

Surname	Centre Number	Candidate Number
Other Names		0



GCSE

4353/01

**MATHEMATICS (UNITISED SCHEME)
UNIT 3: Calculator-Allowed Mathematics
FOUNDATION TIER**

A.M. MONDAY, 20 January 2014

1 hour 30 minutes

ADDITIONAL MATERIALS

A calculator will be required for this paper.

A ruler, a protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

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

Take π as 3.14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

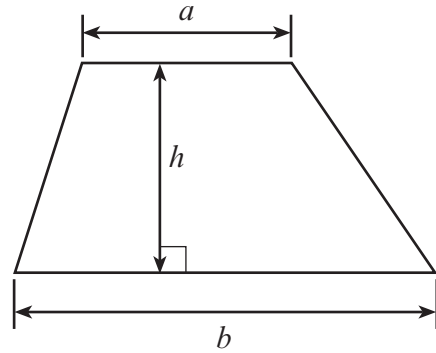
You are reminded that assessment will take into account the quality of written communication (including mathematical communication) used in your answer to question 6.

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	7	
2.	2	
3.	5	
4.	3	
5.	3	
6.	5	
7.	2	
8.	2	
9.	6	
10.	5	
11.	2	
12.	6	
13.	6	
14.	6	
15.	4	
16.	5	
17.	3	
18.	2	
19.	3	
20.	3	
Total	80	

4353
010001

Formula List

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



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



1. Susan bought some Christmas items in the January sales.

(a) Complete her bill.

[4]

Item	Cost
5 packs of Christmas cards at £1.20 per pack	£
4.5 metres of tinsel at 82p per metre	£
40 tree decorations at £1 for 10 decorations	£
Total	£

(b) A special offer gives one free roll of Christmas wrapping paper with every £5 spent.
How many free rolls of wrapping paper will Susan receive?

[1]

.....

.....

(c) Christmas tree lights were priced at £11.98 before the sale.
In the sale, the price is reduced by 50%.

How much will Susan have to pay if she buys the Christmas tree lights in the sale?

[2]

.....

.....

.....

2. Write 57.3826

(a) correct to the nearest whole number,

[1]

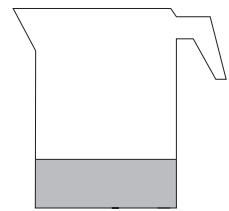
.....

(b) correct to one decimal place.

[1]

.....

3. A measuring jug contains 500 ml of water.
750 ml of water is added to the jug.



(a) What is the new volume of water in the jug in millilitres?

[1]

.....

(b) Some of the water is poured away until there is 250 ml left.
How much water was poured away? Give your answer in litres.

[2]

.....

.....

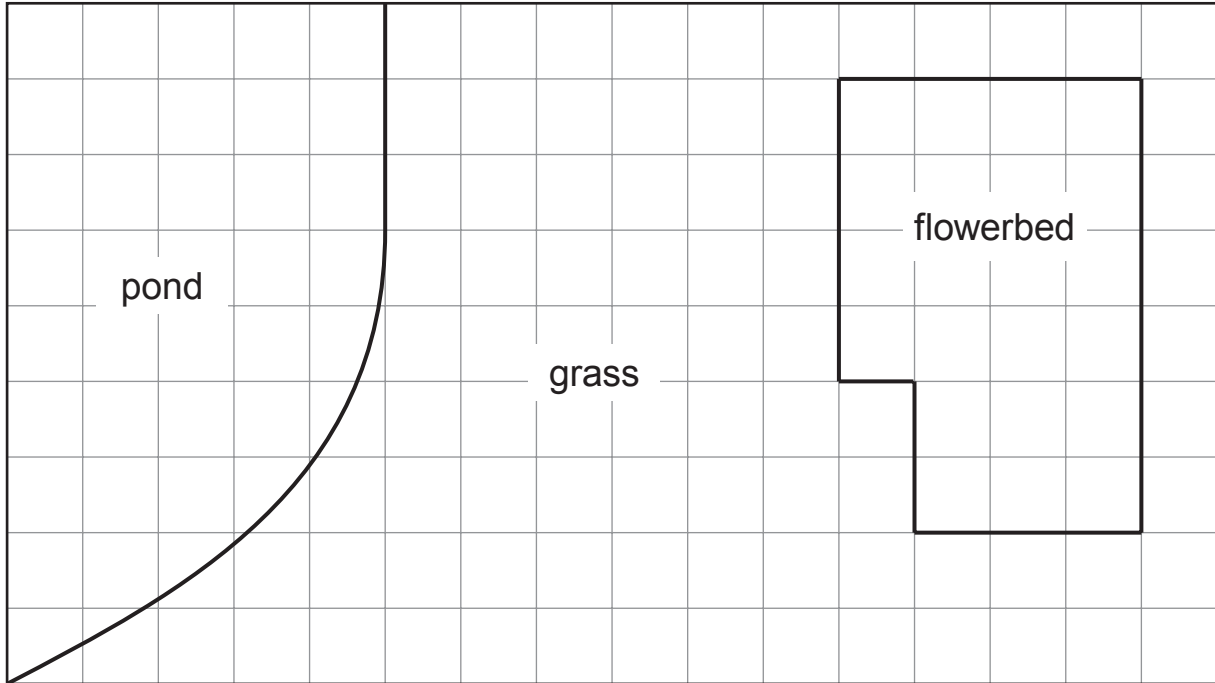
(c) A cup holds 80 ml of water when full.
How many cups can be completely filled with the 250 ml of water from the jug?

[2]

.....

.....

4. The following plan shows a garden made up of a pond, a flowerbed and a grassed area. Each square on the grid represents an area of 1 m^2 .



- (a) Find an estimate for the area of the pond.

[2]

.....

.....

- (b) Find the perimeter of the flowerbed.

[1]

.....

.....

5. Find the exact value of each of the following.

(a) $5 \cdot 6^2$

[1]

(b) 4 to the power of 5

[1]

(c) the square root of $28 \cdot 09$

[1]

6. You will be assessed on the quality of your written communication in this question.



Entry to Caerlech Castle

Adult £4.95

Child £4.60

Family ticket £14.50

(A family ticket provides entry for 2 adults
and all children under 16 in the family)

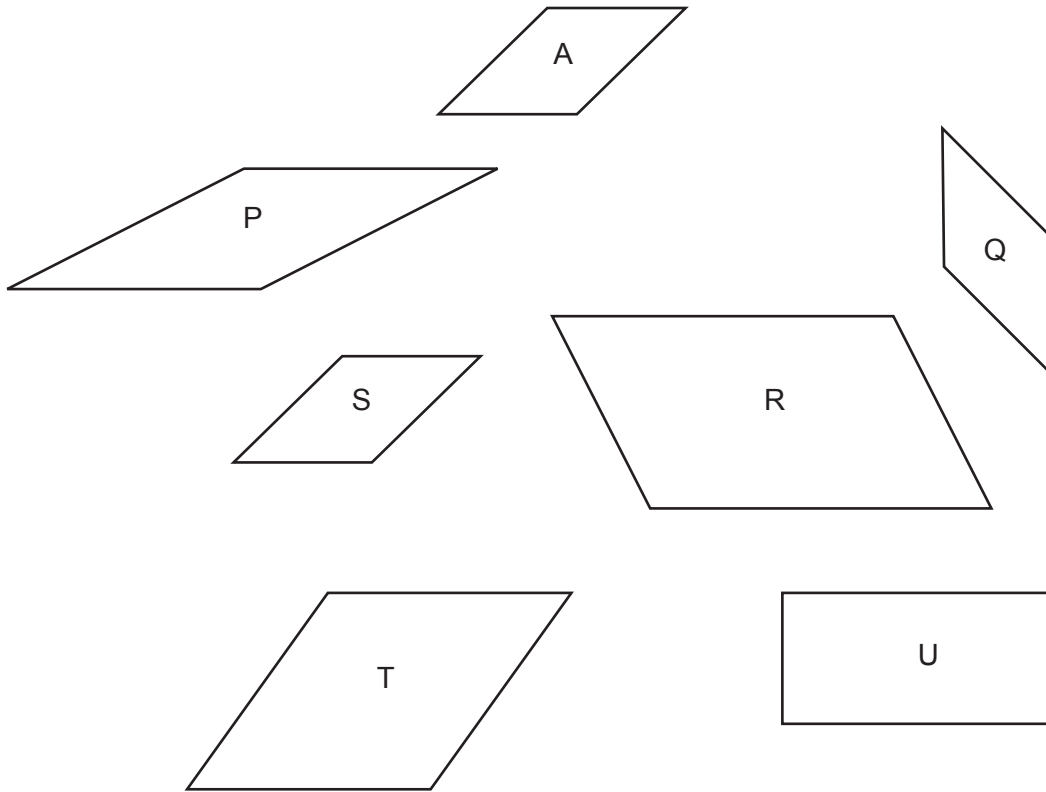
Mr and Mrs Jones and their three children visit Caerlech Castle.
The children are all under 16 years of age.

How much cheaper is it for the Jones family to buy a family ticket compared with buying individual tickets?

You must show all your working.

[5]

7.



Which of these shapes are congruent to shape A?

[2]

.....

8. (a) Solve $a + 6 = 19$.

[1]

.....

.....

(b) Solve $6b = 42$.

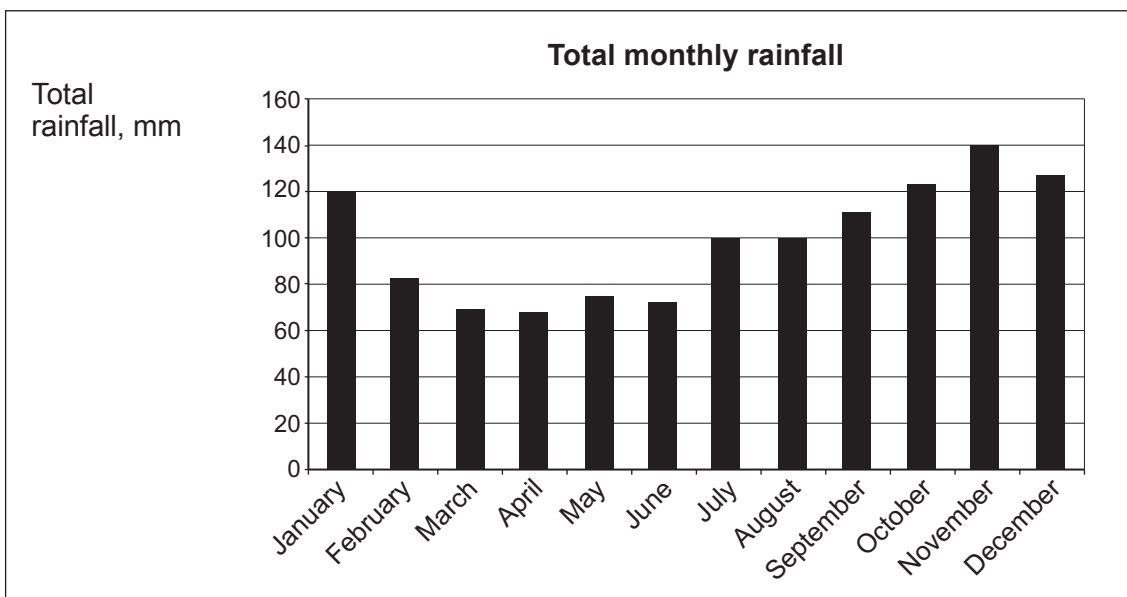
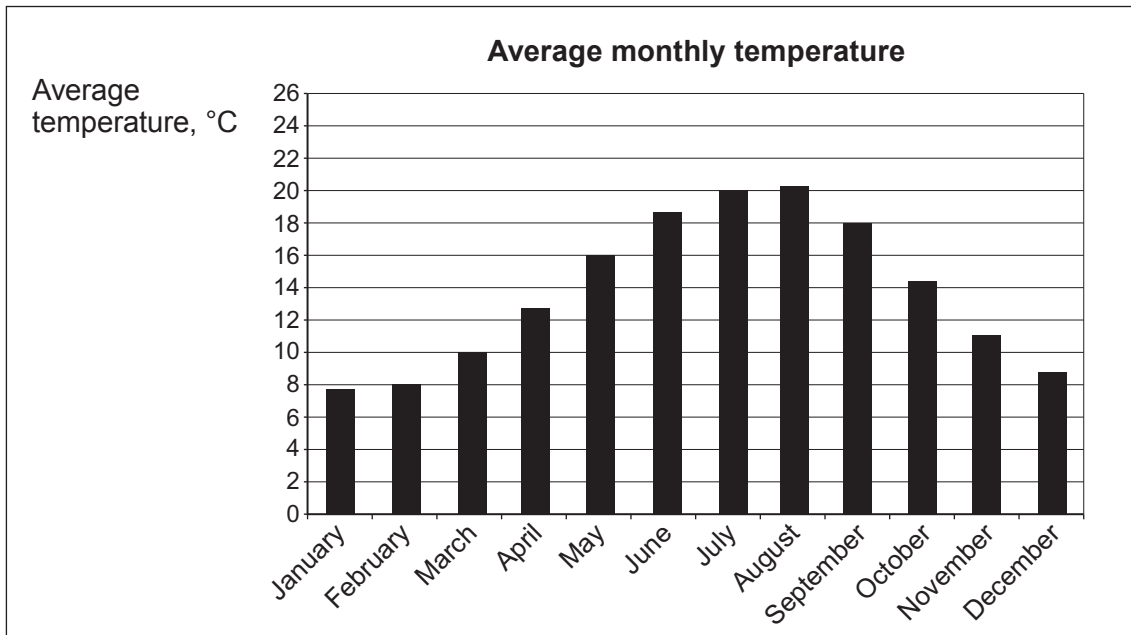
[1]

.....

.....

.....

9. The graphs below show the average monthly temperature and the total monthly rainfall in Swansea Bay during 2013.



- (a) Which month had the lowest total monthly rainfall? [1]

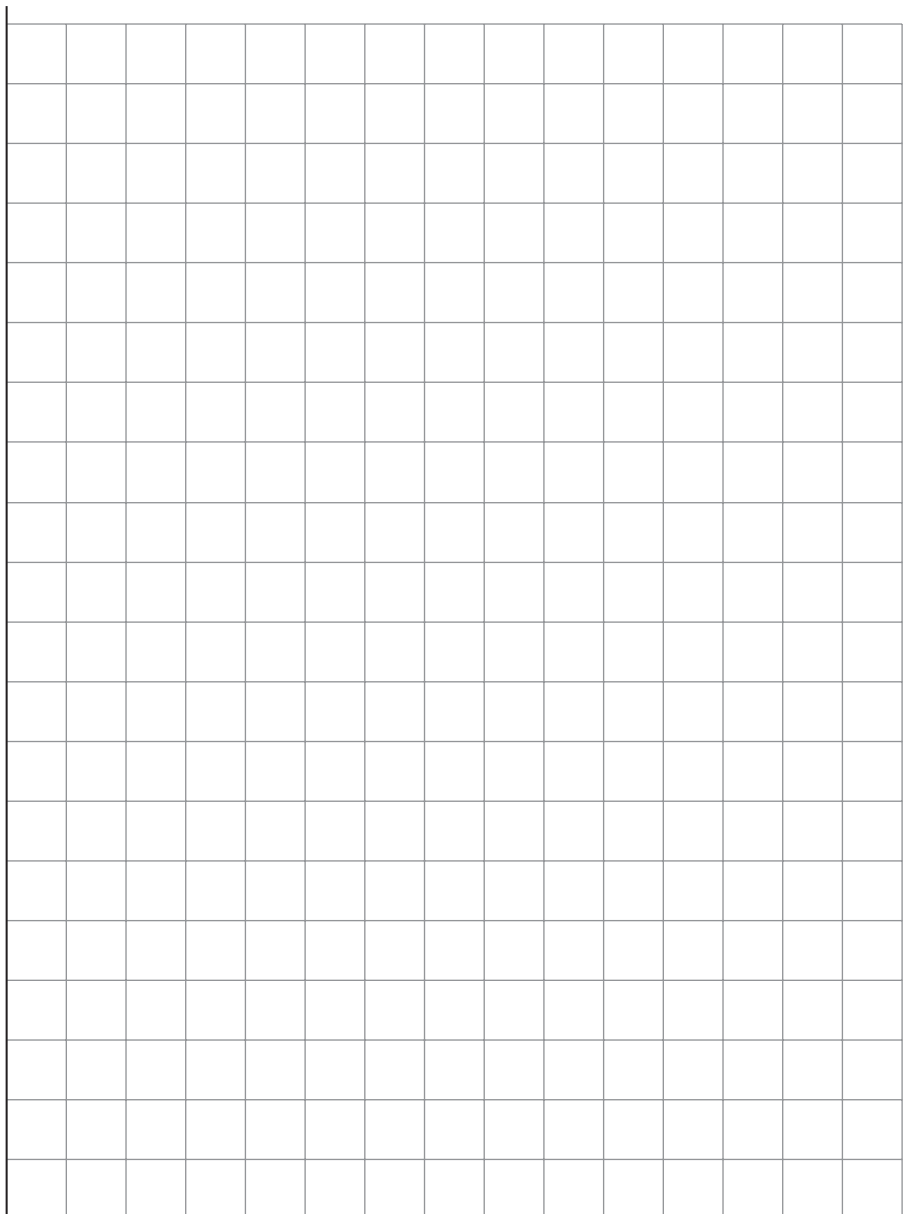
- (b) What was the average temperature in the month with the highest total rainfall? [1]

- (c) What was the total monthly rainfall in the warmest month? [1]

- (d) The average monthly sunshine hours recorded at Swansea Bay for the four seasons of 2013 are given in the table below.

Season	Spring	Summer	Autumn	Winter
Average monthly sunshine hours	160	190	100	60

Using the squared paper below, draw a suitable bar chart for the data given in the table. [3]



10. In a quiz, there are 20 questions in a round.
A contestant scores

- + 5 points for each correct answer,
- 3 points for each incorrect answer,
- 2 points for each question not answered.

Alyn and Gwen are two contestants in the quiz.

(a) Alyn answers 12 questions correctly, answers 5 questions incorrectly and does not answer 3 questions.
What is his final score? [2]

.....

.....

.....

.....

.....

.....

.....

.....

(b) After 19 questions, Gwen’s score was 87 points.
After 20 questions, Gwen’s score was 85 points.
Explain, showing your calculations, how Gwen may have answered the 20 questions. [3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

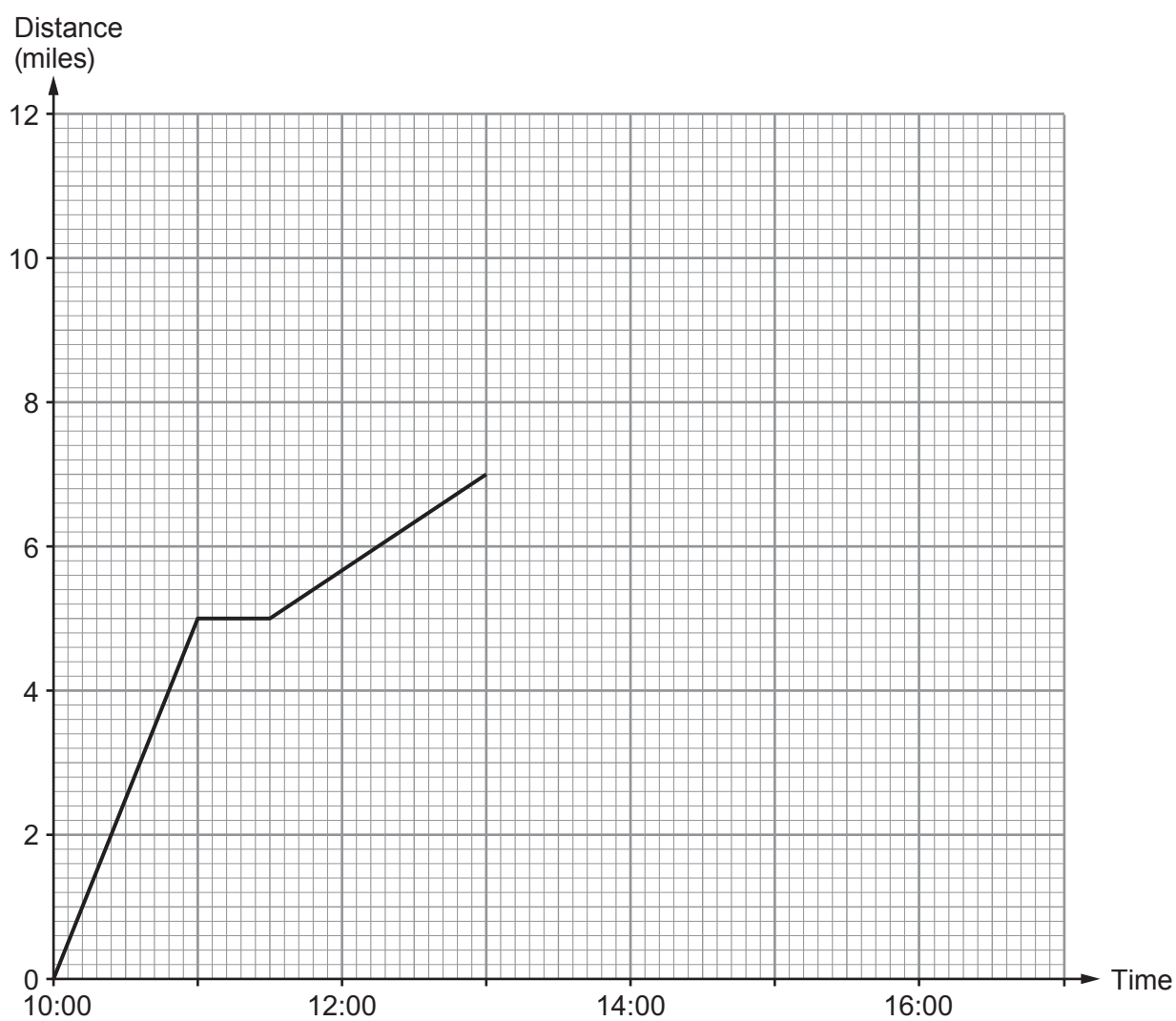
11. Using a ruler and a pair of compasses, construct an angle of 60° at the point X.

[2]

Examiner
only

X

12. David has completed a 12-mile walk.
David has drawn a graph of distance against time for the first stage of his journey.



- (a) How far did David walk in the first hour? [1]

.....

- (b) David stopped for a rest. For how many minutes did he stop? [1]

.....

- (c) Without calculating any speeds, explain how the graph shows that David walked more slowly after his rest. [1]

.....

.....

.....

- (d) At 13:00 David stopped for a lunch break for one hour. David then continued his walk at a constant speed. He completed his 12-mile walk at 16:12. Complete the graph of David's walk. [3]

13. A cardboard box is in the shape of a cuboid measuring 45 cm by 26 cm by 23 cm.

Small wooden blocks are cubes of length 5 cm.

- (a) What is the maximum number of wooden blocks that can be packed inside the cardboard box? [3]

.....

.....

.....

.....

.....

- (b) The empty cardboard box weighs 400 grams. Some of the wooden blocks are put in the box. Each wooden block weighs 60 grams. The total weight of the box and the blocks is 1600 grams. How many blocks are there in the box? [3]

.....

.....

.....

.....

.....

14. (a) Given that $A = 4B + 5C$, find C when $A = 57$ and $B = 3$.

[3]

.....

.....

.....

.....

- (b) Solve the equation $6x - 19 = 2x + 12$.

[3]

.....

.....

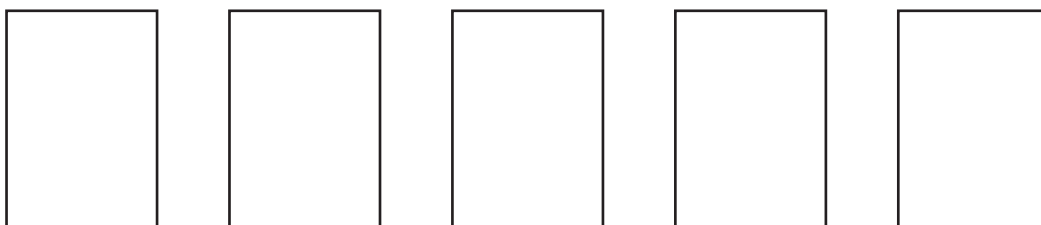
.....

.....

.....

.....

15.



Five **single digit numbers** need to be written on the cards above.
The median, mode, mean and range of the numbers must all be 5.
Write a possible set of **single digit numbers** on the cards, in ascending order.

[4]

.....

.....

.....

.....

.....

16. Alan, Ben and Carwyn are three brothers.
Alan has 3 children, Ben has 2 children and Carwyn has 1 child.

(a) Alan, Ben and Carwyn's parents win £5700.
They decide to share this money between Alan, Ben and Carwyn, in the ratio of the number of children that they each have.
How much money does each brother receive?
You must show all your working. [3]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(b) Alan is happy with this suggestion.
Carwyn argues that it is unfair and that the money should be divided equally between the three brothers.
Will this way of sharing the money affect Ben's share? Show your working. [2]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

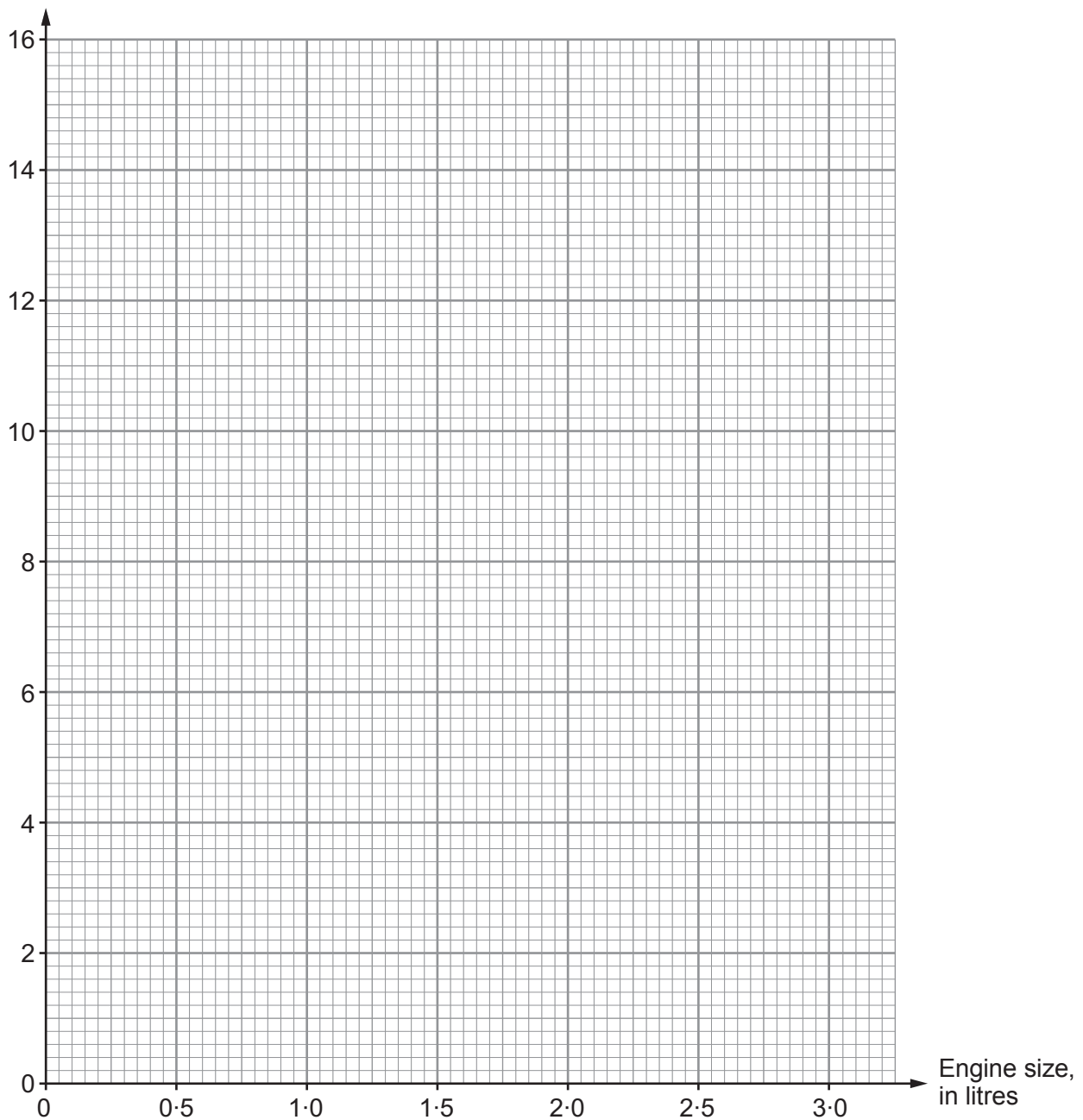
17. The table shows the engine sizes of six cars and the distance they each travel per litre of petrol.

Engine size, in litres	1.0	2.2	1.4	2.0	2.5	1.7
Distance travelled per litre, in km	12.0	7.4	10.6	7.6	5.8	8.2

- (a) Draw a scatter diagram to display this data.

[2]

Distance travelled per litre, in km

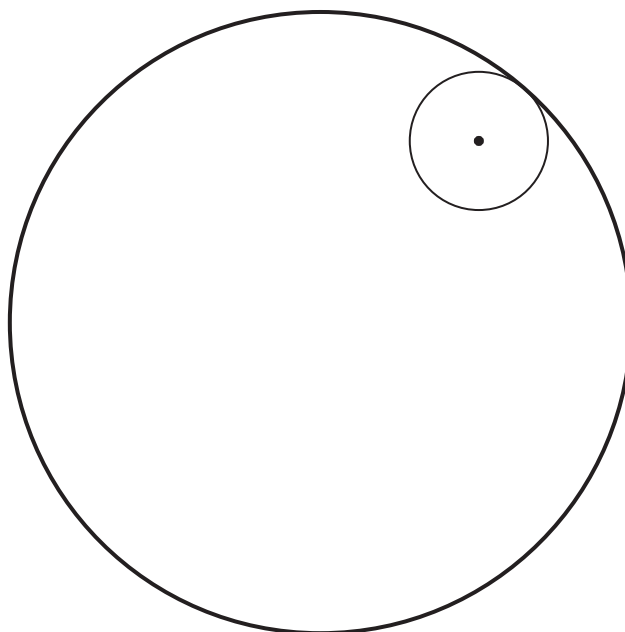


- (b) Describe the relationship between engine size and distance travelled per litre shown by your scatter diagram. [1]

.....

.....

18. The diagram shows a coin inside a large circular ring.
The centre of the coin is shown.
The coin is rolled around the inside of the ring, so that it is always in contact with the ring.
Sketch the locus of the centre of the coin as it is rolled around the inside of the ring. [2]



19.

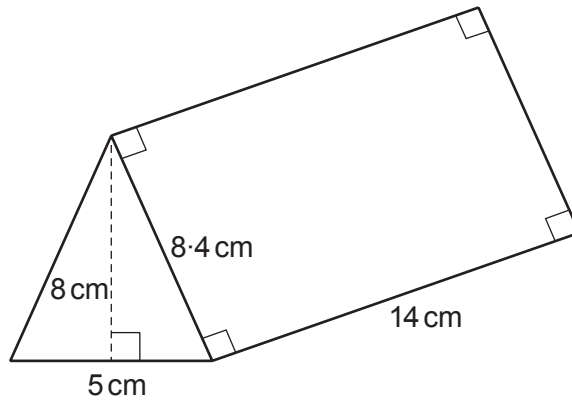


Diagram not drawn to scale

Calculate the volume of the triangular prism shown.
State the units of your answer.

[3]

.....

.....

.....

.....

.....

20. The diagram shows a regular hexagon $ABCDEF$.

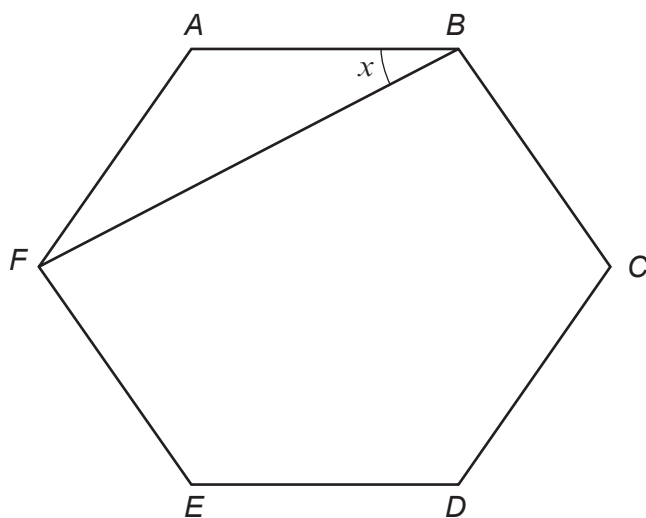


Diagram not drawn to scale

Calculate the size of angle x .
You **must** show all your working to support your answer.

[3]

.....

.....

.....

.....

.....

.....

.....

.....

$x = \dots\dots\dots^\circ$

END OF PAPER