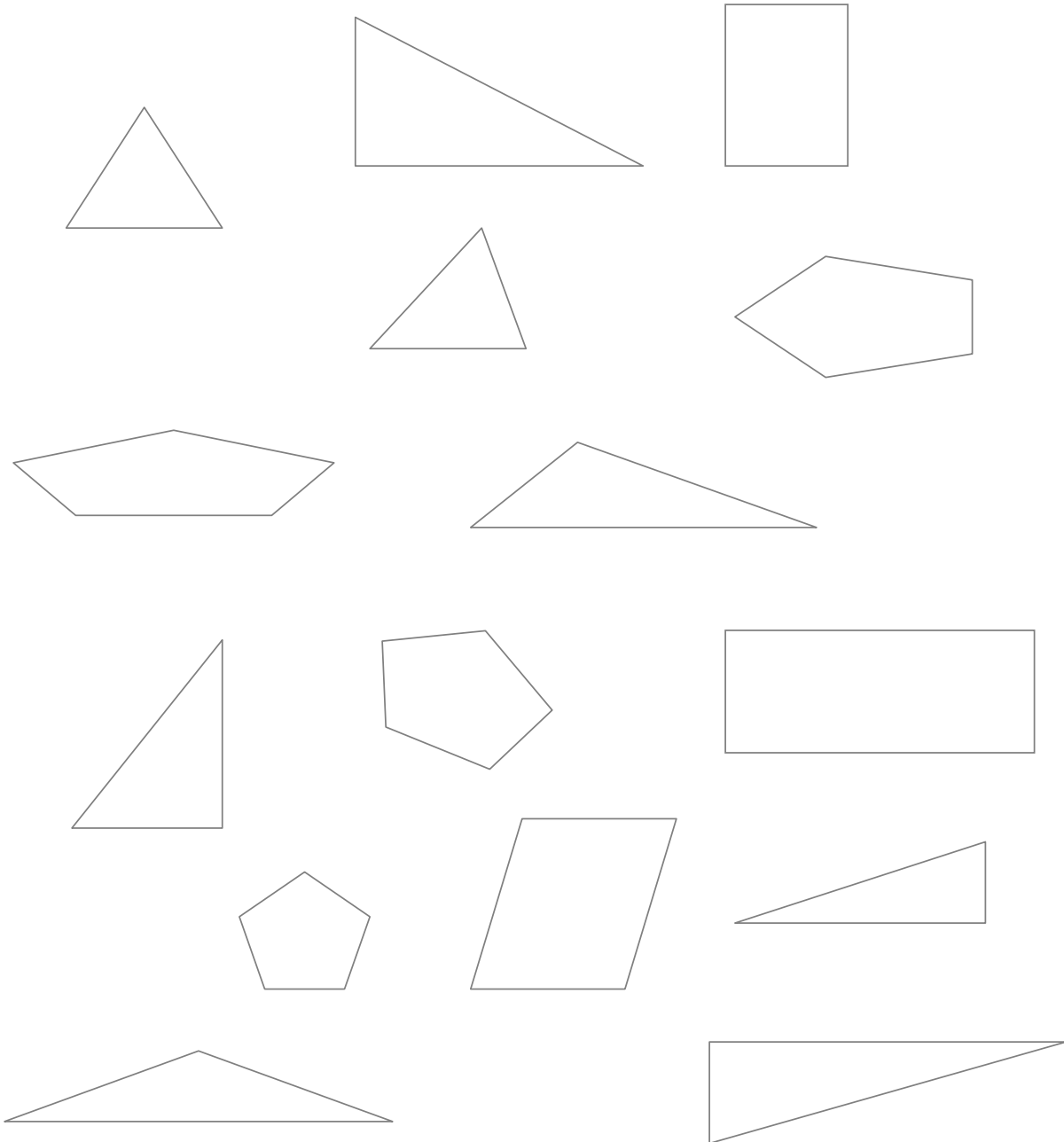
4 (a)   Complete the tally table.

	Tally	Frequency
Triangles		
Quadrilaterals		
Pentagons		

(3 marks)

4 (b)   On the grid draw a suitable diagram to show this information.

(3 marks)

Turn over for the next question

6
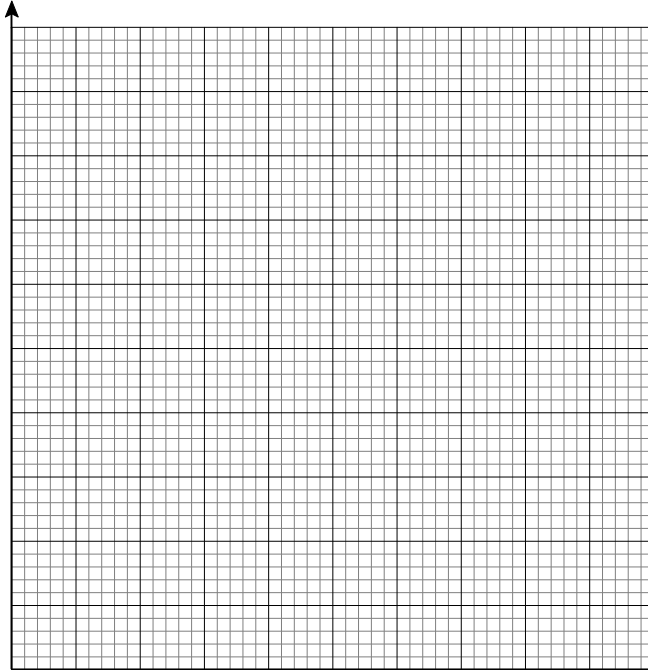
Turn over ▶

5   A regular octagon is split into triangles A, B, C, D, E and F.
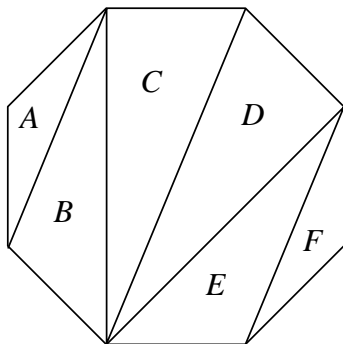
5 (a)   Complete this list of pairs of congruent triangles.

C and D

B and   ....

A and   ....

(2 marks)

5 (b)   Triangles A and B make a trapezium as shown.
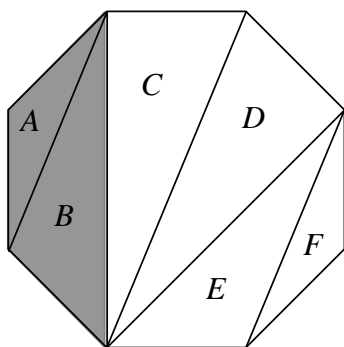
Which of the following triangles also make a trapezium?
Circle your answers.

B and C   C and D   D and E   E and F

(2 marks)

5 (c)   Shade **two** triangles in this diagram to make a kite.
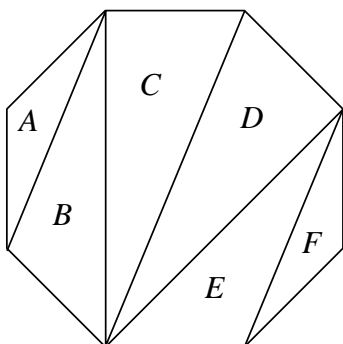
(1 mark)

6 This clock face has been divided into three parts with two lines.

The totals of the numbers in each part are 38, 25 and 15.
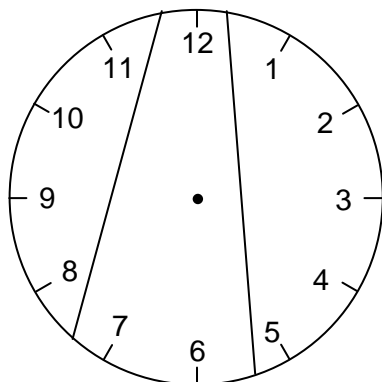
Divide the clock below into three parts with two lines so that the totals of the numbers in the three parts are equal.

Show your working clearly.

....

....
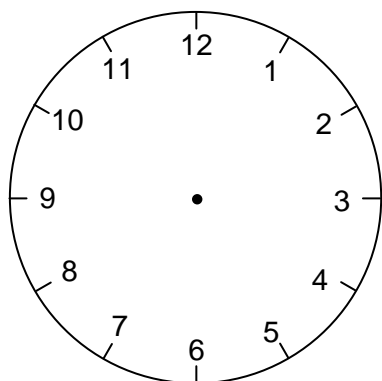
(2 marks)

Turn over for the next question

7

7   A rectangular picture frame is made using four pieces of wood.
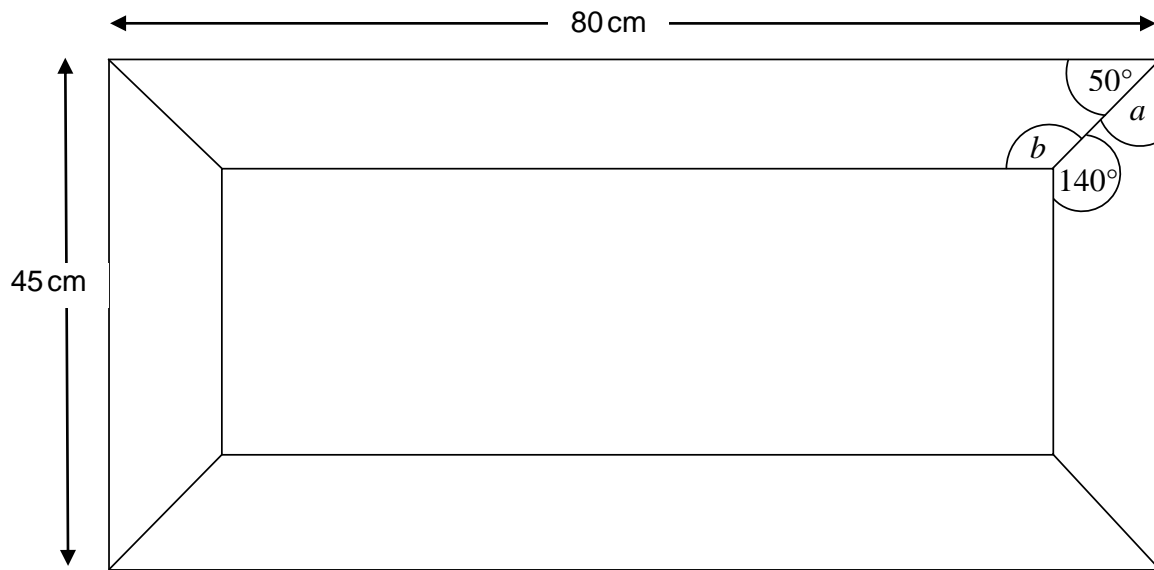
7 (a) (i)   Work out angle a.

....

....

Answer .... degrees *(1 mark)*

7 (a) (ii) Work out angle b.

....

....

Answer .... degrees *(2 marks)*

7 (b)   Work out the total length of the four pieces of wood needed to make the picture frame.

Give your answer in metres.

Show your working clearly.

....

....

....

Answer .... metres *(3 marks)*

8 (a) Shade **one** more square to make a shape with one line of symmetry.
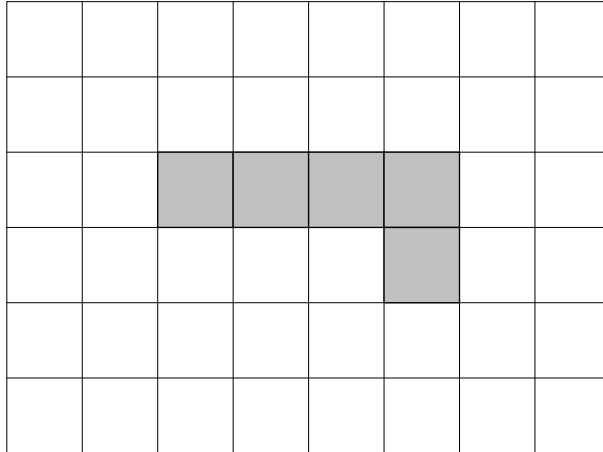
(1 mark)

8 (b) Shade **one** more square to make a different shape with one line of symmetry.
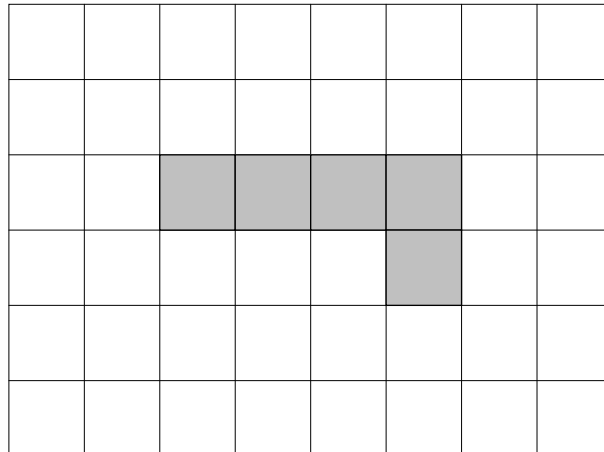
(1 mark)

8 (c) Shade **one** more square to make a shape with rotational symmetry of order 2.

(1 mark)

9

Turn over ▶
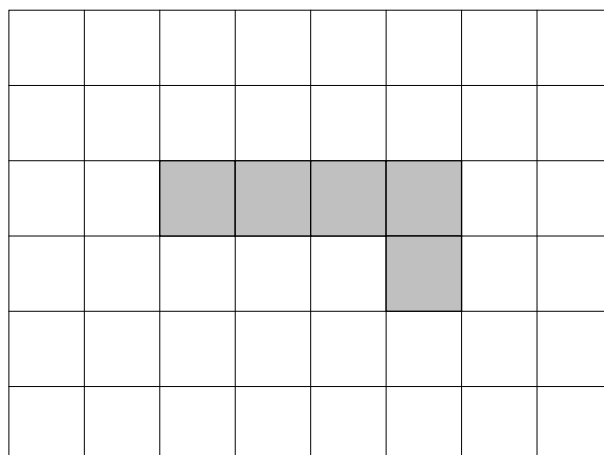
9   Harry's garden is a rectangle measuring 9 metres by 6 metres.
He decides to make one-third of the area into a vegetable plot and the rest into a lawn.

9 (a)   On the grid draw accurately a possible design for Harry's garden.

Use the scale 1 centimetre represents 1 metre.

Label your design.

1 cm represents 1 m

(4 marks)

9 (b)   Lawn turf (grass) costs £2.50 per square metre.

How much will it cost Harry to turf his new lawn?

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....

....

....

Answer £ .... *(3 marks)*

10 (a)   Use your calculator to work out $\sqrt{7.2}$

Write down all the figures in your calculator display.

Answer .... *(1 mark)*

10 (b)   Use your calculator to work out 7.2^3

....

Answer .... *(1 mark)*

11 (a)   Work out the value of $2x + y$ when $x = 3$ and $y = 8$

....

Answer .... *(1 mark)*

11 (b)   Simplify $6a + 7b - 2a + b$

....

....

Answer .... *(2 marks)*

11 (c)   Solve the equation $5w + 6 = 9 - w$

....

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....

Answer $w =$ .... *(3 marks)*

Turn over for the next question

15

12 Two companies A and B sell pens.

The graph shows how much each company charges.
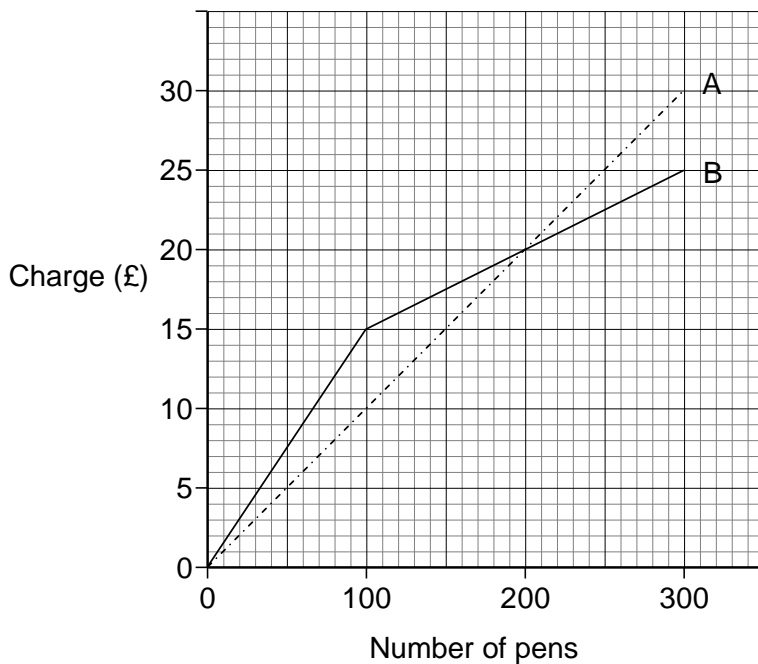
12 (a) (i) How much does company B charge for 100 pens?

Answer £ .... *(1 mark)*

12 (a) (ii) Which company would you buy 100 pens from?

Give a reason for your answer.

....

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....

(2 marks)

12 (b)   Two shops, The Pen Shop and News Box, buy some pens.

12 (b) (i)   The Pen Shop spends £25 on pens.

How many more pens can they buy from company B than company A?

....

....

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....

Answer .... *(2 marks)*

12 (b) (ii)   Buying 200 pens from Company A or Company B costs the same amount.

News Box buys 200 pens.
They sell the pens for 25 pence each.

How many pens do they need to sell to cover the cost of buying the pens?

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Answer .... *(3 marks)*

Turn over for the next question

8

13 The diagram shows a bus route from A to H.
Each letter is a bus stop.

A　B　C　D　E　F　G　H
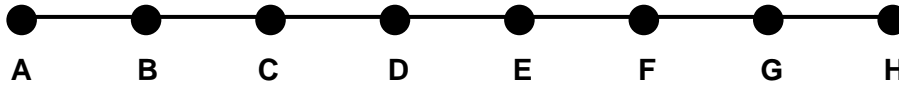
The bus starts from A where 5 passengers get on.
At B, 1 passenger gets off and 7 get on.
At C, 2 passengers get off and 9 get on.
At D, 3 passengers get off and 11 get on.
This pattern continues until G.

How many passengers are on the bus when it arrives at H?

....

....

....

....

Answer .... *(3 marks)*

✳**14** *ABCD* is a square.

PQRS is an oblong.

Not drawn accurately

A　　8 cm　　*B*

$(x + 3)$ cm

D　　　　　*C*

P　　　　　*Q*

$(x - 1)$ cm

S　　　　　*R*
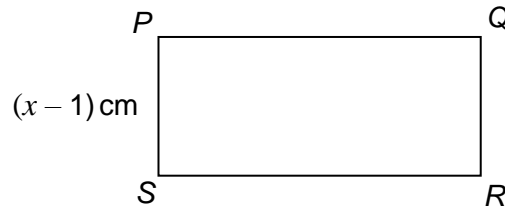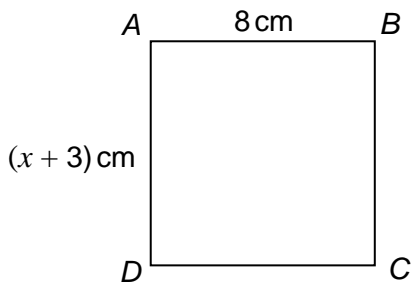
The oblong and the square have the same perimeter.

Work out the length of *PQ*.

Show clearly how you work out your answer.

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Answer .... cm *(4 marks)*

15 ABC is an isosceles triangle with AB = AC

BC is parallel to AD and angle BCA = 55°
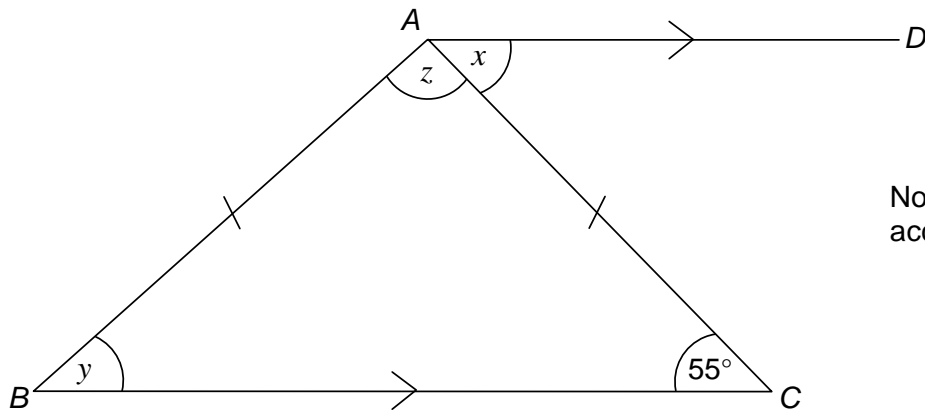
Not drawn
accurately

Work out the sizes of the angles marked x, y and z.

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....

Answer $x =$ .... degrees

$y =$ .... degrees

$z =$ .... degrees

(4 marks)

11

Turn over ▶

16 Ronan is designing a game.

He has two sets of discs laid face down on a table.

The first set of five discs are labelled 1, 3, 5, 7, 9

The second set of four discs are labelled 2, 4, 6, 8

Players turn over one disc, at random, from each set and add the numbers together.

16 (a) Complete the table to show **all** the possible totals.

	1	3	5	7	9
2	3	5	7		
4	5				
6					
8					

(2 marks)

16 (b) What is the probability of getting a total less than six?

....

Answer .... *(1 mark)*

16 (c) Ronan uses the game to raise money for charity.

Each player pays 20p to play the game.

If a player gets a total of exactly 13 they win a bar of chocolate.

It costs Ronan 50p for each bar of chocolate.

If 100 people play the game, show that Ronan should expect to raise £12.50 for charity.

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(4 marks)

17 In a science experiment Sita adds weights to a spring.

Each time she adds a weight she measures the length of the spring.

Her results are shown in the table.

Weight (g)	Length of Spring (cm)
20	165
30	180
40	195
50	210

17 (a) What is the length of the spring for a weight of 45 g?

....

....

....

Answer .... cm *(2 marks)*

17 (b) Work out the length of the spring with no weight on it.

....

....

....

Answer .... cm *(2 marks)*

Turn over for the next question

11

∗ **18 (a)** The basic monthly charge for a mobile phone contract is £35.

This includes:

Option 1   300 free minutes of calls and 100 free texts

or

Option 2   100 free minutes of calls and unlimited free texts.

All other calls are charged at 6 p per minute.
Extra texts are charged at 10 p each.

On average, each month, Matt makes 500 minutes of calls and sends 250 texts.

Which option should he choose?
You **must** show your working.

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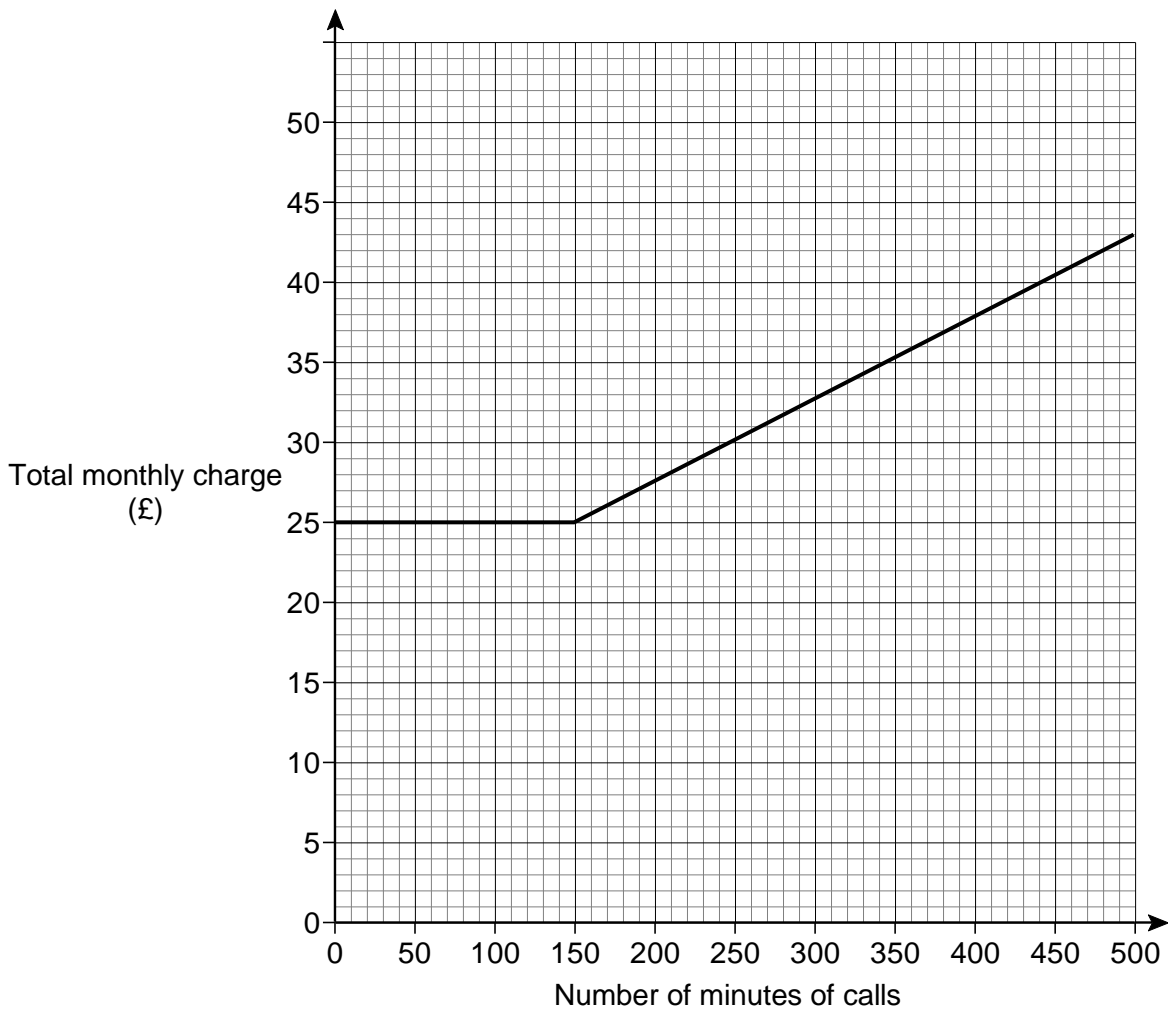Answer .... *(5 marks)*

18 (b)   Viki has a different mobile phone contract.
She never sends texts.

The graph shows how the total monthly charge is calculated for her mobile phone contract for up to 500 minutes of calls.

18(b)(i)   Write down the basic monthly charge and the number of free minutes of calls.

Answer   Basic monthly charge   £ ....

Number of free minutes of calls   .... *(2 marks)*

18(b)(ii)   Work out the charge per minute for the other calls.

....

....

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....

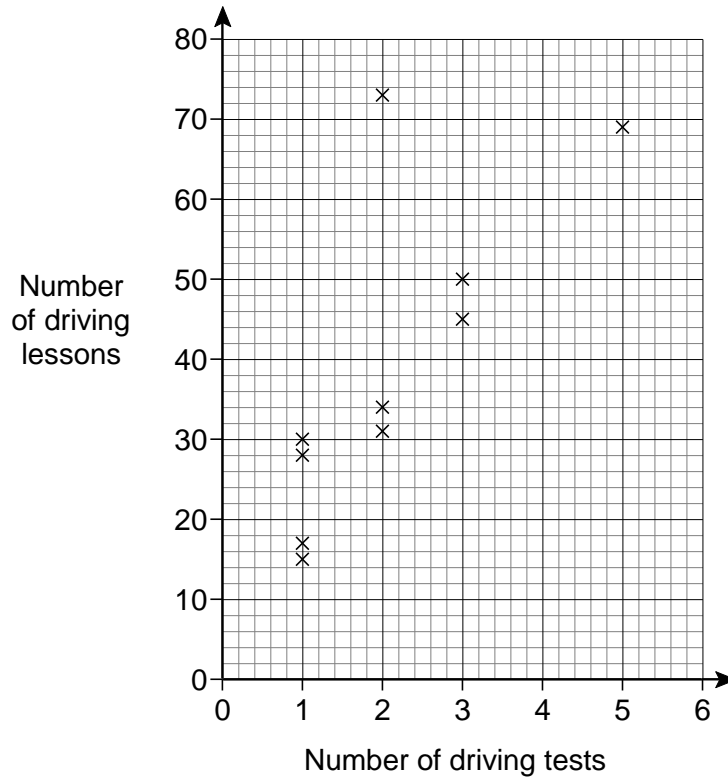Answer .... pence *(3 marks)*

10

19 Rio wants to know the number of driving lessons he might need before he passes his driving test.

He also wants to know the number of times he might have to take his driving test before he passes.

He collects some data and shows it on this scatter graph.

Number of driving tests

19 (a) Rio ignores one of the points on the scatter graph.

Circle this point and give a reason why it should be ignored.

Reason ....……………..……………....………………………………………………..

....................……………...……………....………………………………………………………..

(2 marks)

19 (b) Draw a line of best fit on the scatter graph.

(1 mark)

19 (c)   Rio has already failed his driving test three times after a total of 40 driving lessons.

19 (c) (i) Estimate how many **more** driving lessons Rio needs if he is to pass his driving test
on the fourth attempt.

....

Answer .... *(2 marks)*

19 (c) (ii) Give a reason why this estimate might be unreliable.

....

....

(1 mark)

Turn over for the next question

6

20 A doctor wants to encourage her patients to take more exercise.

The doctor has approximately 500 patients.

She decides to do a survey about what exercise her patients take.

20 (a) This is a question in the survey.

> **Q** Do you exercise?
>
> **A** Tick a box
>
> Yes ☐ No ☐ Sometimes ☐ Everyday ☐

20 (a) (i) Give a criticism of the question.

....

....

....

(1 mark)

20 (a) (ii) Give a criticism of the response section.

....

....

....

(1 mark)

20 (b) This is another question in the survey.

> **Q** How many miles did you walk last week?

Give a suitable response section for this question.

(1 mark)

Do not write outside the box

20 (c) (i) The doctor decides to use one of three methods to do the survey.

        Method 1   Give the survey to the first 50 patients seen in a week

        Method 2   Choose 50 patients at random

        Method 3   Choose 26 patients, picking one whose surname begins with each letter of the alphabet

Give a reason why method 3 is **not** suitable.

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....

....

(1 mark)

20 (c) (ii) Which of the other two methods for doing the survey will give the most reliable results?
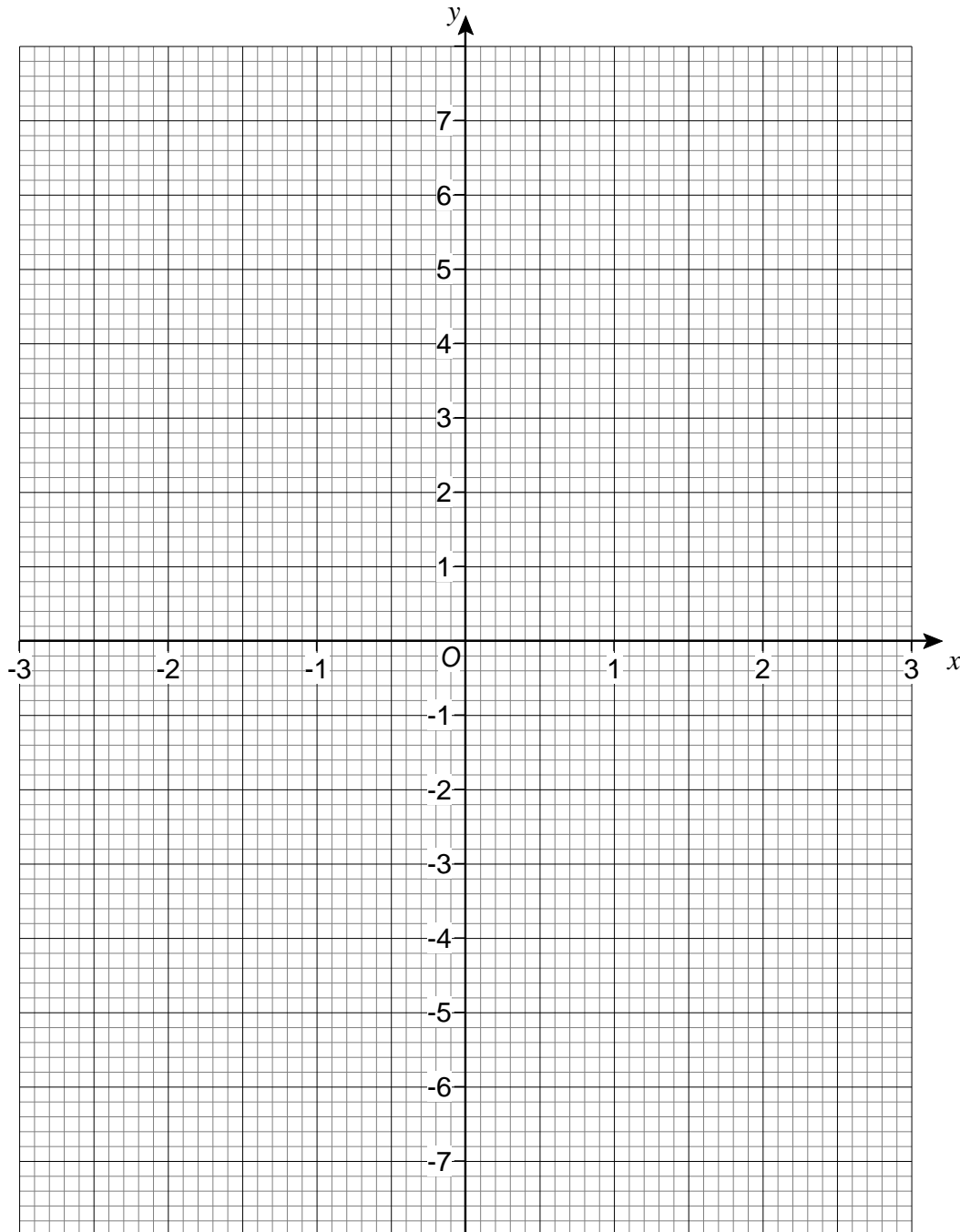
Give a reason for your choice.

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....

(1 mark)

Turn over for the next question

5

Turn over ▶

21 This is a table of values for $y = x^2 - 3$

x	–3	–2	–1	0	1	2	3
y	6	1	–2	–3	–2	1	6

21 (a) On the grid, draw the graph of $y = x^2 - 3$ for values of x from –3 to +3

(2 marks)

21 (b) Use your graph to write down the **positive** solution to the equation $x^2 - 3 = 0$

....

Answer .... *(1 mark)*

END OF QUESTIONS

3

SP12/4365/2F

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