



Centre Number

71	
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Candidate Number

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General Certificate of Secondary Education
2013

Mathematics

Unit T2

(With calculator)

Foundation Tier



MV18

[GMT21]

TUESDAY 11 JUNE, 9.15 am–10.45 am

TIME

1 hour 30 minutes, plus your additional time allowance.

INSTRUCTIONS TO CANDIDATES

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

You must answer the questions in the spaces provided.

Complete in blue or black ink only.

Answer **all twenty-seven** 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 at the end of each question indicate the marks awarded to each question or part question.

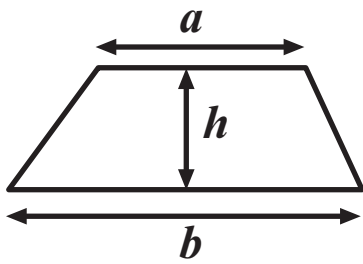
Functional Elements will be assessed in this paper.

Quality of written communication will be assessed in **questions 9 and 26.**

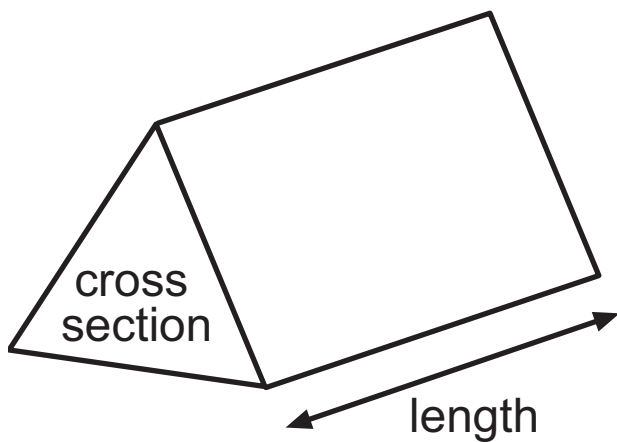
You should have a calculator, ruler, compasses and a protractor.

The Formula Sheet is on page 3.

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



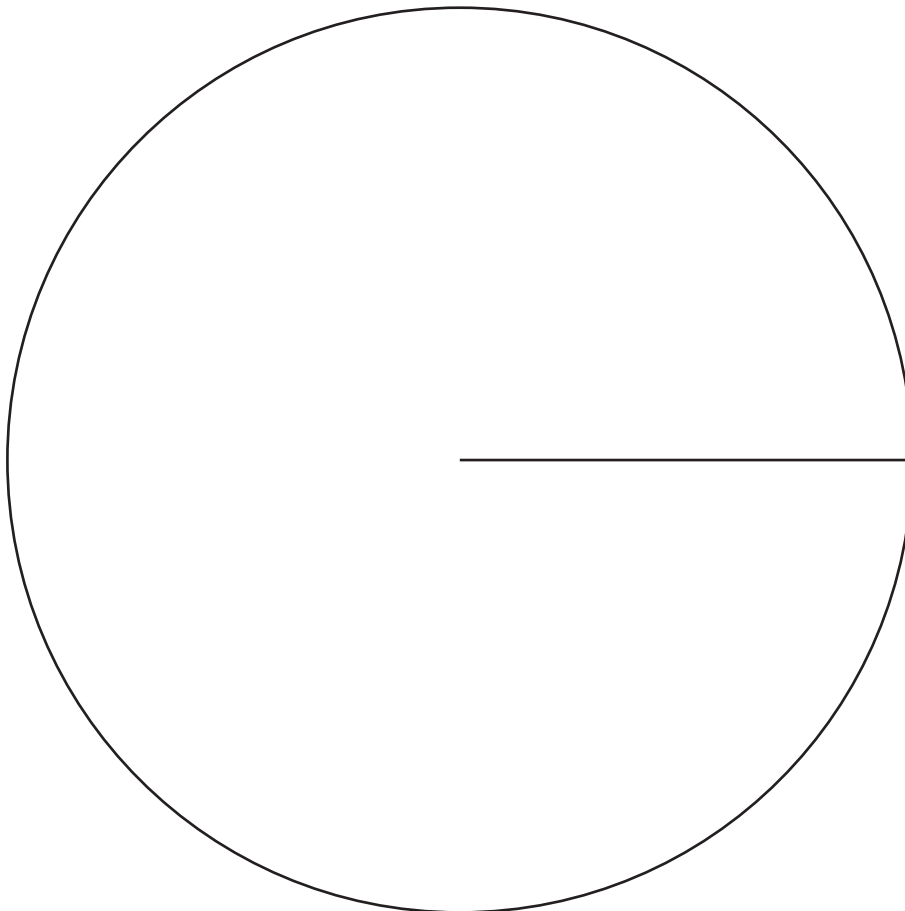
Volume of prism = area of cross section \times length



- 1 The number of crisps sold in a tuck shop was recorded as follows.

Flavour	Frequency	Angle
Salt and Vinegar	10	
Ready Salted	8	
Smokey Bacon	17	
Cheese and Onion	25	

Draw a pie chart to illustrate this information. [4 marks]



2 Calculate $\frac{2}{0.5^2}$ [2 marks]

Answer _____

3 (a) Name each of the 3D shapes from the given descriptions.

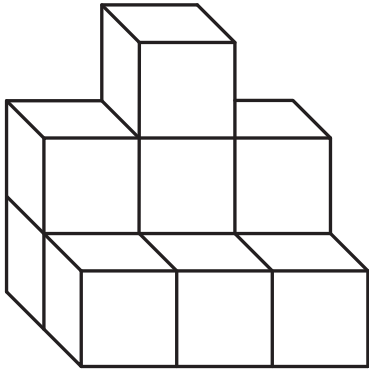
(i) I have 12 edges. I have 8 vertices.
My faces are not all the same. My faces are all rectangles. [1 mark]

Answer _____

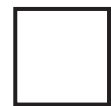
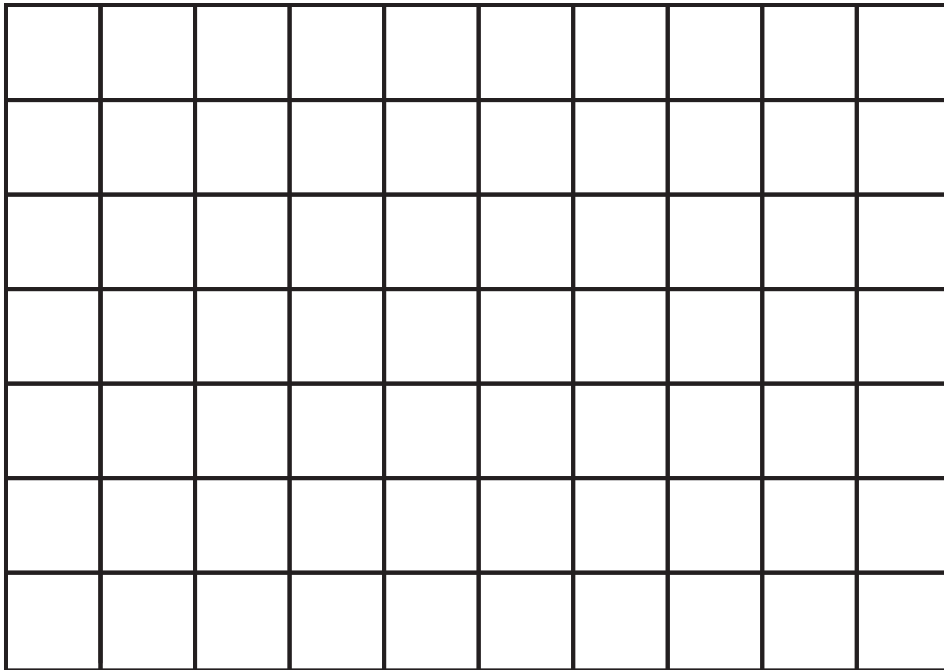
(ii) I have 9 edges. I have 6 vertices.
I have two triangular faces and three rectangular faces. [1 mark]

Answer _____

(b) This solid is made up of centimetre cubes.



On the grid below draw the front elevation of the solid. [2 marks]



represents
 1cm^2

4 (a) Simplify $7a - 3b - 2a + 6b$ [2 marks]

Answer _____

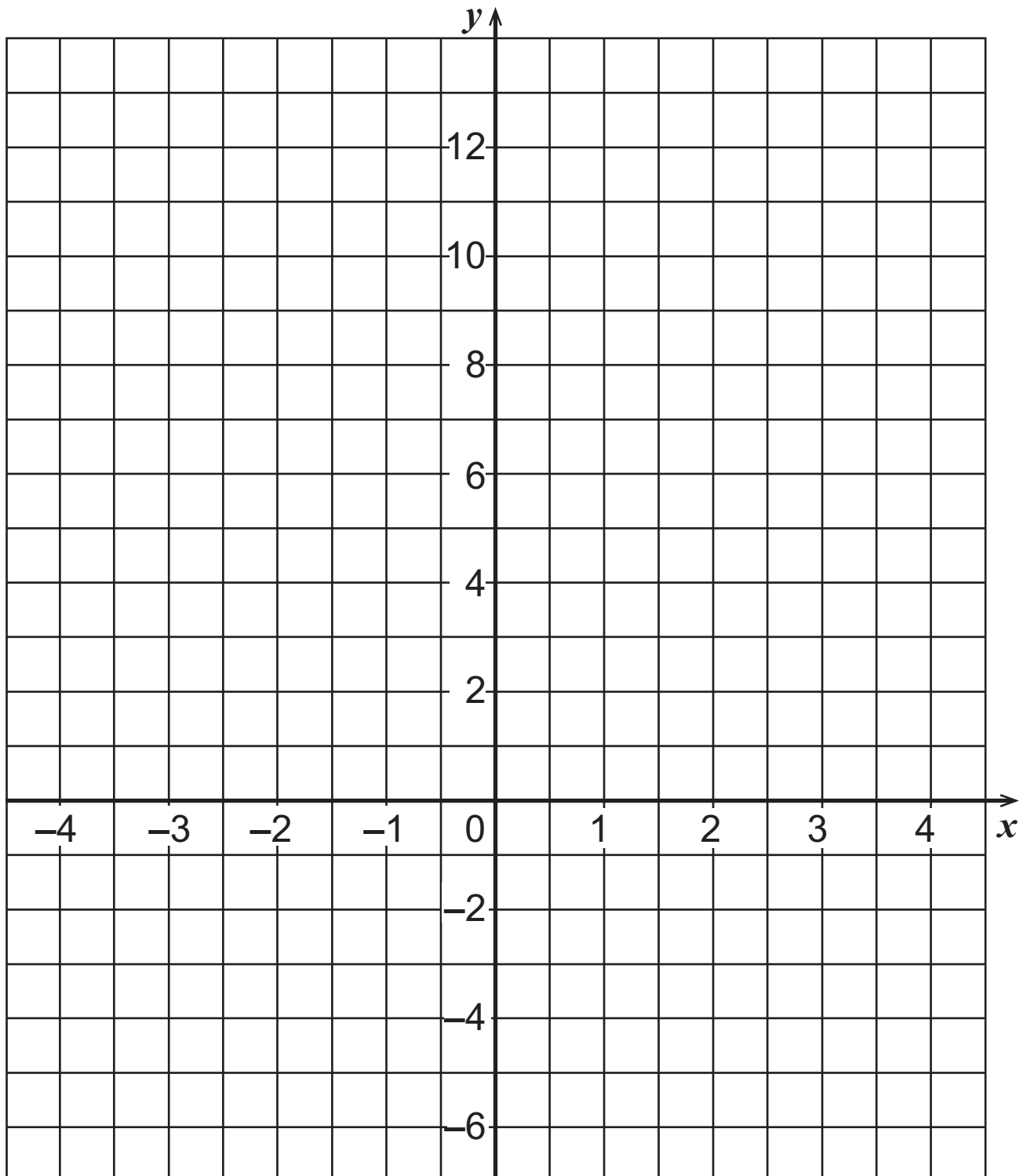
(b) Find the value of $5x + 2y$
when $x = 2$ and $y = -6$ [2 marks]

Answer _____

5 (a) Complete the table for $y = 6 - 2x$ [2 marks]

x	-1	0	1	2	3
$y = 6 - 2x$	8		4		0

(b) Using values from the table, draw the graph of $y = 6 - 2x$ [2 marks]



- 6 (a) Which of the following fractions is nearest in size to $\frac{1}{4}$? [2 marks]

$$\frac{6}{25}$$

$$\frac{13}{50}$$

$$\frac{49}{200}$$

$$\frac{97}{400}$$

Show your work.

Answer _____

- (b) Work out the answer to the following, without using a calculator. [2 marks]

Show your work.

$$\frac{7}{12} - \frac{1}{6}$$

- 7 Construct a triangle ABC where AB is 8 cm, AC is 5 cm and angle A is 55° [2 marks]

A^x

Timetable: Enniskillen Bus Centre – Omagh Bus Centre Service 94 (Monday–Friday)										
Calling points:										
Enniskillen, Bus Centre	...	0655	0735	0740	0905	1130	1330	1545		
Mullaghmeen, Village	...	...	...	...	...	...	...	...
Ballinamallard, Church	...	0710	...	0755	0920	...	1345	1605		
Trillick, Warnock's Shop	...	0720	0802	0805	0930	...	1355	1615		
Irvinestown, Bypass	...	...	...	...	...	1200	...	...
Dromore (Tyrone), Bypass	0727	0730	...	0815	0940	1220	1405	1625		
Prices Shop, near Dromore	...	0738	...	0823	0948	1225	1413	1633		
Omagh, Bus Centre	0752	0752	...	0850	1005	1240	1430	1655		

- (a) The 0740 bus from Enniskillen is running 8 minutes late. At what time will it arrive in Ballinamallard? [1 mark]

Answer _____

- (b) A girl needs to be in Omagh for an appointment at 1.15 pm. She leaves Enniskillen on the latest possible bus to be in time for her appointment. How long will she have to spend in Omagh before the appointment? [2 marks]

Answer _____ minutes

Quality of written communication will be assessed in this question.

9 The boys in Class 12A scored the following goals in a penalty competition:

6, 10, 9, 8, 7, 6, 7, 10, 9, 8

The 8 boys in Class 12B scored a total of 72 goals.

Which class did better in the competition? [4 marks]
Explain your answer.

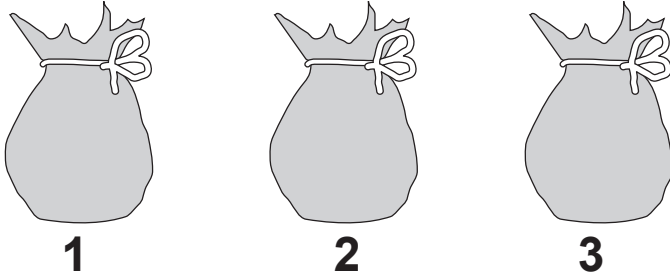
Answer _____

because _____

- 10** In a greengrocer's, cooking apples cost **£2.65** per kg.
Mary buys 0.6 kg of cooking apples.
She also buys 0.4 kg of tomatoes.
At the checkout her bill for both items comes to **£2.83**
Work out the price **per kg** for the tomatoes. [4 marks]

Answer **£** _____

11



Bag 1 contains m marbles.

Bag 2 contains 5 less marbles than Bag 1

(a) Write down an expression in terms of m for the number of marbles in Bag 2 [1 mark]

Answer _____

Bag 3 contains twice as many as in Bag 1 **plus** the number of marbles that are in Bag 2

(b) Write down an expression in terms of m for the number of marbles in Bag 3
Give your answer in its simplest form. [2 marks]

Answer _____

The total number of marbles in Bag 3 is 22

(c) Set up and solve an equation to help find how many marbles are in **Bag 2** [3 marks]

Answer In Bag 2 there are _____ marbles

12 (a) Fill in the boxes to show the next 2 terms in the sequence [2 marks]

16, 11, 6, ,

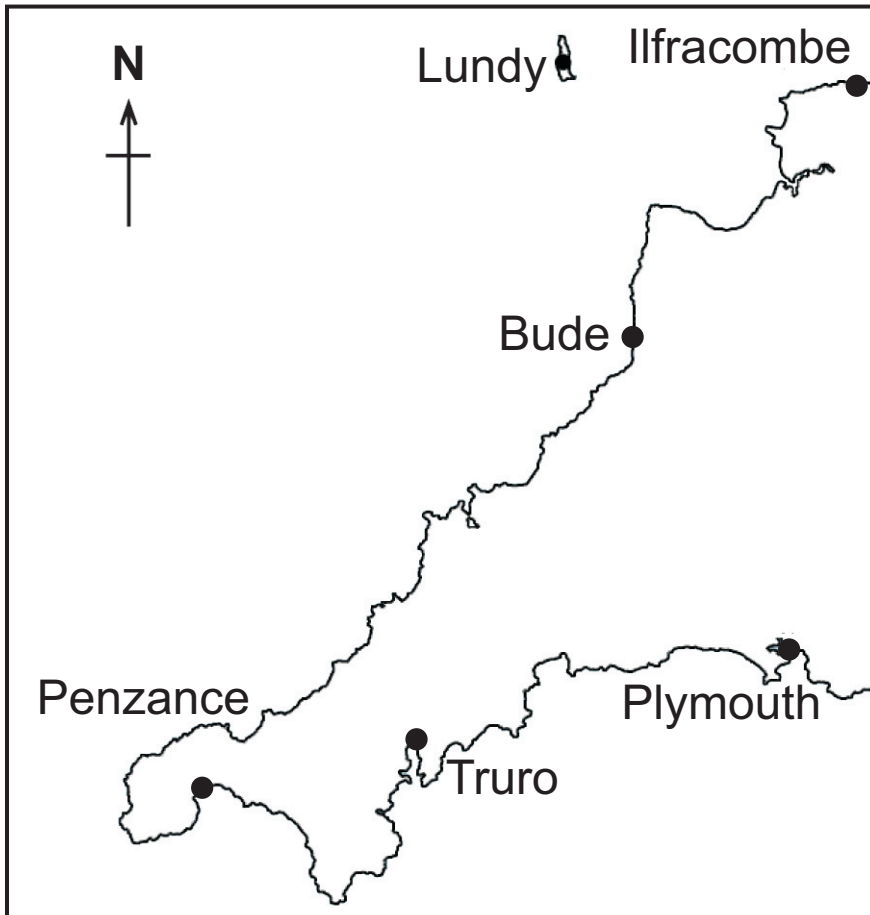
(b) The n^{th} term in a sequence is given as

$$2n + \boxed{}$$

The 3rd term is 10. What value is missing from the box? [2 marks]

Answer _____

13



Boscastle is on a bearing of 028° from Truro.
Boscastle is on a bearing of 310° from Plymouth.
Locate the position of Boscastle on the map above.
Indicate Boscastle with a point marked B. [3 marks]

14 (a) Show how to work out the answer to the following without using a calculator. [2 marks]

$$\frac{3}{8} \div \frac{3}{4}$$

(b) What percentage is £24 of £320? [2 marks]

Answer _____ %

15 The correlation in a scatter graph may be described as one of the following:

no correlation positive correlation negative correlation

Write down the type of correlation you would expect to find in scatter graphs which show the following information:

(a) average daily temperature and cold drinks sales, [1 mark]

Answer _____

(b) marks in a test and distance travelled to school, [1 mark]

Answer _____

(c) number in family and average weekly amount spent on food, [1 mark]

Answer _____

(d) average speed for journey to school and average time for journey to school. [1 mark]

Answer _____

16 The heights (in centimetres) of fifteen girls in a Dance Class are:

151 173 157 165 166 168 170 169
169 169 168 171 154 176 177

Construct a stem and leaf diagram to illustrate these heights. [3 marks]

17

Primus Energy Gas Tariff

Standing charge is 7.93p per day

Gas used is 4.433p per unit

Marie's gas meter was read on 1st March.

The reading was

0	1	9	5	7
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The meter was read again on 1st June.

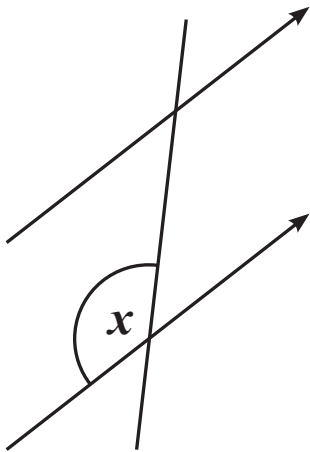
The reading was

0	4	1	0	8
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Calculate the total gas bill that Marie will have to pay for the 92 days from 1st March, if VAT is charged at 5% on the total. [5 marks]

Answer £ _____

- 18 (a) Mark the angle corresponding to angle x on the diagram. [1 mark]



- (b) Calculate the sum of the interior angles of a regular octagon. [2 marks]

Answer _____°

- (c) Is it possible to have a regular polygon with an interior angle of 130° ? [2 marks]
Explain your answer.

19 Convert 62 000 cm² into m². [2 marks]

Answer _____ m²

20 Solve $\frac{2x}{5} - 3 = 7$ [2 marks]

Answer $x =$ _____

21 Derek is trying to find a number x such that $x^2 + \sqrt{x} = 90$

He knows the answer is between 9 and 10

Use trial and improvement to find Derek's number to
2 decimal places. [4 marks]

Show your work.

Answer Derek's number is _____

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(Questions continue overleaf)

22 (a) (i) Write 210 as a product of prime factors. [2 marks]

Answer _____

(ii) Find the LCM of 210 and 84 [2 marks]

Answer _____

(iii) Find the HCF of 210 and 84 [1 mark]

Answer _____

(b) Andrea opened an account using £720 with the Eastern Bank.

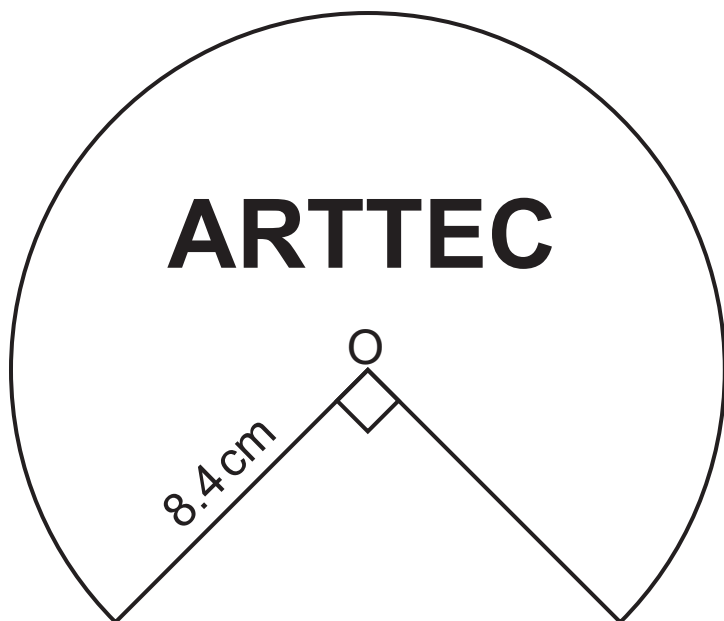
After one year, the bank paid interest into her account.

She then had £747.27 in her account.

Work out, as a percentage, Eastern Bank's interest rate on the account. [3 marks]

Answer _____ %

23 A company logo is shown below. It is $\frac{3}{4}$ of a circle, centre O.



Calculate the perimeter of the logo. [3 marks]

Answer _____ cm

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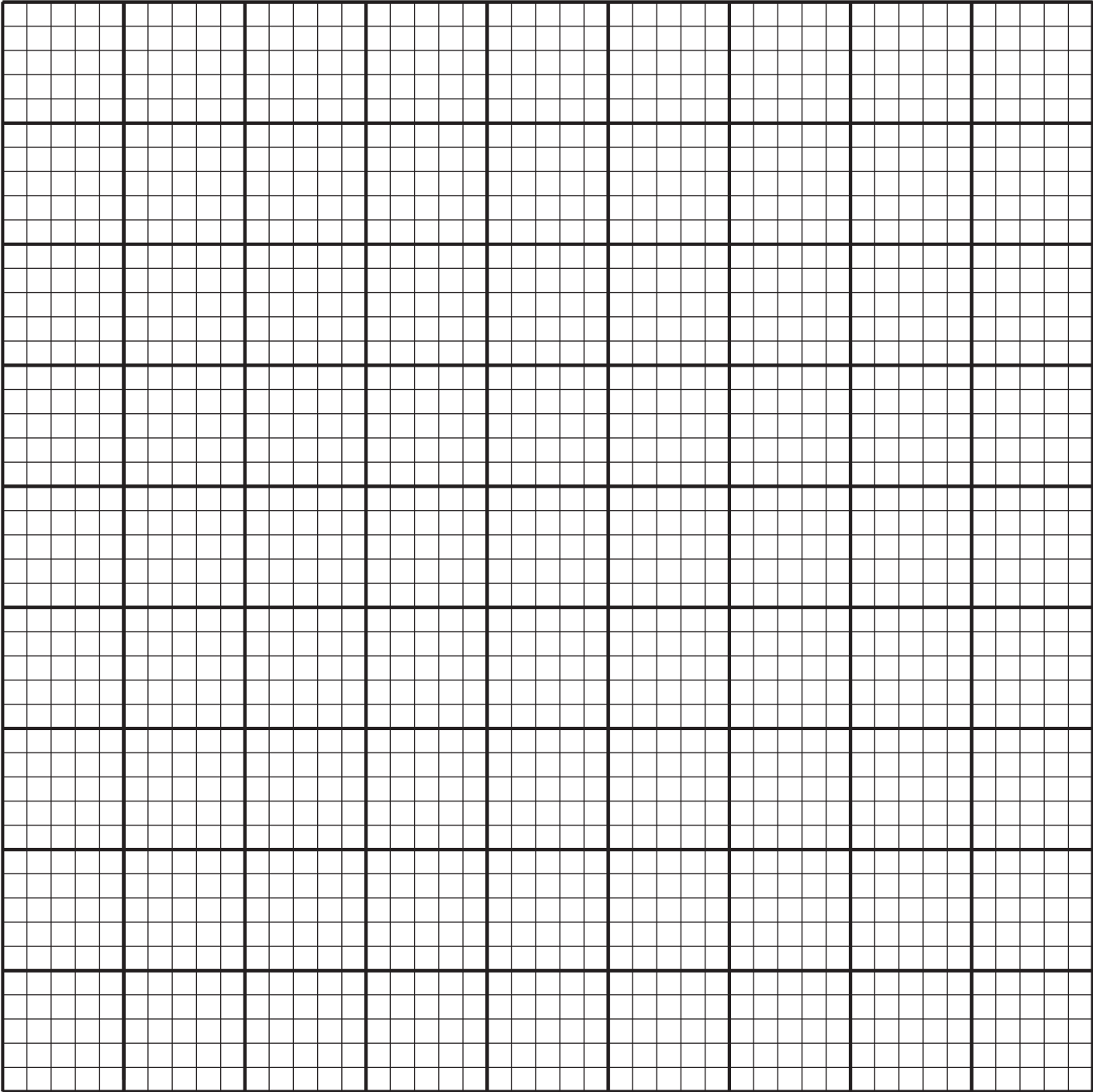
(Questions continue overleaf)

24 The number of items that 80 students had in their sports bags was recorded.

The numbers were grouped as shown in the table.

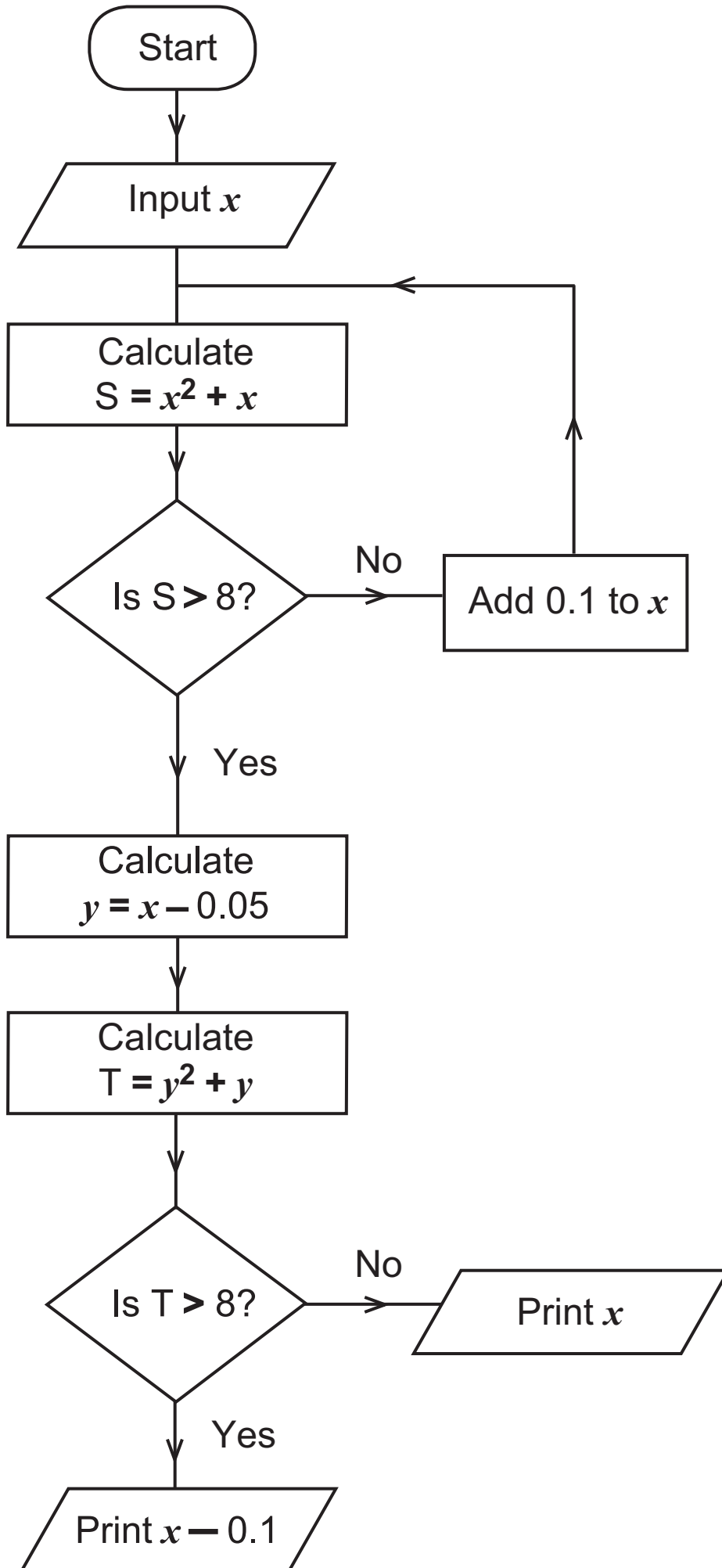
Number (n)	Frequency
$2 < n \leq 4$	8
$4 < n \leq 6$	24
$6 < n \leq 8$	18
$8 < n \leq 10$	17
$10 < n \leq 12$	9
$12 < n \leq 14$	4

(a) Show this information on a frequency polygon. [3 marks]



(b) Which class interval contains the median number? [1 mark]

Answer _____



Starting with $x = 2.0$ use the flow chart on page 34 to find the value printed. [4 marks]

x	S	y	T

Answer Print _____

Quality of written communication will be assessed in this question.

26 The dimensions of three triangles are given:

Triangle A: 5 cm 6 cm 8 cm

Triangle B: 5 cm 12 cm 13 cm

Triangle C: 5 cm 10 cm 12 cm

Only one of these triangles is right-angled.

Which one? [3 marks]

Explain your answer clearly.

Triangle: _____ because _____

27 Find the value of x when $5x^3 = 135$ [1 mark]

Answer $x =$ _____

THIS IS THE END OF THE QUESTION PAPER

Sources

Pg 19, Q13, Map of the South West tip of England: © Graded examples in Mathematics: Geometry & Trigonometry, by M R Heylings, page 24, published by Schofield & Sims, 1984. ISBN 0721722314

For Examiner's use only	
Question Number	Marks
1	
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Total Marks	
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Examiner Number

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