

General Certificate of Secondary Education 2012

Mathematics

Unit T2

(With calculator)



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Foundation Tier

[GMT21]

GMT21

WEDNESDAY 6 JUNE 9.15 am–10.45 am

TIME

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

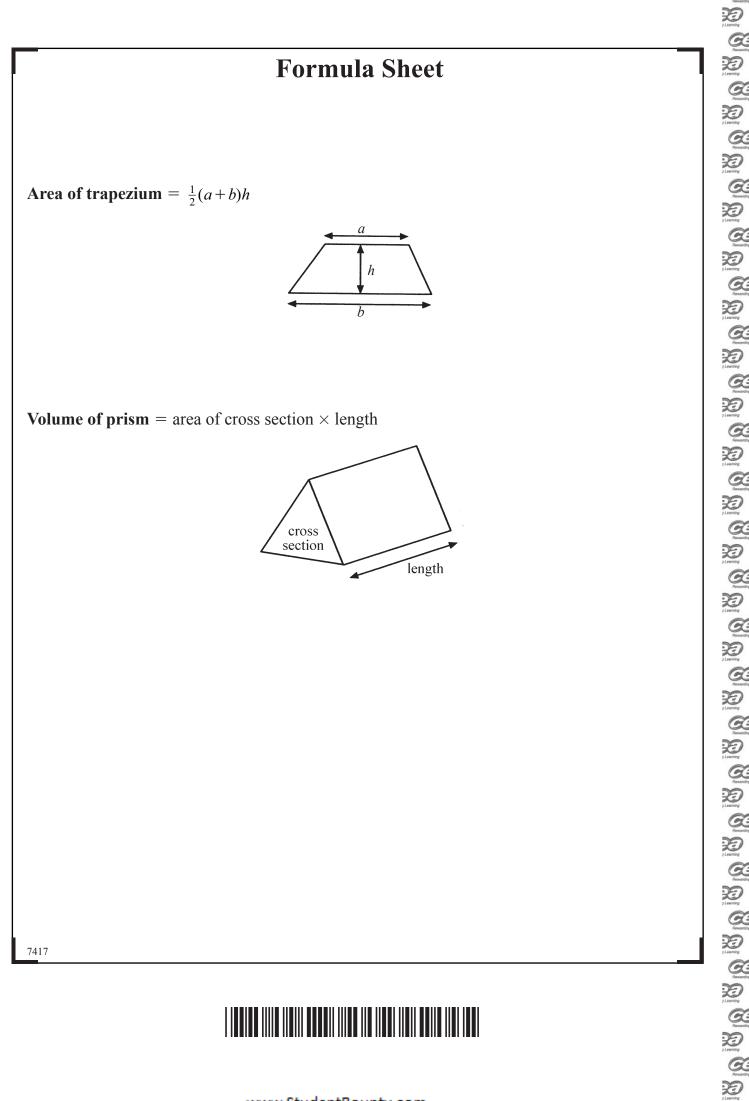
Complete in blue or black ink only. **Do not write in pencil or with a gel pen.** Answer **all twenty-two** questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

You may use a calculator for this paper.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100. Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question. Functional Elements will be assessed in this paper. Quality of written communication will be assessed in **questions 1, 4 and 10**. You should have a calculator, ruler, compasses and a protractor. The Formula Sheet is overleaf.



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Quality of written communication will be assessed in this question.

(a) Show how to work out
$$\frac{7}{12} - \frac{1}{2}$$
 if you do not have a calculator.

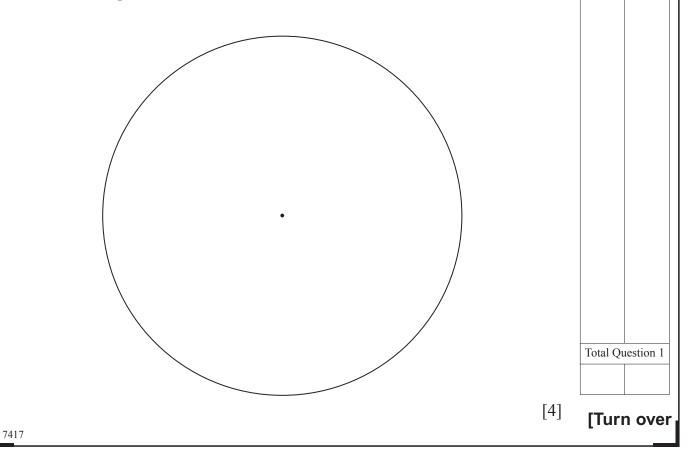
[2]

Examiner Only Marks Remark

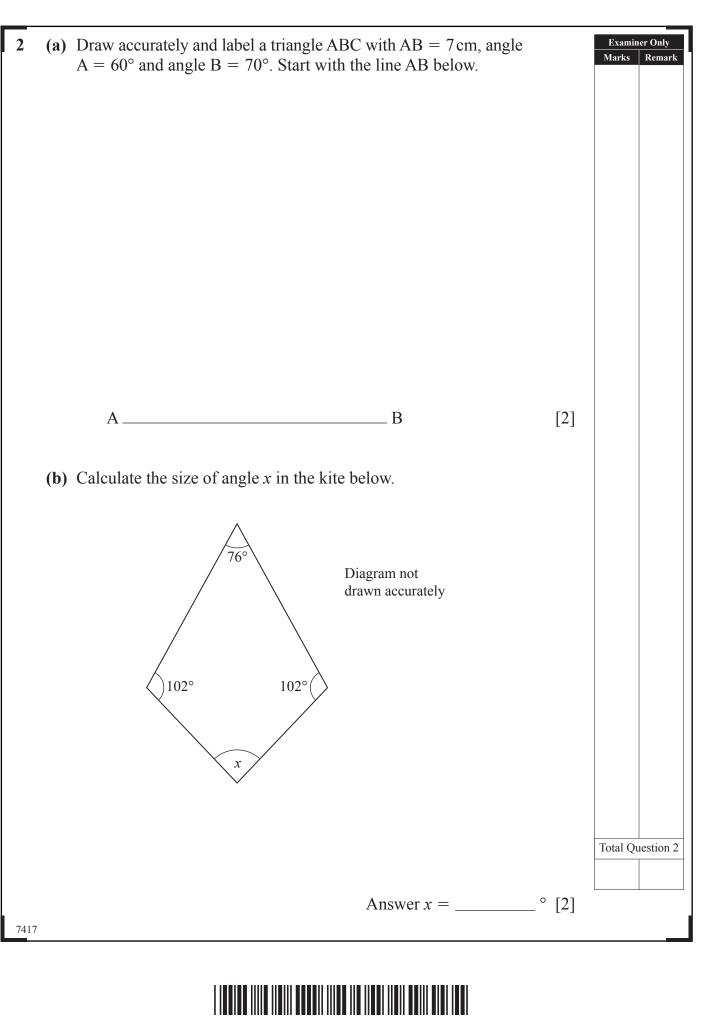
(b) The following table gives the numbers of the pets owned by a group of primary school children.

Pet	Dog	Cat	Rabbit	Guinea Pig
Number of children	55	35	20	10
Angle				

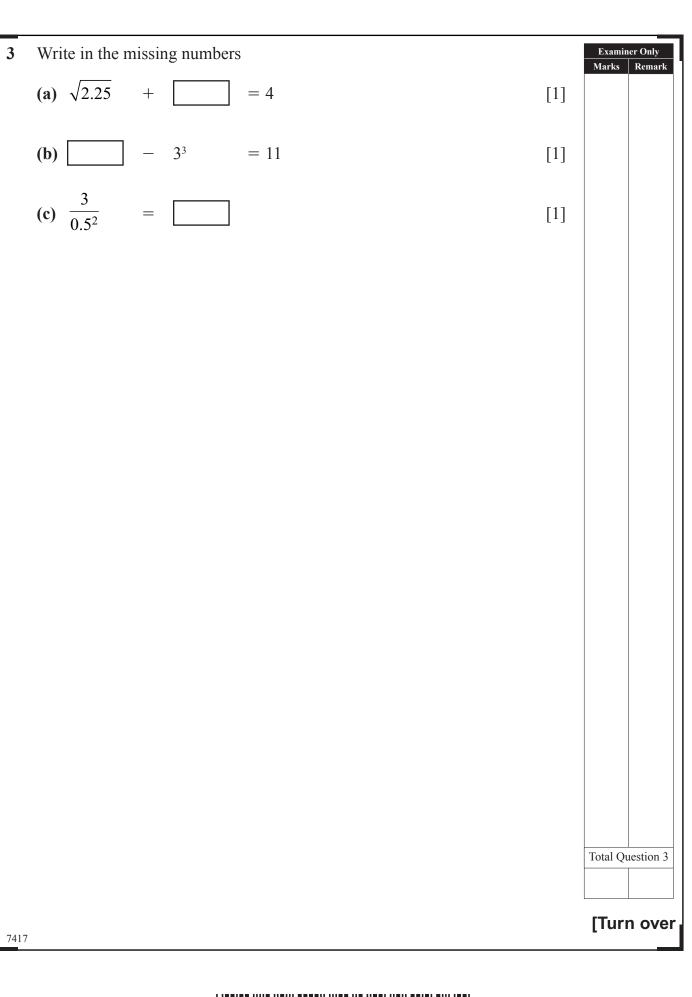
Draw a pie chart to illustrate this data.



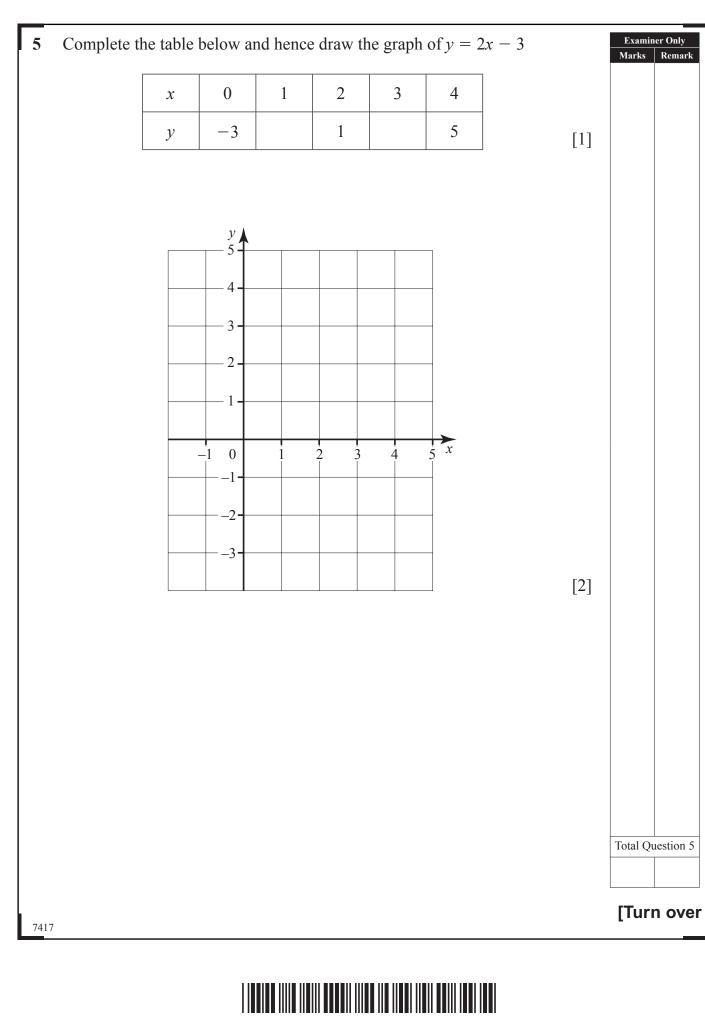




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Qu	ality of written communication will be assessed in this question. Examiner Only Marks Remark
4	Bill bought 36 memory sticks at £4.20 each.
	He sold 28 of them for £4.50 each and the other 8 for £3 each.
	Did he make a profit or loss, and by how much?
	Show your working.
	Answer by £ [4]
	Total Question 4
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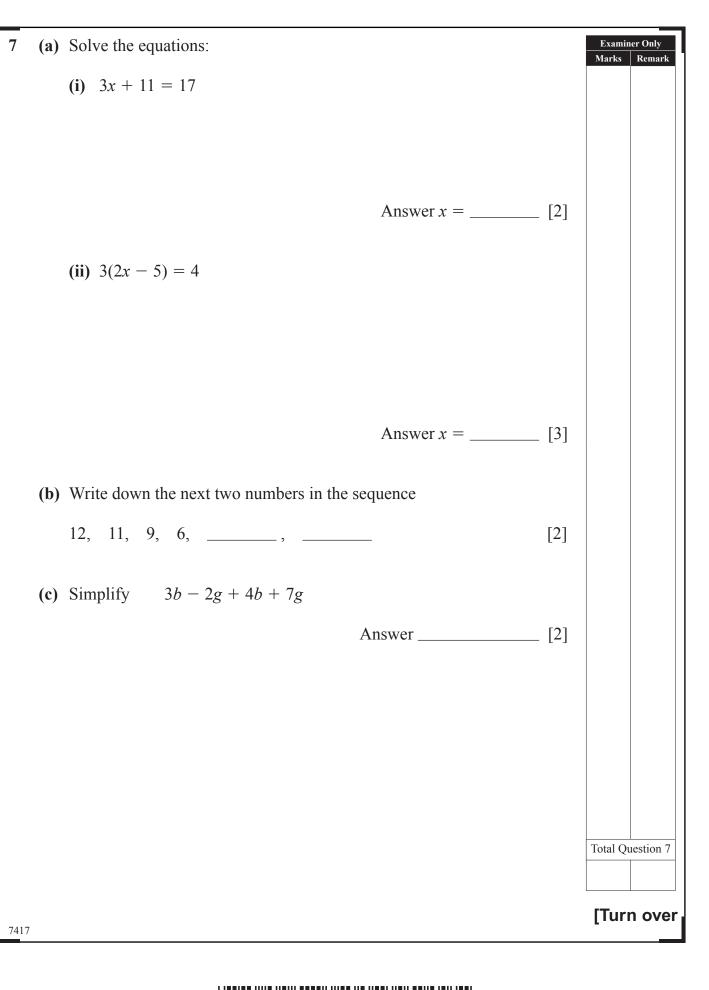
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6		Ages of 24 people taking a car driving test	Examine	r Only
		$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Marks	Remark
	(a)	One age has been recorded inaccurately. Put an X through the inaccurate age and give a reason for your answer.		
		Reason [1]		
	(b)	The test centre manager says, "The range of ages of those who sat the test was 28". Use this information to make the stem and leaf diagram correct. [1]		
	(c)	The data from the stem and leaf diagram is to be represented on a pie chart. Calculate the angle on the pie chart which would represent the modal age.		
		Answer ° [2]		
			Total Que	estion 6
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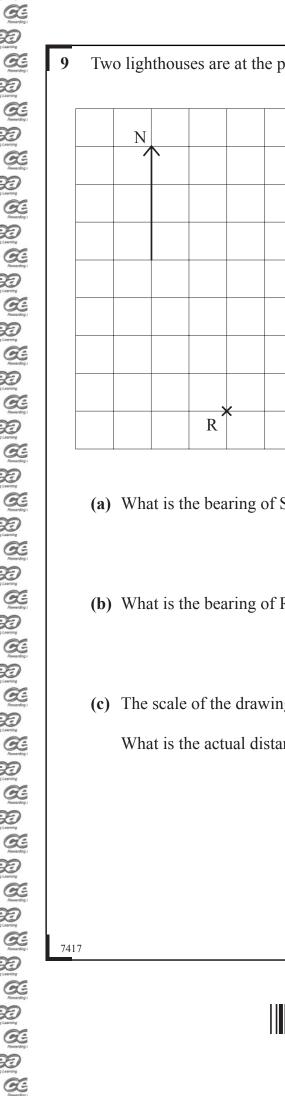


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		Total Qu	estion 8
	Answer [3]		
c)	[1] One week the bureau discovered that 15% of the £20 notes they changed were fake. If they changed £5,600 worth of £20 notes, how many of these £20 notes were fake?		
b)	Explain how the formula would change if the bureau increased the charge to £3.80 for every transaction.		
	Answer euro [3]		
a)	Calculate the number of euro you get for £150 when the exchange rate is 1.2		
e c	calculated using the formula: number of euro = exchange rate \times (number of pounds - 3.5)		
he	e number of euro you get from changing a certain number of pounds can	Marks	Remark
111	exchange bureau charges £3.50 for every transaction.	Examin Marks	



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30

Two lighthouses are at the points R and S on the diagram. Examiner Only Marks Remark S (a) What is the bearing of S from R? Answer ______° [1] (b) What is the bearing of R from S? Answer ______° [1] (c) The scale of the drawing is 1 cm to 4 km. What is the actual distance between the two lighthouses? **Total Question 9** Answer _____ km [3] [Turn over

Quality of written communication will be assessed in this question.		Examiner Only Marks Remark
10 Jacob wants to investigate the hypothesis		
"Children watch more television than adults."		
He surveys 8 boys in his class and 8 teachers in his school.		
Give two reasons why his sample is unsuitable.		
Reason 1		
	[1]	
Reason 2		
	[1]	
		T.(10,
		Total Question 10
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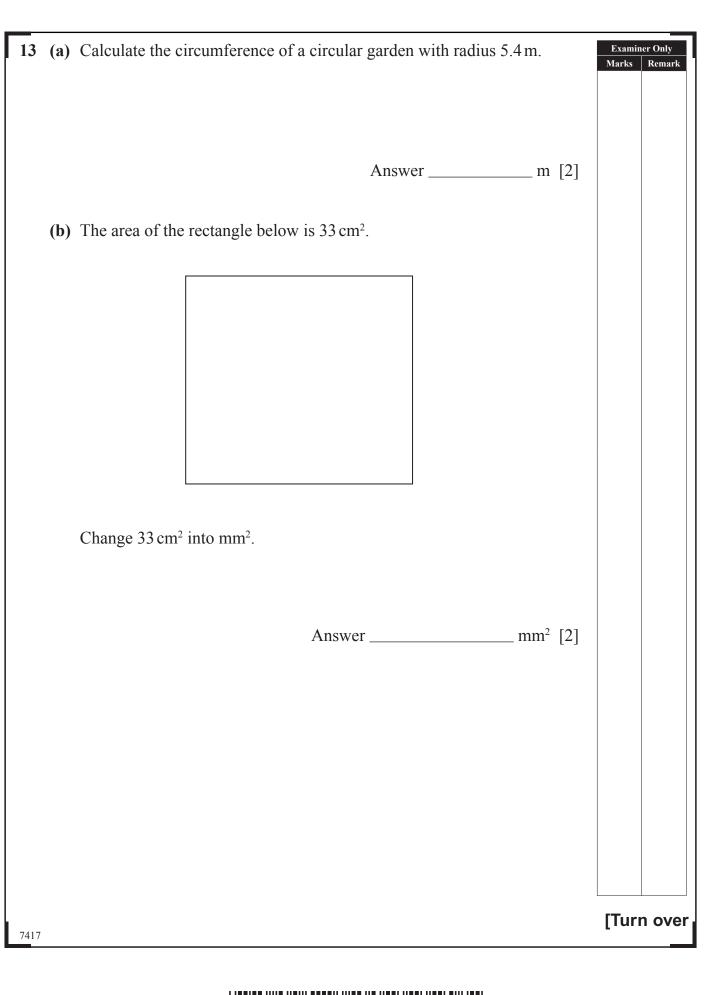
11	Liz buys <i>x</i> markers a £13.50
	Write down an equat
	Equation
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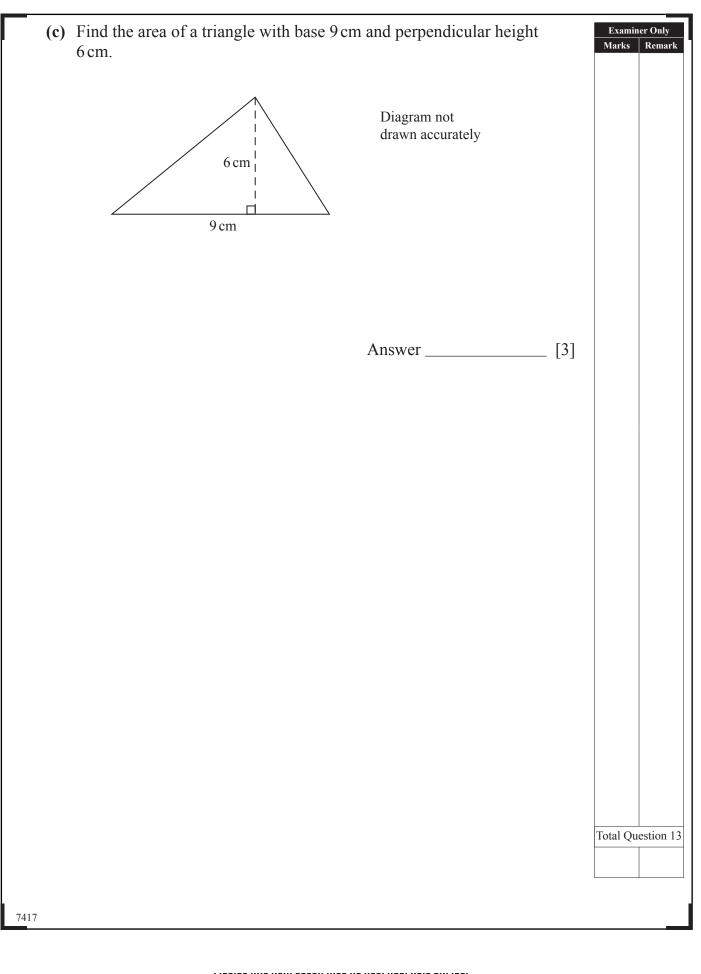
buys x markers at 90p each and 3 books at £1.20 each. The total cost is 3.50	Examiner Only Marks Remark
ite down an equation and solve it to find x .	
uation	
Answer $x = $ [4]	
	Total Question 11
	[Turn ove

12	(a)	Write the ratio 12:27 in its simplest form.		Examin Marks	er Only Remark
		Answer	[1]		
	(b)	The heights of three flower pots are 45 cm, 30 cm and 10 cm.			
		Write the ratio of their heights in simplest form.			
		Answer	[1]		
	(c)	Complete the following:			
		(i) 0.6 can be written as the fraction	[1]		
		(ii) The recurring decimal 0.280280280 can be written using dot			
		notation as	[1]		
			[1]		
	(d)	Fill in the box to make the statement correct.			
		$\frac{1}{1} + \frac{1}{2} = \frac{9}{2}$	[2]		
			[2]		
				Total Qu	estion 12
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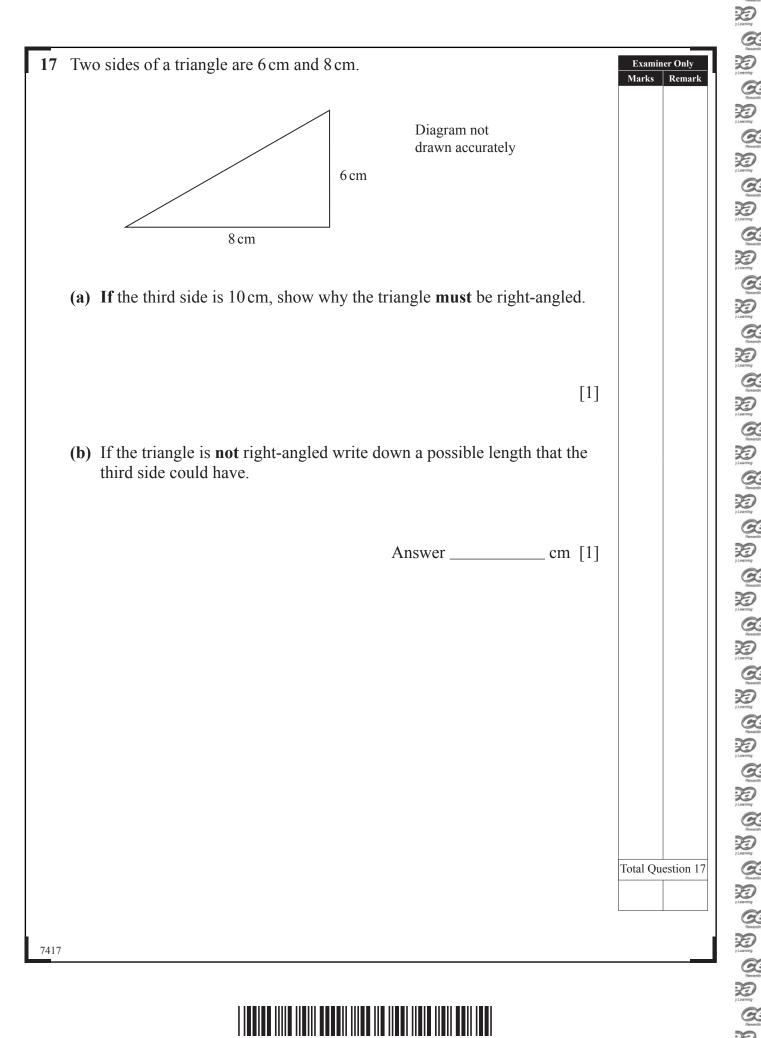
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			Total Qu	estion 14
		Answer cm [2]		
		What is the length of side of the largest square tile that can be used?		
	(c)	A floor measuring 252 cm by 297 cm is to be covered completely by identical square tiles.		
		Answer [1]		
	(b)	Write 297 as a product of prime factors.		
	()	Complete the following to write 252 as a product of prime factors. $252 = 2 \times 2 \times 3 \times $ [1]	Marks	Remark



417		
		Total Question 15
	Answer % [3]	
(0)	This year the cost is £268. What is the percentage increase?	
(h)	Last year Paul's house insurance cost £250.	
	Answer £ [2]	
5 (a)	Paul's car insurance is due and the company quote him a price of £228. Another company make him an offer which is 35% cheaper and he decides to take up their offer. How much does he pay?	Examiner Only Marks Remark

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16	Write down the nth term of the following seq	uences:		Examin Marks	er Only Remark
	(a) 6, 12, 18, 24,				
		Answer	[1]		
	(b) 3, 8, 13, 18,				
		Answer	[2]		
				Total Que	estion 16
_				[Turr	ו over
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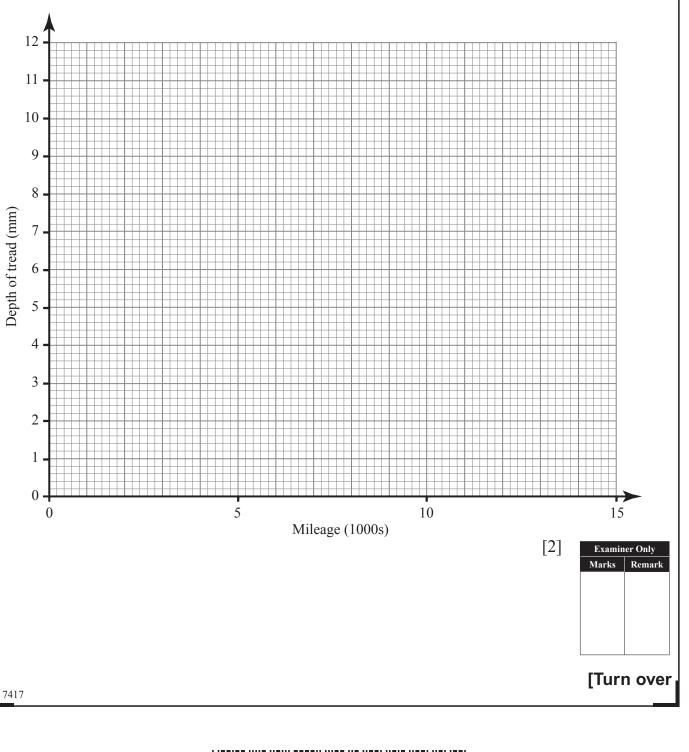
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18 The mileage on seven cars (in 1000s of miles) and the depth of tread on the tyres (in mm) were recorded. The table shows the results.

Mileage (1000s)	3	8	12.5	9	6	15	4.5
Depth of tread (mm)	9.4	7.7	10.6	7.4	8.4	4.9	8.7

(a) Draw a scatter graph for this data.



	Answer			
		[1]		
(c)	Describe the type of correlation of the other points and explain what this means.			
	Answer			
		[2]		
			Total Qu	estic

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10	(a)	Dig the point $(1, 4)$ O is the point $(7, -2)$ Find the coordinates of the	Examiner Only	
17	(a)	P is the point $(1, 4)$. Q is the point $(7, -2)$. Find the co-ordinates of the midpoint of PQ.	Marks Remark	
		Answer (,) [2]		
	(b)	Calculate the size of the interior angle of a regular nonagon (nine-sided polygon).		
		Answer ° [2]		
	(c)	Calculate the area of a semi-circle with diameter 6 cm.		
		Answer cm^2 [2]		
			Total Question 1	9
7417			[Turn ove	۲ ۲



20	The table shows the ages of people visiting the town library one Saturday
	morning.

Age	Frequency
$0 < A \le 10$	7
$10 < A \le 20$	4
$20 < A \le 30$	5
$30 < A \le 40$	4
$40 < A \le 50$	18
$50 < A \le 60$	20
$60 < A \le 70$	22

(a) Write down the class interval which contains the median age.

Answer _____ [1]

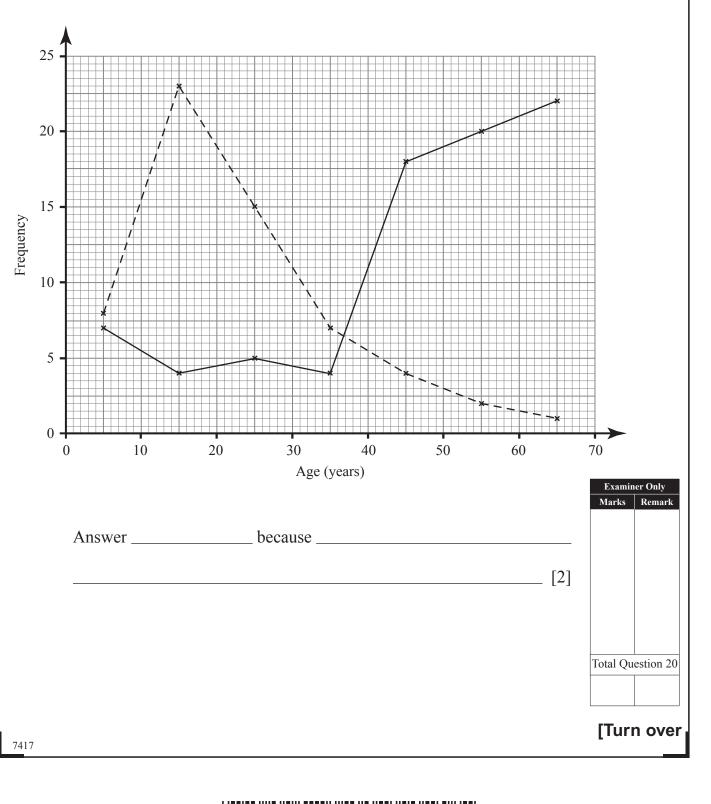


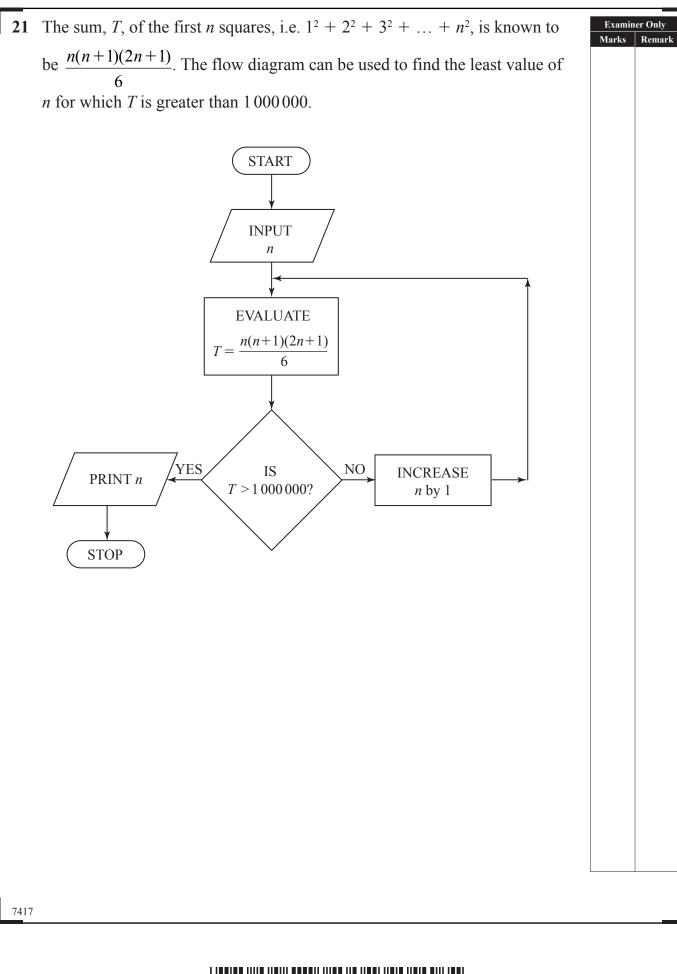
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Examiner Only Marks Remark (b) The frequency polygon below (solid line) illustrates the data recorded at the library.

A second frequency polygon (broken line) illustrates the ages of people visiting a different place in the same town on the Saturday morning.

By considering the polygons suggest what the second place might be. Give a reason for your answer.

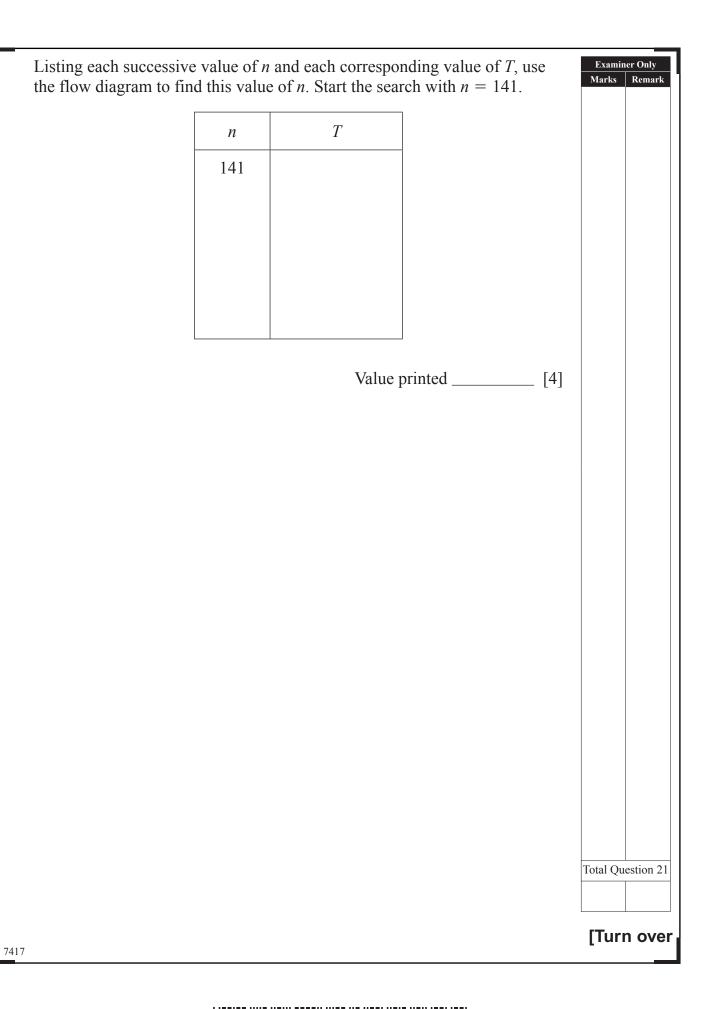


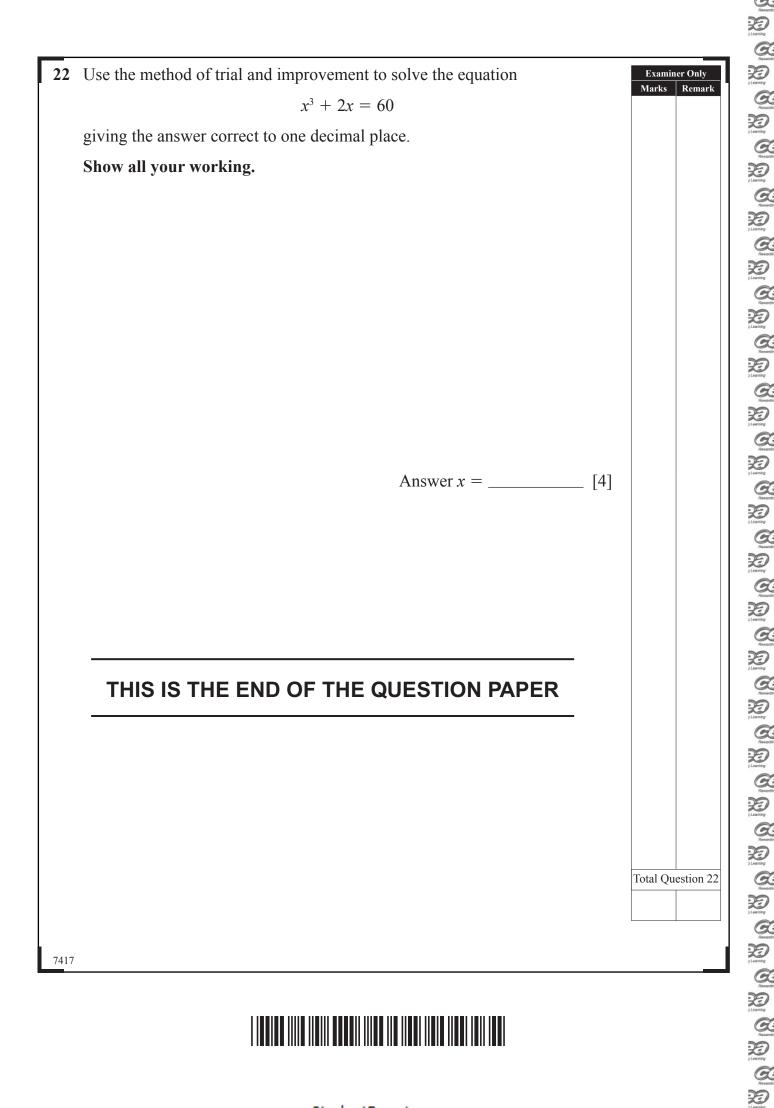


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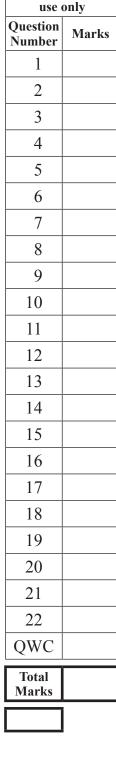


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