

Surname	Centre Number	Candidate Number
Other Names		0



GCSE

4353/01



W16-4353-01

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

A.M. MONDAY, 18 January 2016

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.

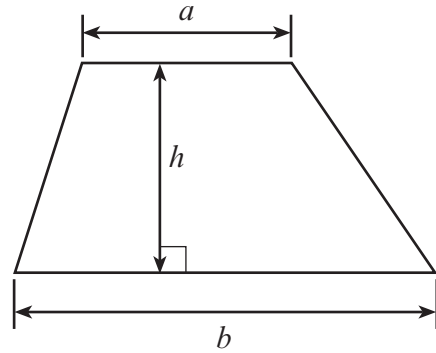
INFORMATION FOR CANDIDATES

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 7.

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

Formula List

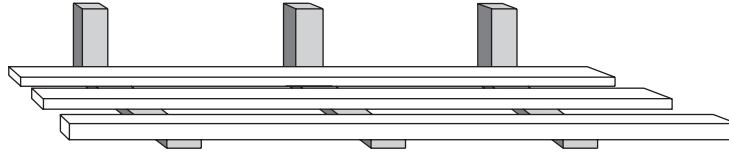
Area of trapezium $= \frac{1}{2} (a + b)h$



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



1. Jo is making a wooden shelf for her bathroom.



She visits a DIY shop to buy the items she needs.

- (a) Complete her bill:

[3]

Item	Cost
3 metal brackets at £1.89 each	£
2.8 metres of shelving wood at £2.15 per metre	£
1 packet of screws	£
TOTAL	£ 13.75

- (b) The bill does not include VAT which is charged at a rate of 20% of the total cost.

- (i) How much VAT will Jo need to pay?

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- (ii) What is the total cost including VAT?

[1]

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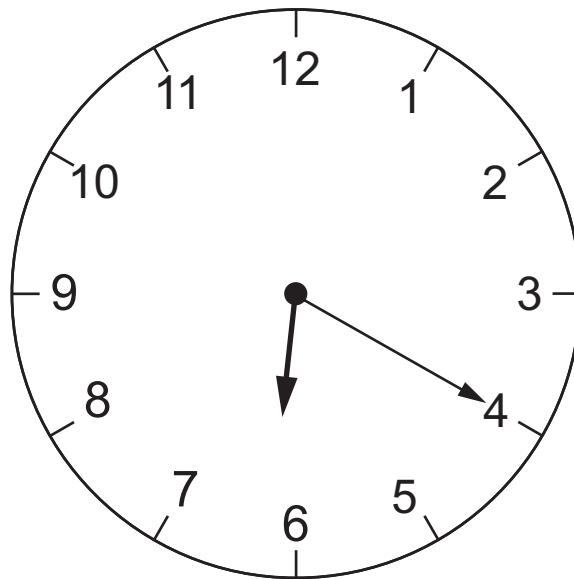
- (c) Jo considers buying a ready-made shelf that would cost her £22.99, including VAT. How much money does she save by making the shelf herself?

[1]

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2. When Mair came home from work one evening, she looked at the clock on her kitchen wall.



- (a) At what time did she arrive home? You must indicate a.m. or p.m. [1]

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- (b) Thirty five minutes later, Mair looked at the digital clock in her bedroom. The digital clock showed the time in the 24-hour system. What time was the digital clock showing? [2]

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- (c) At half-past eight that evening, Mair started watching a film. The film ended at ten minutes past eleven. How long did the film last? [2]

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3. (a) Solve $x - 3 = 15$. [1]

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- (b) Using the rule $A = 5B + 18$, find the value of A when $B = 4 \cdot 3$. [2]

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4. (a) Work out the value of $(15 + 3) \times (-4)$.

[1]

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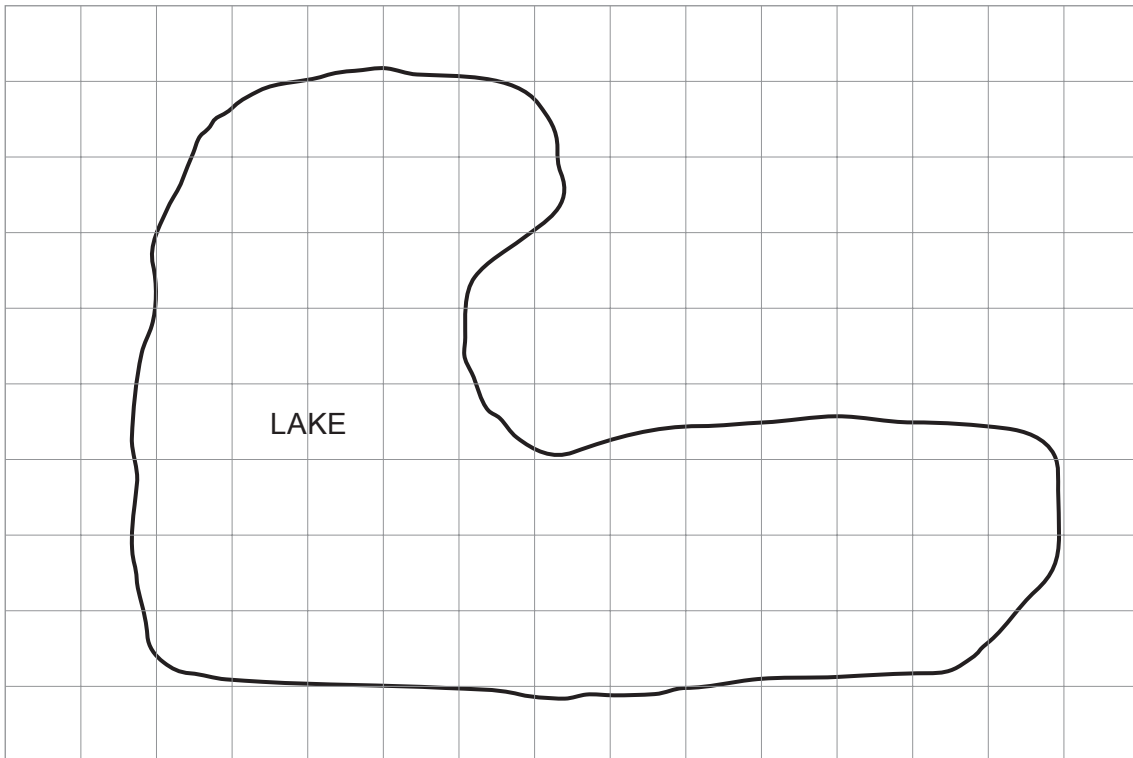
(b) Work out the value of $15 + 3 \times (-4)$.

[1]

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The above shape represents the outline of a lake.
 The diagram is drawn to scale.
 Each square on the grid represents an area of 100m^2 .

Find the approximate area of the lake in square metres.

[3]

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6. (a) Calculate $\sqrt{758}$, giving your answer correct to the nearest whole number. [2]

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(b) Find 3.524^2 , giving your answer correct to one decimal place. [2]

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(c) Find the value of the cube root of 512. [1]

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

A gardener wants to buy grass seed for a new lawn.
He knows that 40 grams of seed is enough for one square metre of lawn.
The lawn will measure 12 metres by 8 metres.
The seed is sold in boxes.
Each box contains 1 kg of seed and costs £6.30.
How many boxes of grass seed will the gardener need to buy and what is the total cost?
You must show all your working.

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8. (a)



Hannah threw 6 darts at a dartboard and hit the following scores:

20, 5, 1, 40, 17, 15

What was Hannah's median score?

[2]

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(b) Tariq threw three darts at the dartboard and hit three scores.

The lowest was 8.

The range was 9.

The mean was 13.

What were the three scores that Tariq hit?

[3]

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The three scores were:

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9. A cuboid has length 80 cm, width 60 cm and height 75 cm.
Find the volume of the cuboid, stating the units of your answer.

[3]

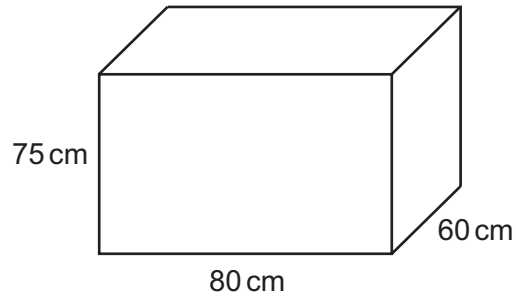


Diagram not drawn to scale

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10. (a) Two equations are known.

$18 = 7 + a$ $a + 5 = 10 + b$

Use **both** equations to work out the value of b .

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(b) Two different rectangles are joined to make a larger rectangle, as shown in the diagram.

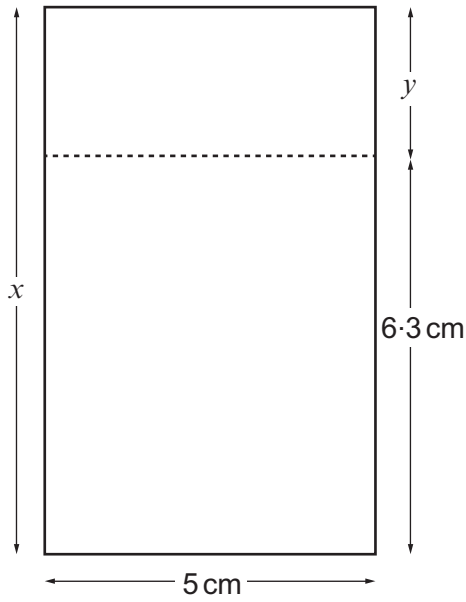


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The total area of the whole rectangle is 40 cm^2 .
Work out the lengths marked x and y .

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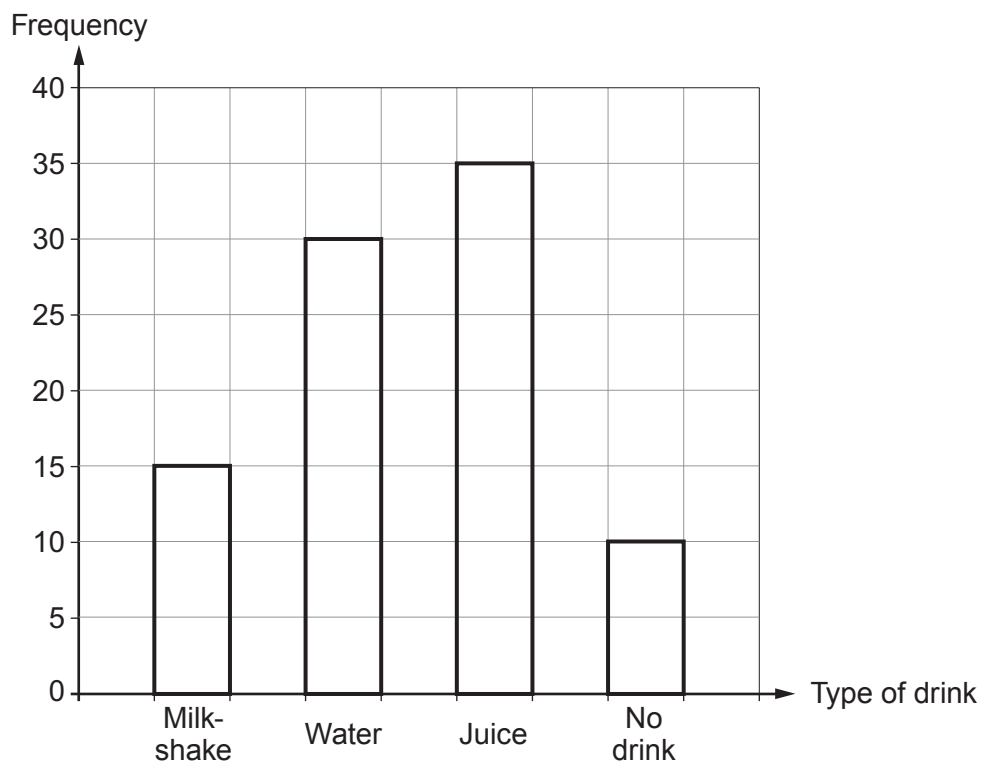
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$x =$ $y =$

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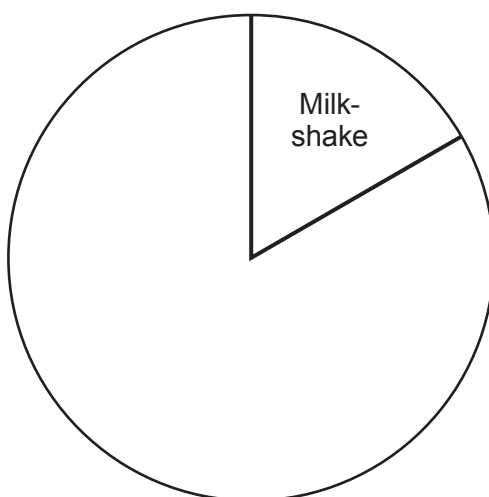
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11. A survey was carried out in a school canteen. 90 students were asked which type of cold drink they had selected with their lunch. The bar chart shows the results of the survey.



Use the information in the bar chart to complete the pie chart. One sector has been drawn for you.

[3]



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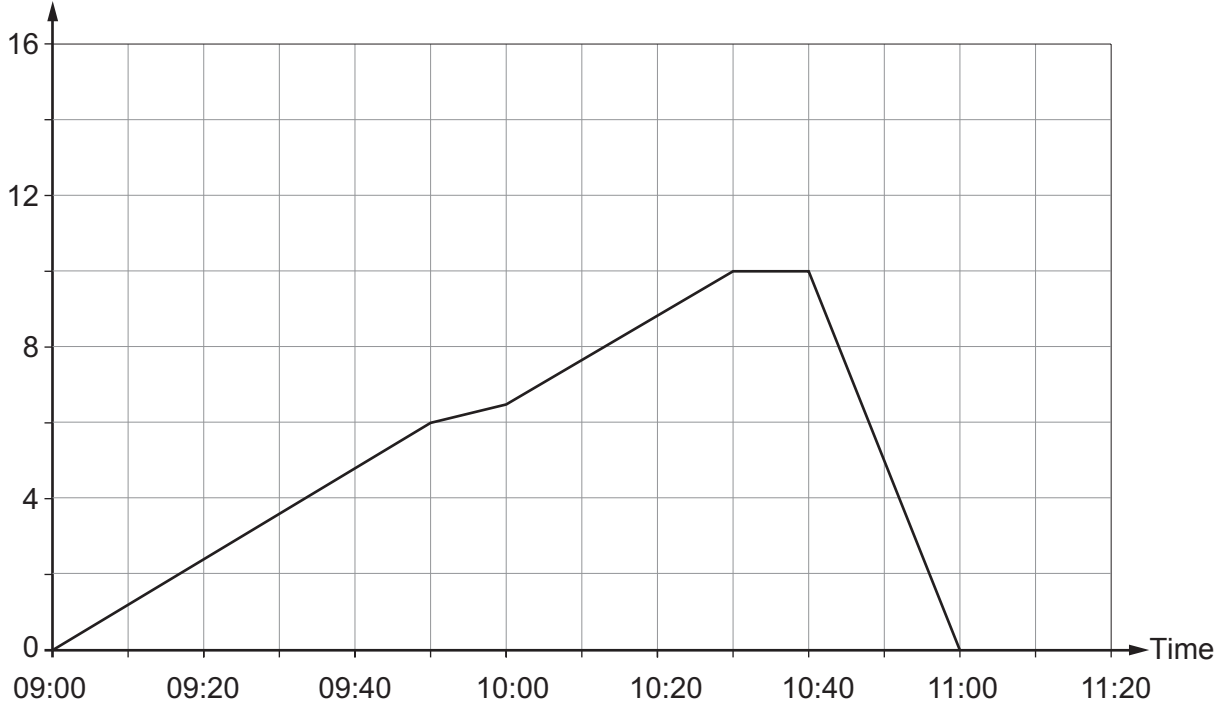
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12. Morgan has started training for a charity run. She uses an App on her phone to record her training session as a graph.

Distance from home (miles)



Morgan set out from home at 9 a.m. She planned to run or walk as far as she could, then telephone her father for a lift home in the car.

- (a) How does the graph show that she ran, walked and then started running again? [1]

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- (b) How many miles had she already run when she started to walk? [1]

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- (c) She telephoned her father as soon as she stopped running for the second time. At what time did she telephone her father? [1]

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- (d) How long did she wait for her father to arrive? [1]

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- (e) At what speed did her father drive home? [2]

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13. The Body Mass Index (BMI) of each of 15 boys in class A was calculated from their height and weight measurements. The results are shown below:

19.9	21.8	21.9	20.5	17.3
18.4	19.7	21.7	18.9	21.1
22.7	19.6	23.7	21.3	24.9

- (a) Complete the frequency table for the results.

[2]

BMI	Tally	Frequency
$17 \leq \text{BMI} < 19$		
$19 \leq \text{BMI} < 21$		
$21 \leq \text{BMI} < 23$		
$23 \leq \text{BMI} < 25$		

- (b) How many of the boys in class A had a Body Mass Index of less than 23?

[1]

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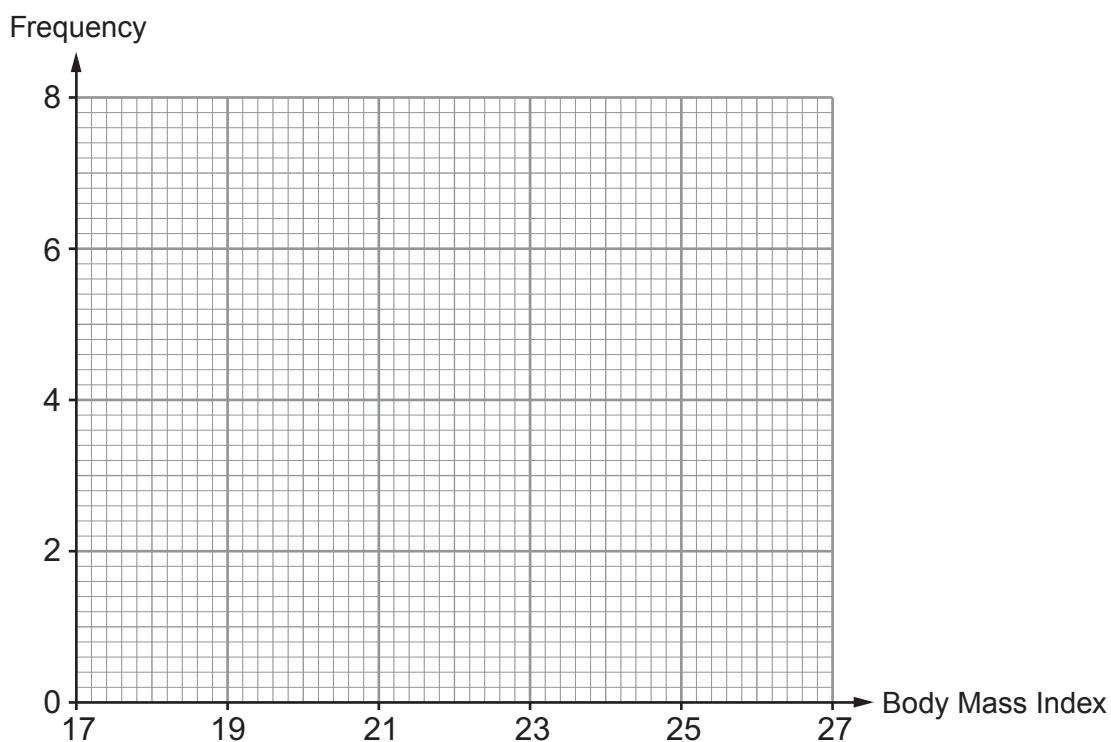
- (c) Which is the modal group in class A?

[1]

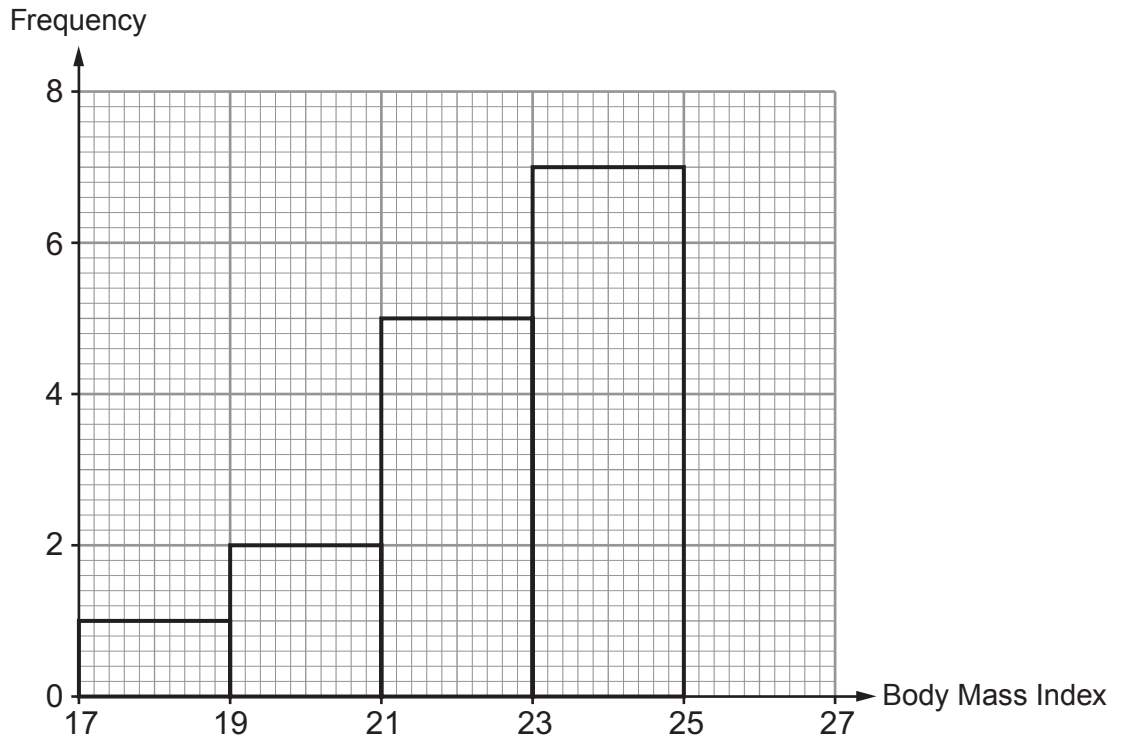
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- (d) On the graph paper below, draw a grouped frequency diagram to show this data.

[2]



- (e) The grouped frequency diagram below shows the results of the Body Mass Index calculations for 15 boys in class B.



It is known that older boys tend to have a higher Body Mass Index.

Explain **how** the grouped frequency diagrams could help you to decide whether class A or class B contains older boys. [1]

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14. William and Rushan earned £45 by washing cars.
They agreed to share the money in the ratio of the time they each spent washing cars.
William washed cars from 10:15 a.m. to 11:45 a.m.
Rushan washed cars from 1:45 p.m. to 4:45 p.m.
How much did each person receive?

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William receives £ Rushan receives £

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15. Cellan buys a season ticket each year to watch Swardiff Rovers football club play all their home matches.

The season ticket payment options for next year are given below.

- Normal price is £510
- Pay before the end of January and get a discount of $\frac{1}{12}$ off the normal price
- If you pay by credit card, a charge of 1.6% will be added

Cellan decides to pay before the end of January to get the discount.

He pays using his credit card.

How much less than the normal price does he pay?

You must show your working.

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16. Solve the equation $8y - 3 = 2(2y + 8)$.

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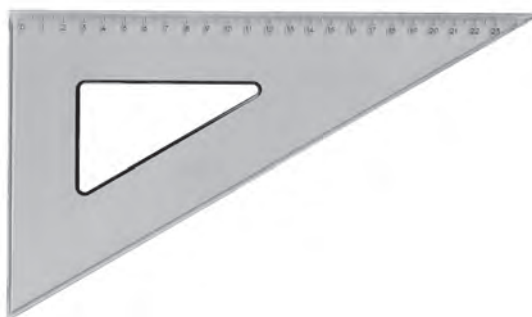
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17. Elwyn is a carpenter.
He normally uses a tool called a try square to measure angles of 90° .

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One day, Elwyn forgets to pack his try square.
In his van, Elwyn has three wooden rods of length 8 cm, 15 cm and 17 cm.
Show, using calculations, that he can create an angle of 90° by joining the ends of these rods to form a triangle. [3]

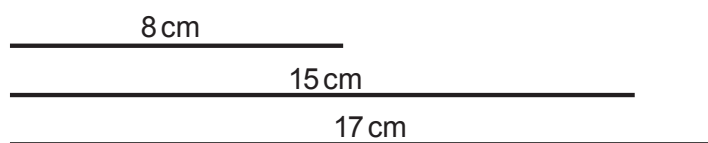


Diagram not drawn to scale

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18. A semi-circle with diameter 7.8 cm has the same perimeter as that of a square.

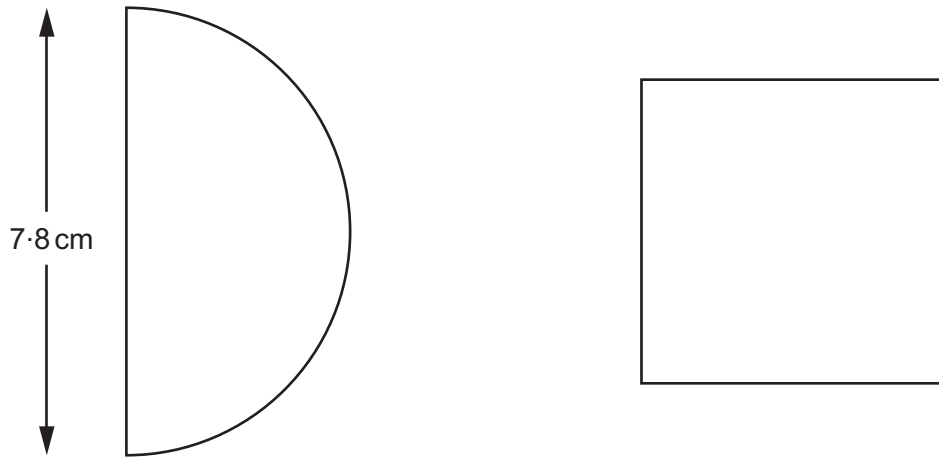


Diagram not drawn to scale

Calculate the area of the square.

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