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GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS A
Unit B (Foundation Tier)

A502/01

Monday 13 June 2011
Afternoon

Duration: 1 hour

Candidates answer on the question paper.

OCR supplied materials:
None

- Other materials required:**
- Geometrical instruments
 - Tracing paper (optional)



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Answer **all** the questions.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- The total number of marks for this paper is **60**.
- This document consists of **16** pages. Any blank pages are indicated.



Formulae Sheet: Foundation Tier

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



Volume of prism = (area of cross-section) \times length



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1 (a) Work out.

$$9 + 35 - 38$$

(a) _____ [1]

(b) Work out.

$$0.9 + 35 - 3.8$$

(b) _____ [2]

(c) Brian wants to work out $6.72 \div 0.2$.

Complete his work.

$$0.2 \times \underline{\hspace{2cm}} = 2$$

$$6.72 \times 10 = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} \div 2 = 33.6$$

$$\text{so } 6.72 \div 0.2 = \underline{\hspace{2cm}}$$

[3]

2 (a) Work out.

$$\frac{5}{8} + \frac{3}{8} - \frac{7}{8}$$

(a) _____ [1]

(b) Lorna is given £10 by her grandfather.
Lorna saves $\frac{2}{5}$ of this money.

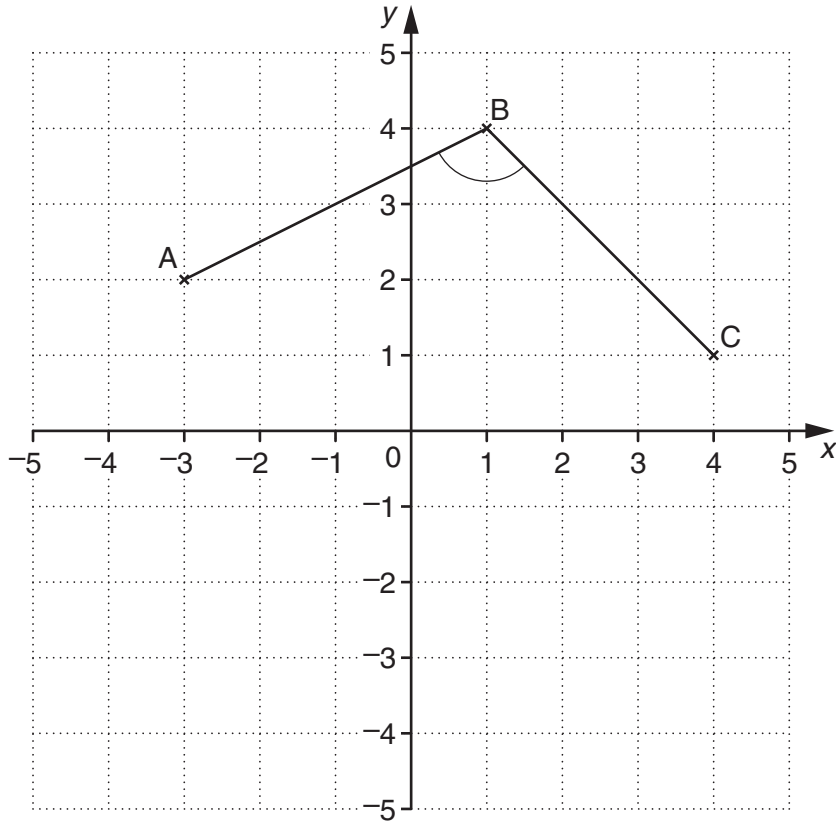
(i) How much of the £10 does Lorna save?

(b)(i) £ _____ [2]

(ii) What fraction of the £10 does Lorna not save?

(ii) _____ [1]

3



(a) Write down the coordinates of point A.

(a) (_____ , _____) [1]

(b) Measure BC in millimetres.

(b) _____ mm [1]

(c) ABCD is a parallelogram.

Plot and label point D and write down its coordinates.

(c) (_____ , _____) [2]

(d) What is the correct mathematical name for the angle ABC?

(d) _____ [1]

- 4 (a) Cheryl buys four pieces of wood.
The lengths are 2.4 m, 3.25 m, 2.15 m and 150 cm.

How many centimetres longer is the longest piece of wood than the shortest piece?

(a) _____ cm [2]

- (b) Cheryl wants to make some shelves.

Complete the bill.

Wood	£ 15.00
2 boxes of screws @ £1.50 each box	£ _____
10 wall brackets @ _____ each	£ 7.00
Cost of all items	£ _____
Delivery charge (10% of cost of all items)	£ _____
Total	£ _____

[5]

- 5 (a) Each side of a square has length d .



Write an expression for the perimeter of the square.

(a) _____ [1]

- (b) Four squares like the one in part (a) are joined in a row as shown.



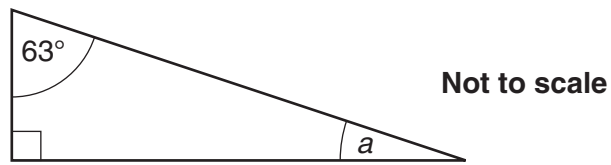
Write an expression for the **perimeter** of this shape.
Give your answer in its simplest form.

(b) _____ [2]

- (c) How many of these squares, joined in a row, will have a perimeter of $16d$?

(c) _____ [2]

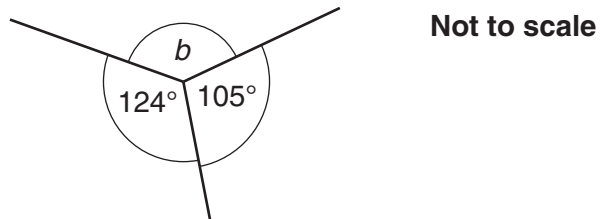
- 6 (a) The diagram shows a right-angled triangle.



Work out the size of angle a .

(a) _____ ° [2]

(b)



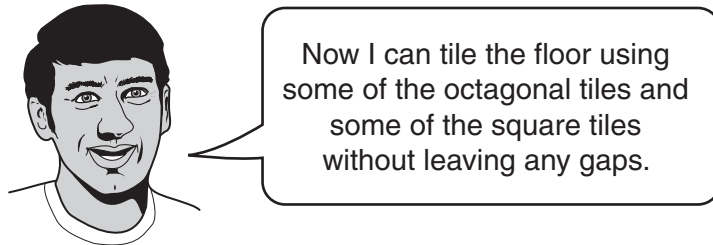
Work out the size of angle b .
Give a reason for your answer.

_____ ° because _____

_____ [2]

(c) (i) Show that the size of an interior angle of a regular octagon is 135° . [2]

- (ii)* Bas is tiling a floor.
He has lots of identical tiles.
Each tile is a regular octagon.
He knows these octagonal tiles will not fit together without leaving gaps between them.
He buys some square tiles.



Explain why Bas may be right. [4]

Question		Answer	
1	What is the reciprocal of 5?	A	2
2	What is the reciprocal of $\frac{1}{2}$?	B	1
3	What is the answer when a number is multiplied by its reciprocal?	C	$\frac{1}{5}$
4	Which number does not have a reciprocal?	D	0

Write down the letter for the correct answer to each question.
The first one is done for you.

Question 1 _____ **C** _____

Question 2 _____

Question 3 _____

Question 4 _____ [2]

8 (a)

Diagram 1

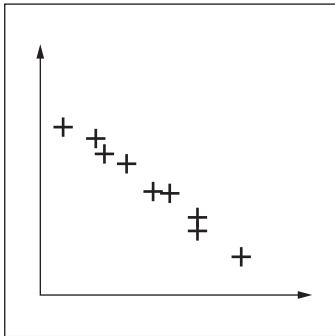


Diagram 2

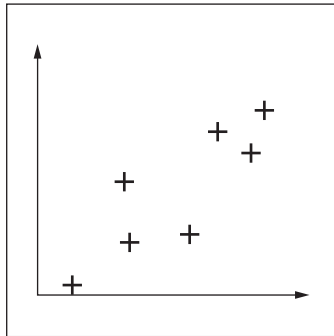
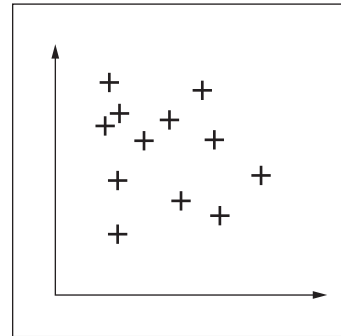


Diagram 3



What type of correlation is shown on each diagram?

(a) Diagram 1 _____

Diagram 2 _____

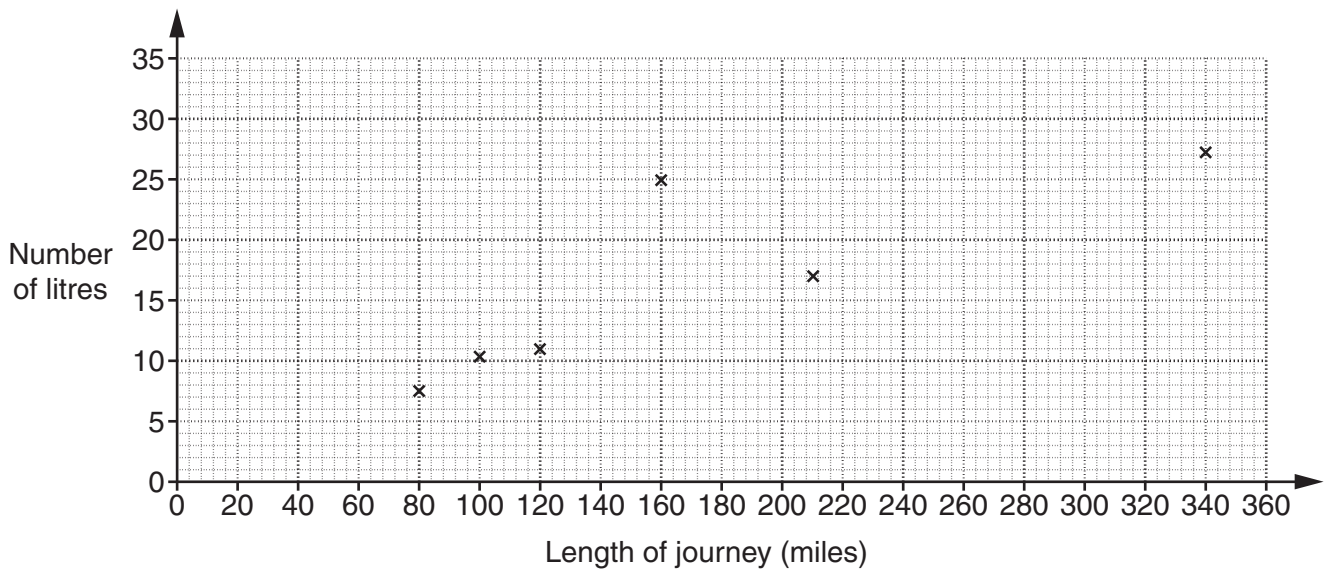
Diagram 3 _____ [3]

(b) Clyde always starts a journey with the fuel tank in his car full. When the journey is over he records the following.

- the length of the journey
- how many litres of fuel he puts into the tank to fill it again

This table gives details of some of his recent journeys.

Length of journey (miles)	120	210	80	340	100	160	350	60	96	260
Number of litres	11	17	7.5	27.2	10.2	25	30	6	8	20.5



(i) Complete the scatter graph by plotting the last four points. [2]

(ii) Draw a line of best fit on your scatter graph. [1]

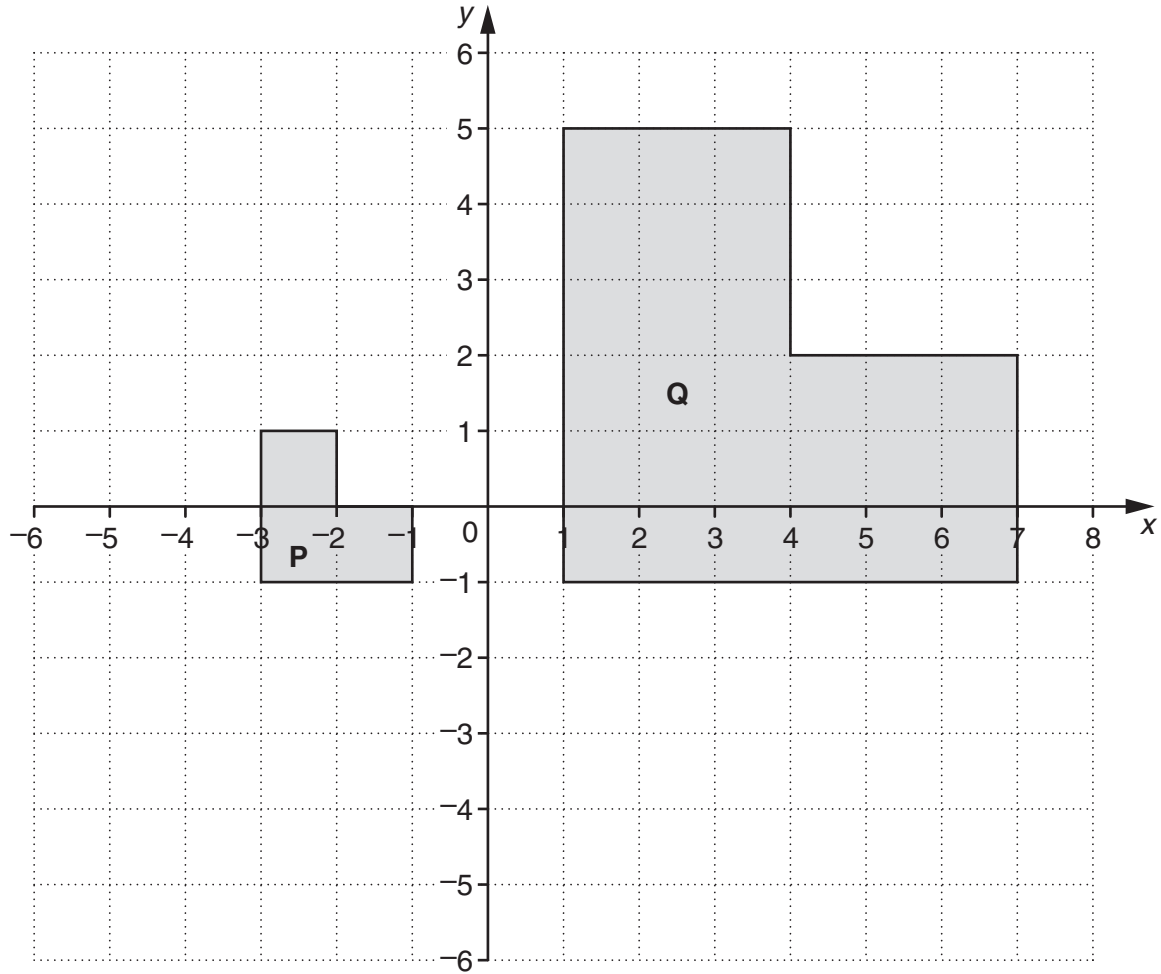
(iii) Use your line of best fit to estimate the number of litres of fuel Clyde would need to fill the tank after a journey of 300 miles.

(b)(iii) _____ litres [1]

(iv) On one of these journeys Clyde was delayed by roadworks and used much more fuel than usual.

Put a ring round the cross representing this journey. [1]

9



- (a) Describe fully the **single** transformation that maps shape **P** onto shape **Q**.

[3]

- (b) Rotate shape **P** 180° about the point $(-2, -2)$.
Label the image **R**.

[2]

10 Mark is organising a party for his group of 17 Scouts.

(a) (i) Each Scout will need $\frac{3}{4}$ of a pizza.

How many pizzas should Mark buy?

(a)(i) _____ [3]

(ii) The pizzas normally cost £2.60 each.
Mark is given a discount of 15% off this price.

How much does Mark pay for each pizza?

(ii) £ _____ [3]

(b) The area of the base of a can of lemonade is 32.4 cm^2 .

What is this area in mm^2 ?

(b) _____ mm^2 [2]

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