

For AQA

General Certificate of Secondary Education

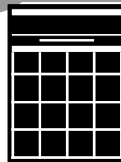
**MATHEMATICS**

**Foundation Tier**

**Paper 2A Non-Calculator**

**For this paper you must have:**

- a calculator
- mathematical instruments.



Time allowed: 1 hour 30 minutes

**Instructions and Information**

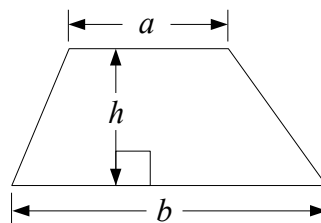
- Do not write on this question paper – use blank paper and the answer sheets provided.
- The maximum mark for this paper is 100.

**Advice**

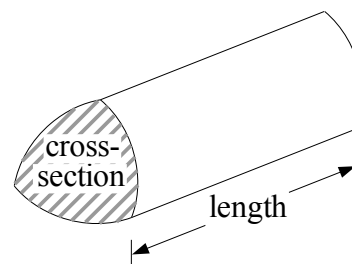
- In all calculations, show clearly how you work out your answer.

**Formulae: Foundation Tier**

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



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



*Churchill  
Maths*



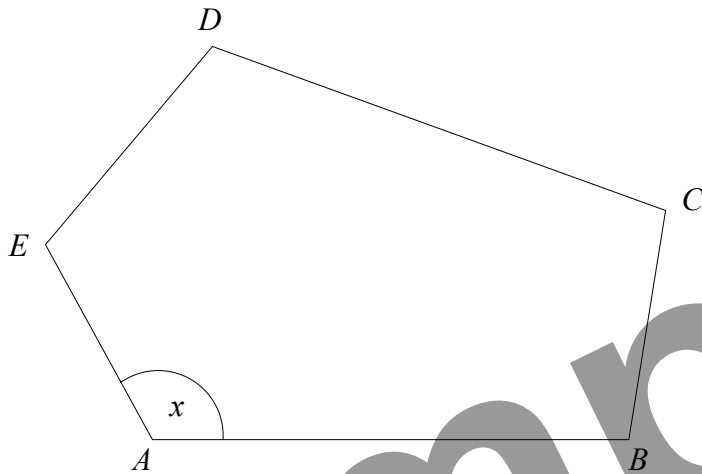
Written by Shaun Armstrong

Only to be copied for use in the purchaser's school or college

Answer **all** questions.

- 1 (a) On the grid on the answer sheets, reflect the shaded shape in the mirror line. (2 marks)
- (b) On the grid on the answer sheets, show how the shaded shape tessellates. You should draw at least 6 shapes. (2 marks)
- 2 Mansa wants to collect information about how much students spend on sweets. Design a suitable question that she could use. You should include response boxes. (2 marks)
- 3 (a) Write 0.35 as a percentage. (1 mark)
- (b) Write 70% as a decimal. (1 mark)
- (c) Write 6% as a decimal. (1 mark)
- (d) Work out 20% of £180. (1 mark)

4



The diagram is an accurate drawing of shape  $ABCDE$ .

(a) Write down the mathematical name of this shape.

*(1 mark)*

(b) Measure the length of the side  $AB$ .

*(1 mark)*

(c) Measure the size of the angle marked  $x$ .

*(1 mark)*

(d) What type of angle is  $x$ ?

*(1 mark)*

5

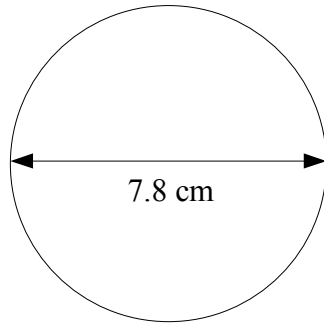
<p style="text-align: center;"><b>Spikey's Gym</b></p> <p style="text-align: center;">Admission Prices: One day pass £2.80 One month pass £17.50</p>
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Suzie goes to Spikey's Gym on eight days each month.

How much does she save each month by buying a one month pass instead of eight day passes?

*(3 marks)*

6



Not drawn accurately

The diagram shows a circle of diameter 7.8 cm.

- (a) Work out the radius of the circle. *(1 mark)*
- (b) Work out the area of the circle.  
Give your answer to an appropriate degree of accuracy. *(2 marks)*

7 (a) Here is a number sequence.

62      58      54      50

- (i) Write down the next number in this sequence. *(1 mark)*
- (ii) Write down the rule for continuing this sequence. *(1 mark)*

(b) Here is another number sequence.

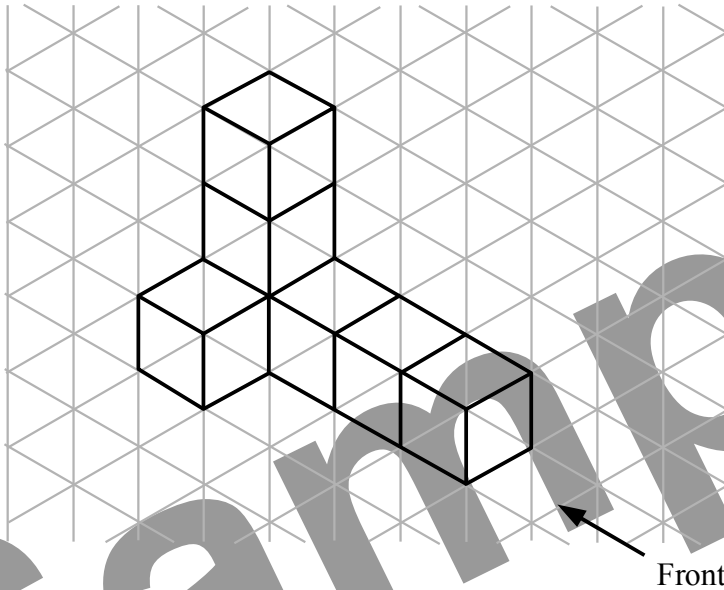
249      87      33      15

The rule for continuing this sequence is

**DIVIDE BY 3, THEN ADD 4**

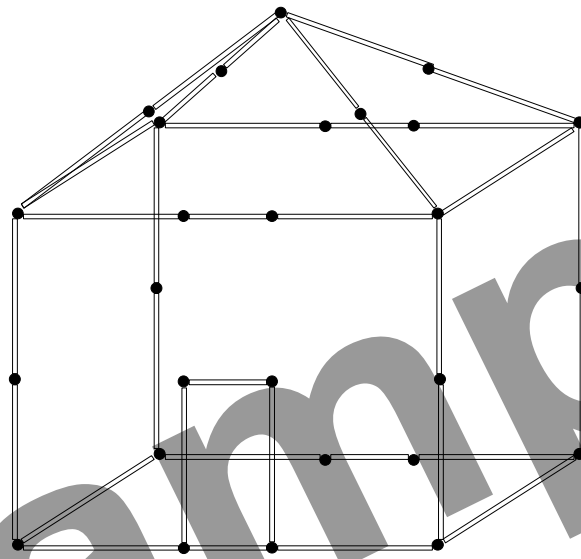
Write down the next two numbers in this sequence. *(2 marks)*

- 8 The diagram shows a 3-D shape made from cubes.



- (a) On the grid on the answer sheets, draw the front elevation of the shape from the direction shown. *(2 marks)*
- (b) On the grid on the answer sheets, draw the plan of the shape. *(2 marks)*
- 9 For each part of this question, a probability scale is drawn on the answer sheets.  
Use an arrow to show the probability of the given event.
- (a) A baby will be born somewhere in Scotland tomorrow. *(1 mark)*
- (b) A 6 is scored when an ordinary dice is rolled. *(1 mark)*
- (c) A law will be passed next year banning blue cars. *(1 mark)*
- 10 The points  $A$  and  $B$  are shown on the grid on the answer sheets.
- (a) Write down the coordinates of the point
- (i)  $A$ , *(1 mark)*
- (ii)  $B$ . *(1 mark)*
- The line  $AB$  is a diagonal of a square.
- (b) Write down the coordinates of the other two corners of the square. *(2 marks)*

11 Ellie has a kit for making things out of drinking straws.



The kit contains 120 long straws and 80 short straws.  
Making a house uses 30 long straws and 5 short straws.

(a) Work out how many houses Ellie could make using the kit.

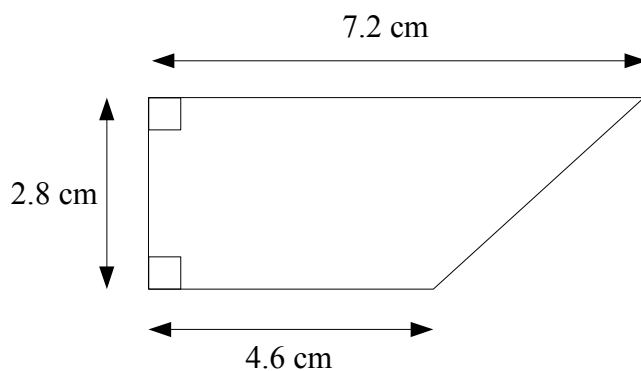
(2 marks)

Making a car uses 8 long straws and 22 short straws.

(b) Work out how many straws would be left altogether if Ellie used the kit to make 3 houses and 2 cars.

(3 marks)

12



Not drawn accurately

The diagram shows a replacement blade for a knife.  
The blade is in the shape of a trapezium.

Find the area of this trapezium.  
Give the units with your answer.

(3 marks)

13 Martin wins £9000 in a competition.

He spends  $\frac{1}{3}$  of his winnings on a new car.

(a) Work out  $\frac{1}{3}$  of £9000.

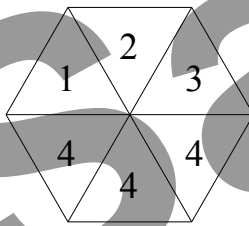
(1 mark)

Martin invests £4000 of his winnings in a savings account.  
After 2 years, the amount in his account has increased by 10.5%.

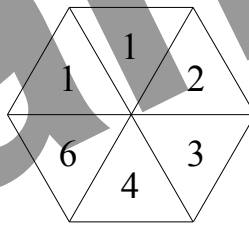
(b) Work out how much is in his account after 2 years.

(2 marks)

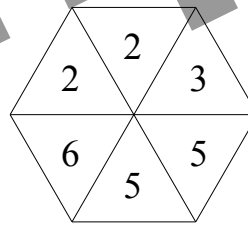
14 Here are four fair spinners.



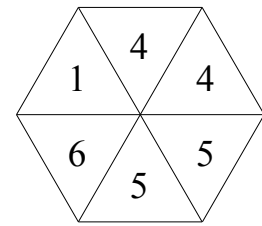
Spinner A



Spinner B



Spinner C



Spinner D

In each part of this question a statement is made.

Write down the letter of the spinner for which the statement is true.

(a) The probability of getting a 4 is  $\frac{1}{2}$ .

(1 mark)

(b) It is impossible to get a 3.

(1 mark)

(c) The probability of getting a 2 is the same as the probability of getting a 5.

(1 mark)

(d) The probability of getting a 1 is  $\frac{1}{3}$ .

(1 mark)

(e) The probability of getting a 4 is twice the probability of getting a 6.

(1 mark)

15 Ann cycles to her friend's house.

She cycles at a steady speed of 6 metres per second for 25 minutes.

Work out the distance she travels.

Give your answer in kilometres.

(4 marks)

- 16 Angela recorded the resting pulse, in beats per minute, of 20 people. Here are her results.

72 63 54 64 80 60 67 63 75 78  
61 78 72 57 63 57 66 83 71 69

Draw an ordered stem and leaf diagram to show her results.  
You should include a key.

(3 marks)

- 17 The cost, in pounds, of taking a computing course is worked out using this formula.

$$\text{Cost of course} = 15 \times \text{Number of lessons} + 25$$

Adam takes a course that has 10 lessons.

- (a) Work out how much Adam pays for his course.

(2 marks)

Eve pays £115 for a taking a different course.

- (b) Work out how many lessons there are in Eve's course.

(2 marks)

- 18 These are the prices for the items Jim wants to buy.

Carton of Juice	69p each
Bread roll	22p each OR 4 for 80p
Cheddar Cheese	£6.50 per kilogram

Complete Jim's shopping bill on the answer sheets.

(4 marks)

- 19 (a) Simplify

(i)  $2x \times 3y$

(1 mark)

(ii)  $p^2 + p^2$

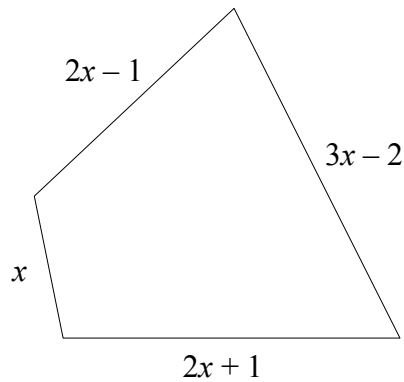
(1 mark)

(iii)  $m + 4n + 3m - 6n$

(2 marks)

- (b) Make  $b$  the subject of the formula  $a = 3 + 5b$

(2 marks)



Not drawn accurately

The diagram shows a quadrilateral.  
The lengths of the sides are given in centimetres.

- (a) Find an expression, in terms of  $x$ , for the perimeter of the quadrilateral.  
Give your answer in its simplest form.

*(2 marks)*

The perimeter of the quadrilateral is 34 cm.

- (b) Find the length of the longest side of the quadrilateral.

*(3 marks)*

- 21 A company records how many employees are late each day for two weeks.  
Here are the results.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	8	2	6	5	7
Week 2	6	5	4	3	6

- (a) (i) What is the range of the number of employees who are late?

*(1 mark)*

- (ii) Find the median number of employees who are late.

*(2 marks)*

The company also records how many employees are absent each day.  
Here are the results for one month.

Number Absent	Number of Days
2	1
3	5
4	11
5	9
6	4

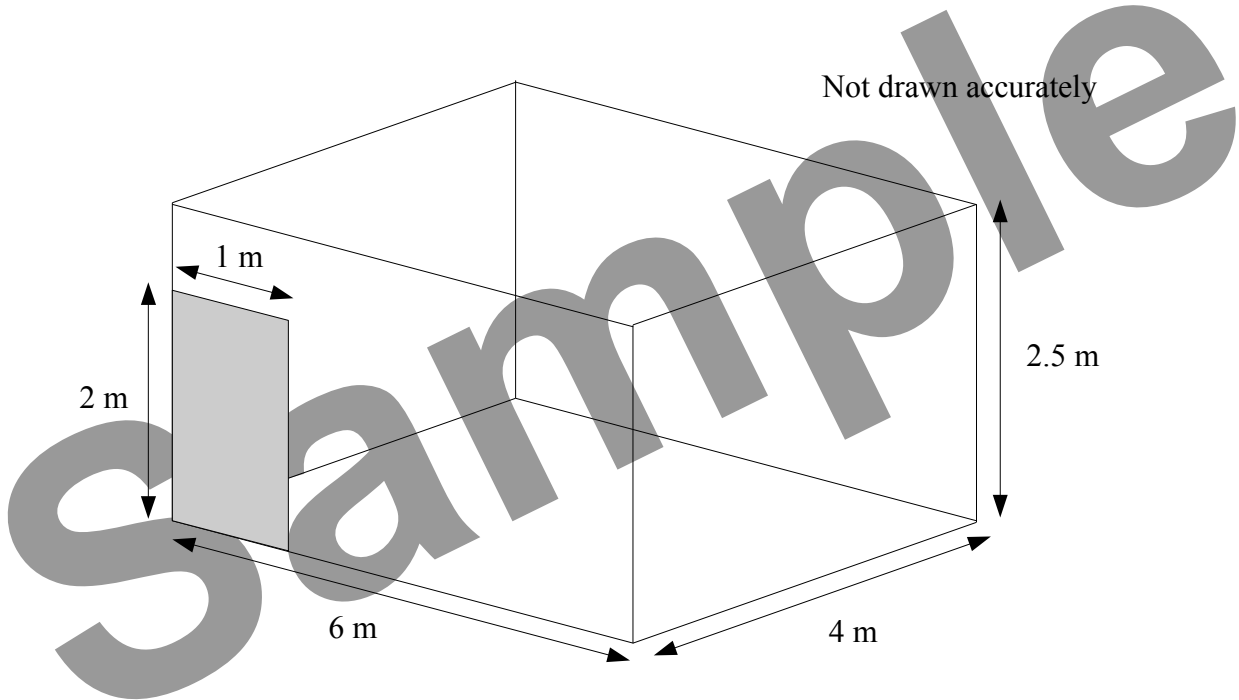
- (b) Work out the mean number of absent employees.  
Give your answer correct to 1 decimal place.

*(3 marks)*

22 Bill and Ben are decorators.

Bill charges £70 per wall to hang wallpaper.

Ben charges £6 per square metre covered to hang wallpaper.



The diagram shows the dimensions of Brian's dining room.

He wants wallpaper hung on all four walls except for the door which is shaded.

Work out who will charge less to hang the wallpaper, Bill or Ben, and by how much.  
You must show all your working.

*(5 marks)*

23 Use trial and improvement to continue the table on the answer sheets and find a solution to the equation

$$x^3 - x = 100$$

Give your answer correct to 1 decimal place.

*(3 marks)*

24 Zahir wants to change £300 into Euros (€).

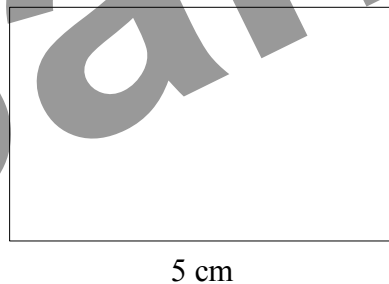
There are two places where he can change his money.

<b>Central Bank</b> £1 = €1.44 no fee
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<b>Travel Mart</b> £1 = €1.48 2% fee
--

- (a) Work out how many Euros he would get at the Central Bank. *(2 marks)*
- (b) Work out how much extra he would get at the Travel Mart after paying the fee. *(3 marks)*

25



Not drawn accurately

A rectangle measures 3 cm by 5 cm.

- (a) Work out the perimeter of the rectangle. *(1 mark)*
- (b) Work out the length of a diagonal of the rectangle.  
Give your answer correct to 1 decimal place. *(3 marks)*

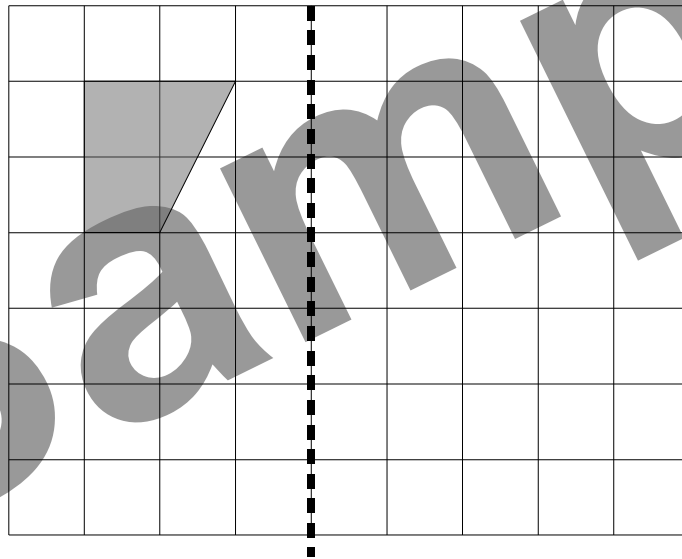
**END**

For AQA

Name

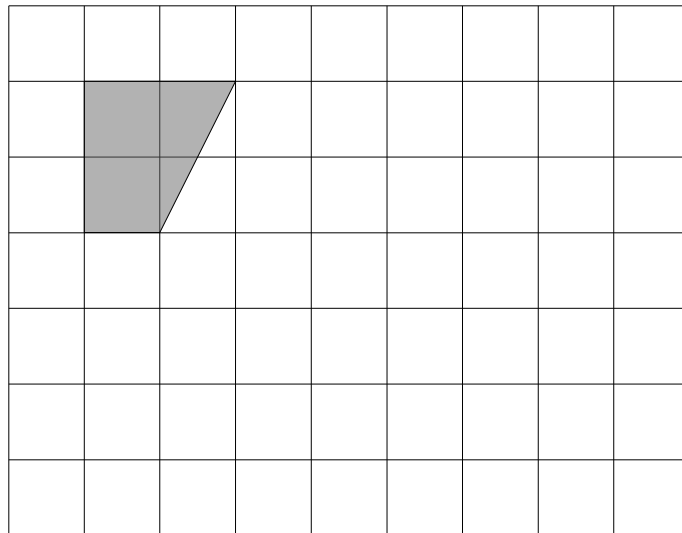
Answer Sheets for Foundation Tier, Paper 2A

1 (a)

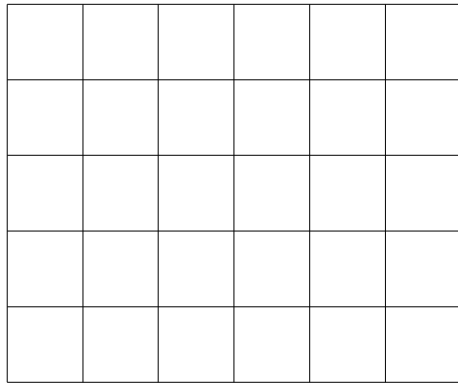


mirror line

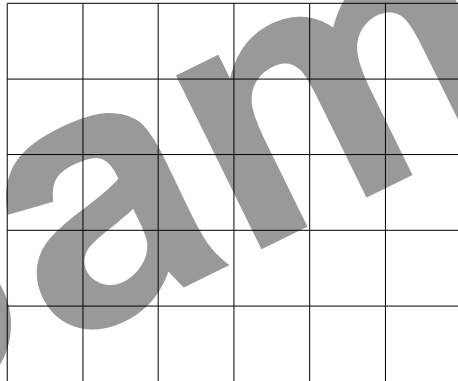
(b)



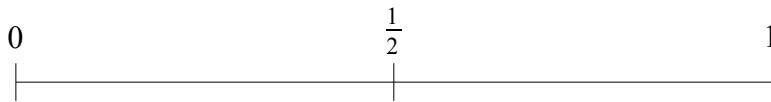
8 (a)



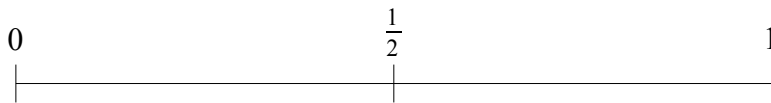
(b)



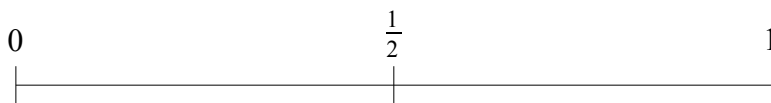
9 (a)



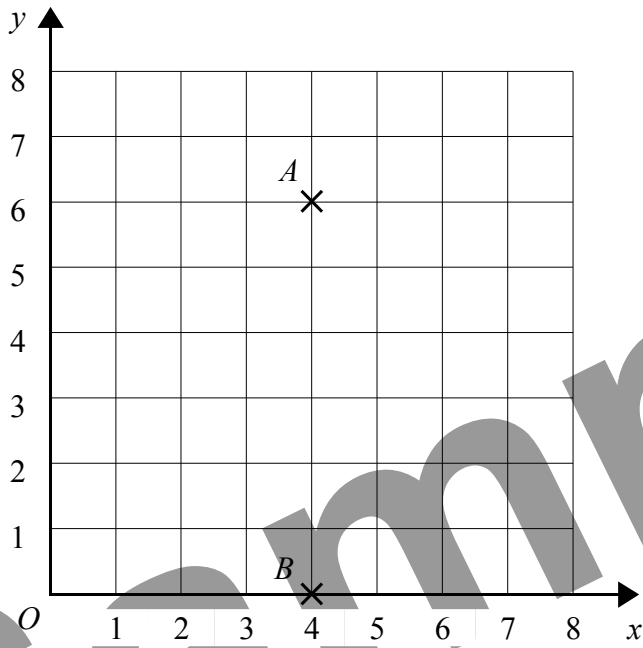
(b)



(c)



10



18

Item	Quantity	Cost (£)
Carton of Juice	5	
Bread roll	8	
Cheddar Cheese	500 g	
<b>TOTAL</b>		

23

$x$	$x^3 - x$	Comment
4	60	Too low
5	120	Too high