



General Certificate of Secondary Education
January 2017

Centre Number

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Candidate Number

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Mathematics

Unit T1
(With calculator)
Foundation Tier



[GMT11]

GMT11

MONDAY 9 JANUARY, 9.15am–10.45am

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.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page, on blank pages or tracing paper.

Complete in black ink only. **Do not write with a gel pen.**

Answer **all twenty-nine** questions.

All working should be clearly shown in the spaces provided. 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 **14** and **24**.

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

The Formula Sheet is on page 2.

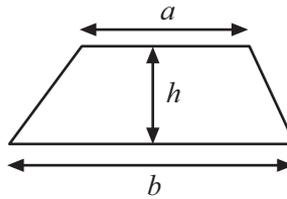
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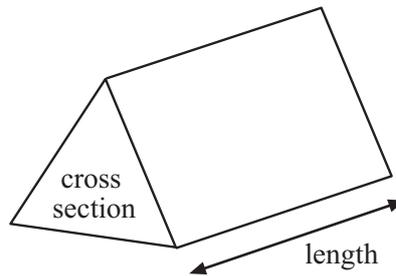
32GMT1101

Formula Sheet

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



$$\text{Volume of prism} = \text{area of cross section} \times \text{length}$$





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(Questions start overleaf)

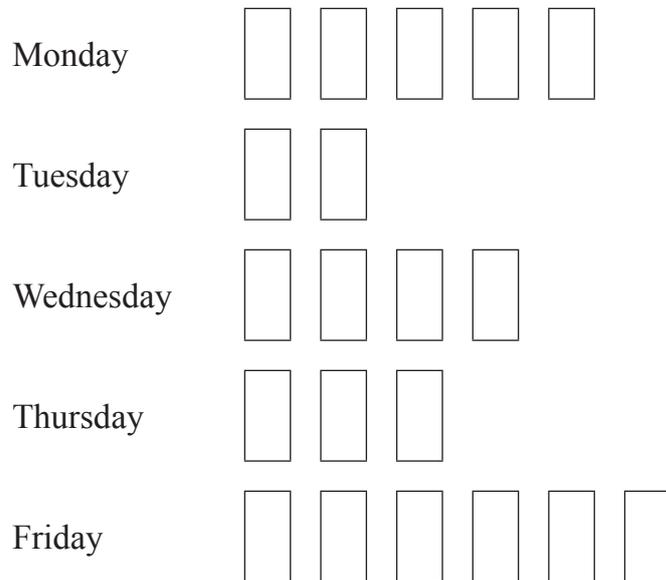
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- 1 The pictogram shows the number of library books borrowed from Monday to Friday one week.



- (a) On Tuesday 16 books were borrowed. Complete the key

represents _____ books [1]

- (b) How many more books were borrowed on Friday than on Thursday?

Answer _____ [1]

- (c) On which day was the largest number of books borrowed?

Answer _____ [1]



(d) Calculate the mean number of books borrowed per day from Monday to Friday.

Answer _____ [3]

(e) On Saturday 20 books were borrowed. Complete the row for Saturday below.

Saturday

[1]

[Turn over



2

21 22 23 24 25 26 27 28 29

(a) From the above list of numbers, select

(i) a multiple of 8

Answer _____ [1]

(ii) a factor of 130

Answer _____ [1]

(iii) a square number

Answer _____ [1]

(iv) a cube number

Answer _____ [1]

(v) two prime numbers

Answer _____ and _____ [1]

(b) Write down the largest prime number that is smaller than 21

Answer _____ [1]



3 Look at Freddie's grocery order.

(a) Fill in the missing amounts in all the blank spaces.

2 cartons of juice at £1.45 each	£
3 breakfast bars at 56p each	£
1 box of cereal	£3.75
4 baps at 32p each	£
Box of 10 eggs	£2.78
Order Total	£
Delivery Charge	£1.50
Total Amount to pay	£

[4]

(b) How much change should he receive from £20?

Answer £ _____ [2]



4 (a) ABCD is a quadrilateral.

The sides AB and AD are both 3 cm long.

The sides BC and CD are both 5 cm long.

What type of quadrilateral is ABCD?

Answer _____ [1]

(b) EFGH is a quadrilateral.

The sides EF and GH are both 4 cm long and parallel.

What type of quadrilateral is EFGH?

Answer _____ [1]



5 (a) Write three thousand and seventy in figures.

Answer _____ [1]

(b) Write the number 100 000 in words.

Answer _____ [1]

(c) Round 7342 to the nearest ten.

Answer _____ [1]

(d) Round 0.08461 correct to three decimal places.

Answer _____ [1]

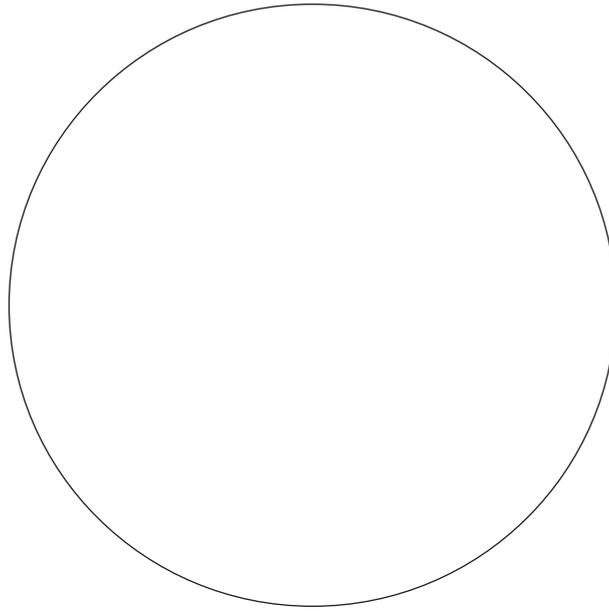
(e) Round 0.08461 correct to three significant figures.

Answer _____ [1]

[Turn over



6



(a) Measure the diameter of the circle.

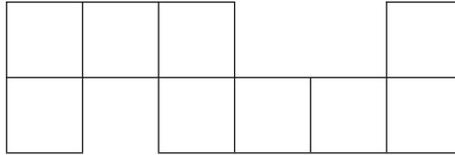
Answer _____ cm [1]

(b) Draw a chord of length 6 cm on the circle.

[1]



7



(a) Find the perimeter of the shape above.

Answer _____ cm [1]

(b) Find the area of the shape above.

Answer _____ [2]

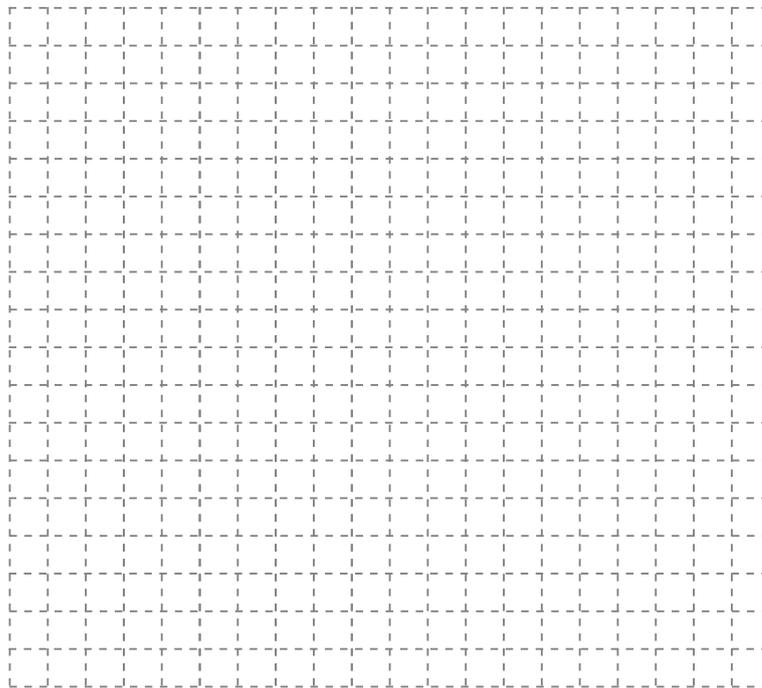


- 8 The number of concert tickets sold at different prices is shown.

Cost of ticket	Number sold
£10	12
£12	35
£15	25
£20	12
£25	10

- (a) Draw a bar chart on the grid to show this information.

[3]



- (b) How much **more** was the income from the most popular tickets than from the most expensive tickets?

Answer £ _____ [3]



9 The scores in a competition were

14	11	23	17	15	13
23	29	17	14	23	16

(a) Find the mode of the scores.

Answer _____ [1]

(b) Find the median of the scores.

Answer _____ [2]

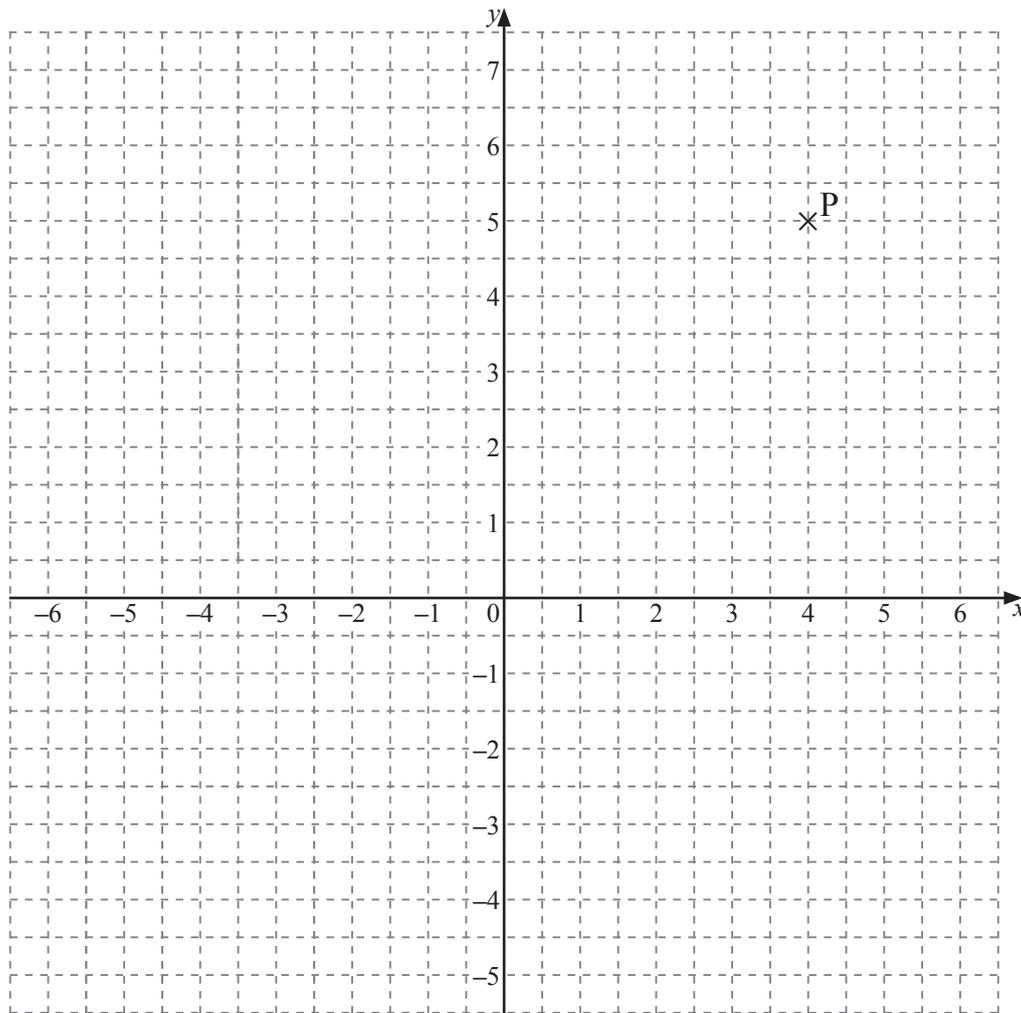
(c) Find the range of the scores.

Answer _____ [1]

[Turn over



10



(a) Write down the co-ordinates of the point P.

Answer (_____ , _____) [1]

(b) Plot and label the points Q $(-1, -5)$ and R $(-6, 5)$ [2]

(c) Join up P, Q and R to form a triangle.

What type of triangle is PQR?

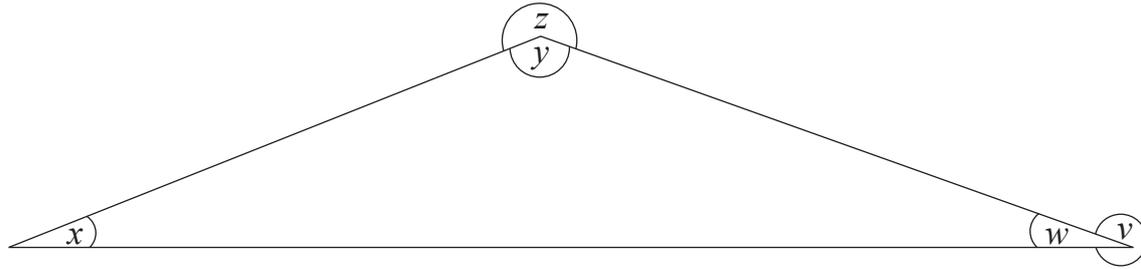
Answer _____ [1]

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11



(a) Measure the angle x .

Answer _____ $^{\circ}$ [1]

(b) From the diagram, name

(i) an obtuse angle,

Answer _____ [1]

(ii) a reflex angle.

Answer _____ [1]



12 The temperatures in six cities were

Aberdeen	Belfast	Cork	Dublin	Edinburgh	Helsinki
-5°C	-1°C	2°C	1°C	0°C	-8°C

(a) What was the difference in temperature between Belfast and Helsinki?

Answer _____ $^{\circ}\text{C}$ [1]

(b) What was the difference in temperature between Cork and Helsinki?

Answer _____ $^{\circ}\text{C}$ [1]

(c) The temperature in Oslo was 2° colder than Aberdeen. What was the temperature in Oslo?

Answer _____ $^{\circ}\text{C}$ [1]



13 Look at the numbers below

0.31 0.301 0.303 0.103

0.1003 0.3003 0.33 0.11

(a) Which is the smallest number?

Answer _____ [1]

(b) Which of the numbers is nearest in size to $\frac{1}{9}$?

Answer _____ [1]

(c) How many of the numbers are bigger than 30%?

Answer _____ [1]



Quality of written communication will be assessed in this question.

14 Show how to work out 247 multiplied by 62 without using a calculator.

You must show every step of your work.

[3]

15 Andy has £20 and wants to buy as many files as possible costing £1.45 each.
How many can he buy and what change should he receive?

Answer _____ files with £ _____ change [3]



16

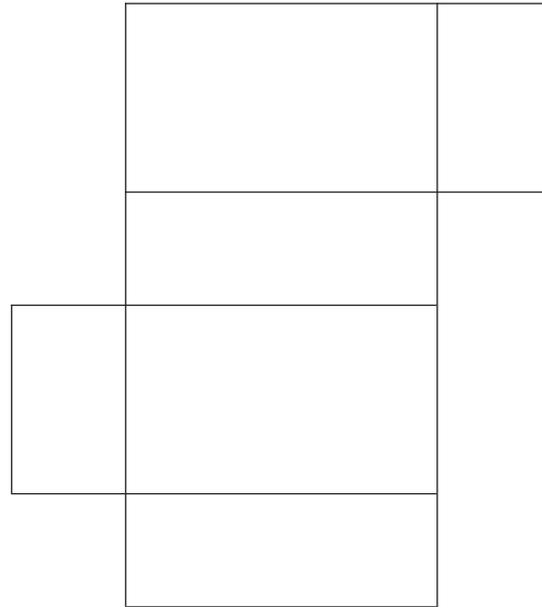


Diagram not
drawn accurately

The lengths of the sides in the net are 2 cm, 3 cm and 5 cm.

(a) What 3D shape can be made using this net?

Answer _____ [1]

(b) What is the volume of the 3D shape?

Answer _____ cm^3 [2]



17 Look at the sequence below

3 5 9 15 23

(a) What is the next number?

Answer _____ [1]

(b) Explain the rule for finding the next number each time.

Answer _____ [1]

18 Toni buys 40 apples for £5

She sells five bags of six apples at 90p per bag and the rest of the apples at 10p each.

How much profit does she make?

Answer _____ [3]



19 Solve

(a) $12 - x = 5$

Answer $x =$ _____ [1]

(b) $8x = 24$

Answer $x =$ _____ [1]

20 (a) Explain the meaning of 3^3

Answer _____ [1]

(b) Work out $3^3 \times 10^4$

Answer _____ [1]

21 Expand and simplify

$$3(x + 2) - 2x$$

Answer _____ [2]

[Turn over



22 In Mary's shop the total cost of 1.7 kg of bananas and 0.4 kg of pears is £2.32

Bananas cost £0.80 per kg.

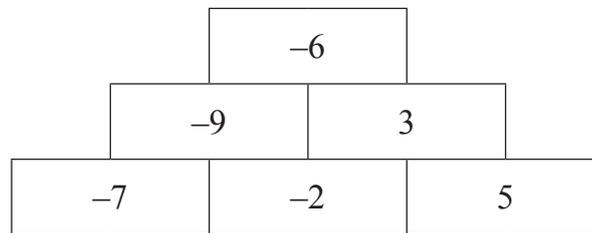
How much do pears cost per kg?

Answer £ _____ [4]

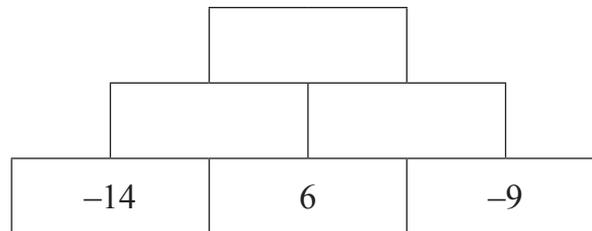


23 Here is an example of a mathematical pyramid.

To find the number in each box you **add** the two numbers in the boxes beneath it.

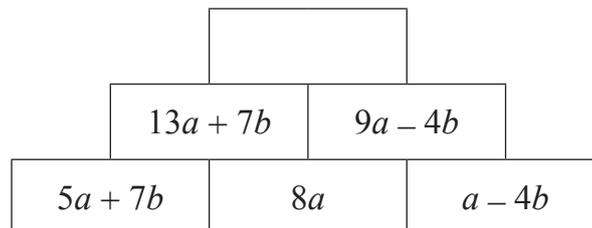


(a) Complete the following pyramid in the same way.



[2]

(b) Here is an algebraic pyramid. Complete the top box of this pyramid.



[2]

[Turn over



Quality of written communication will be assessed in this question.

24 Olive received £240 for her birthday.

She spent $\frac{1}{3}$ of this money on clothes and $\frac{1}{4}$ on books.

She saved the rest.

What fraction of the £240 did she save?

You must show all your working.

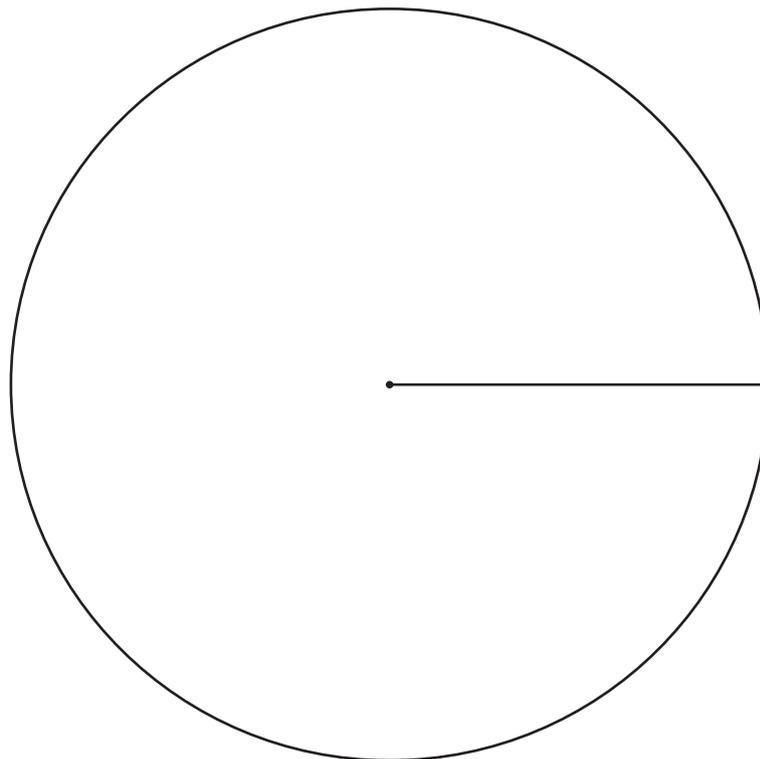
Answer _____ [4]



25 Ella recorded how many of each flavour of ice-cream were sold in her shop one day.

Ice-cream Flavour	Number	Angle
Strawberry	48	
Vanilla	31	
Chocolate	29	
Mint	12	

Draw a clearly labelled pie chart to show this information.



[4]

[Turn over



26 The stem and leaf diagram shows the weights of some coins.

3	4 6
4	0 5 7 9
5	1 2 4 6 8
6	1 3 4 5 7 8 9
7	0 5 5 5 7 9
8	1 1 2 4 6
9	2 3

Key 3 | 4 = 3.4 g

Write down

(a) the range,

Answer _____ g [1]

(b) the mode,

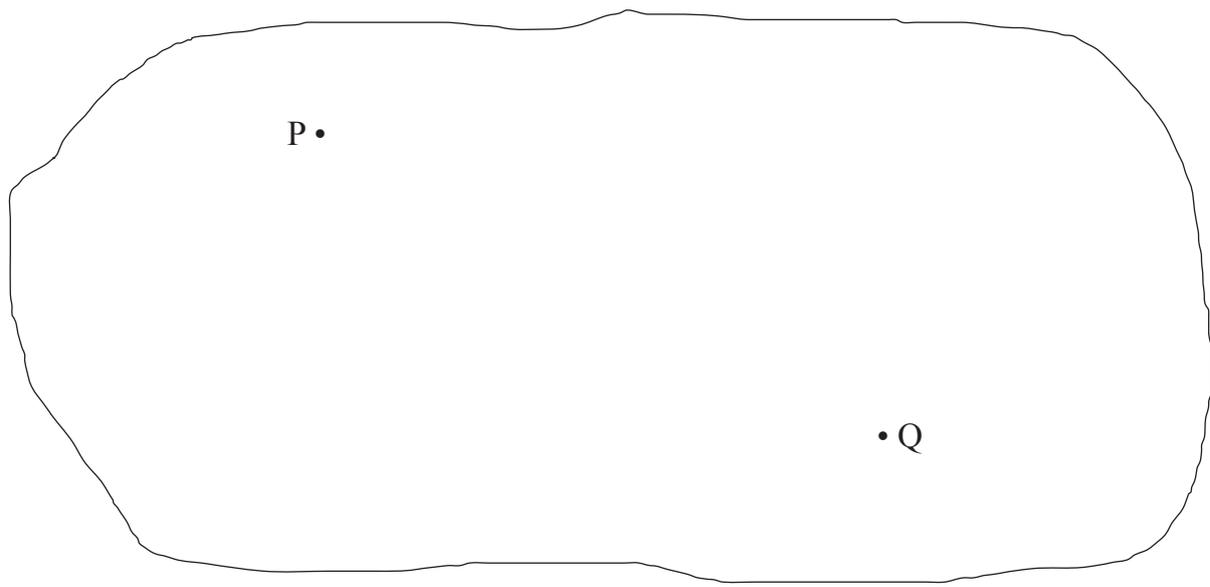
Answer _____ g [1]

(c) the median.

Answer _____ g [1]



27 Two towns are at the points P and Q on the map.



The scale of the map is 1 cm to 5 km.

Work out the actual distance between the two towns.

Answer _____ km [3]



28 Draw accurately a triangle PQR with $PQ = 9\text{ cm}$, angle $P = 70^\circ$ and angle $Q = 40^\circ$

Start with the line PQ below.



[2]



29 Calculate the size of angle x in this quadrilateral.

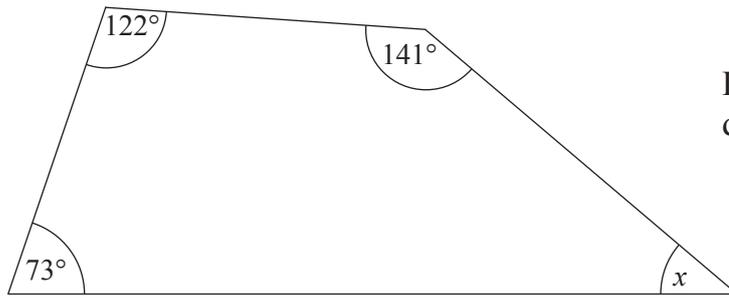


Diagram not
drawn accurately

Answer $x =$ _____ $^\circ$ [2]

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