



Rewarding Learning

General Certificate of Secondary Education  
January 2016

Centre Number

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Candidate Number

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## Mathematics

Unit T1  
(With calculator)  
Foundation Tier



\*GMT11\*

[GMT11]

**MONDAY 11 JANUARY, 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.

**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 blue or black ink only. **Do not write with a gel pen.**

Answer **all twenty-seven** questions.

All 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 **5** and **14(c)**.

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

The Formula Sheet is on page 2.

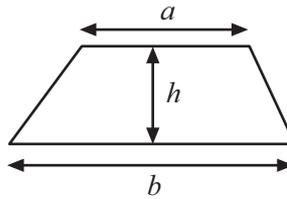
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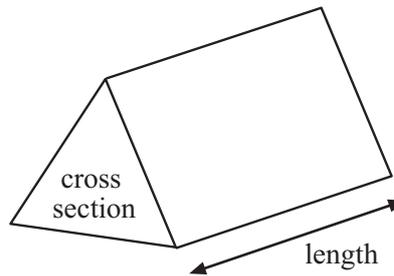
\*28GMT1101\*

# 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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\*28GMT1103\*

1 (a) Write the number twenty-six thousand and forty-one in figures.

Answer \_\_\_\_\_ [1]

(b) Write in words the number  $100\frac{1}{2}$

Answer \_\_\_\_\_ [1]



2 (a) Write down the two missing numbers in this sequence:

6      14      \_\_\_\_\_      30      38      \_\_\_\_\_      [2]

(b) What rule did you use to find the missing numbers in part (a)?

Answer \_\_\_\_\_ [1]



3 From the table below

16	8	20
36	1	49
17	23	6

(a) write down two numbers which add to give 50

Answer \_\_\_\_\_ and \_\_\_\_\_ [1]

(b) write down two numbers which have a difference of 16

Answer \_\_\_\_\_ and \_\_\_\_\_ [1]

(c) write down two prime numbers,

Answer \_\_\_\_\_ and \_\_\_\_\_ [1]



(d) write down two numbers where one is the square of the other,

Answer \_\_\_\_\_ and \_\_\_\_\_ [1]

(e) write down two numbers which are factors of 60

Answer \_\_\_\_\_ and \_\_\_\_\_ [1]



4



(a) Write, in its simplest form, the fraction of the rectangle which is shaded.

Answer \_\_\_\_\_ [2]

(b) What percentage is **not** shaded?

Answer \_\_\_\_\_ % [1]



Quality of written communication will be assessed in this question.

- 5 The two-way table shows some information about boys and girls in a class and whether they are right-handed or left-handed.

	Boys	Girls	TOTAL
Right-handed		10	
Left-handed	6	5	
TOTAL	20		

- (a) How many girls are left-handed?

Answer \_\_\_\_\_ [1]

- (b) How many boys are right-handed?

Answer \_\_\_\_\_ [1]

- (c) How many pupils are in the class?

Answer \_\_\_\_\_ [1]

- (d) Megan states “boys are more likely to be left-handed than girls”. Do you agree? Explain your answer clearly.

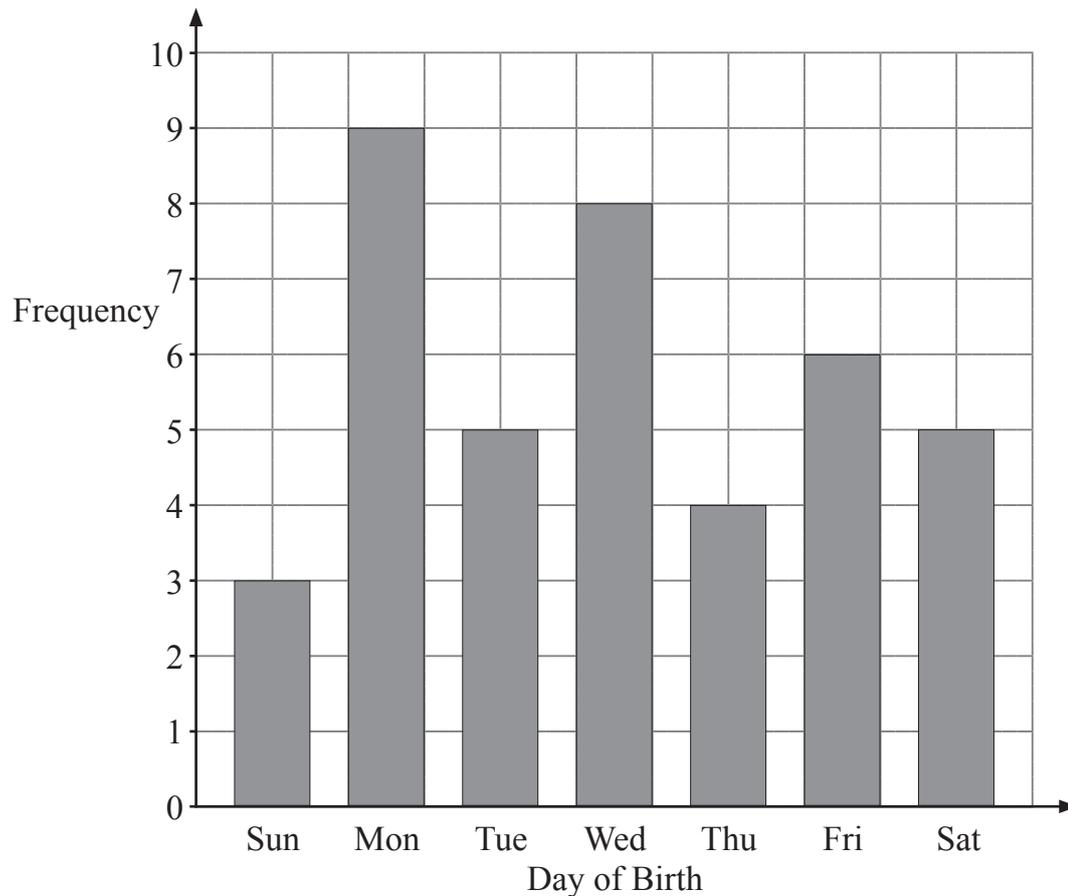
\_\_\_\_\_ because \_\_\_\_\_

\_\_\_\_\_ [2]

[Turn over



6 The bar chart below shows the day of birth for a group of children.



(a) Complete the statement:

“twice as many children were born on a \_\_\_\_\_ as on a Sunday”. [1]

(b) Which day of birth is the mode?

Answer \_\_\_\_\_ [1]

(c) On which day were 10% of the children born?

Answer \_\_\_\_\_ [2]



(d) Sarah wishes to draw a different diagram to represent the data.

- (i) She plans to draw a pictogram where  $\text{♂}$  represents 4 children. Why would this symbol not be a good choice?

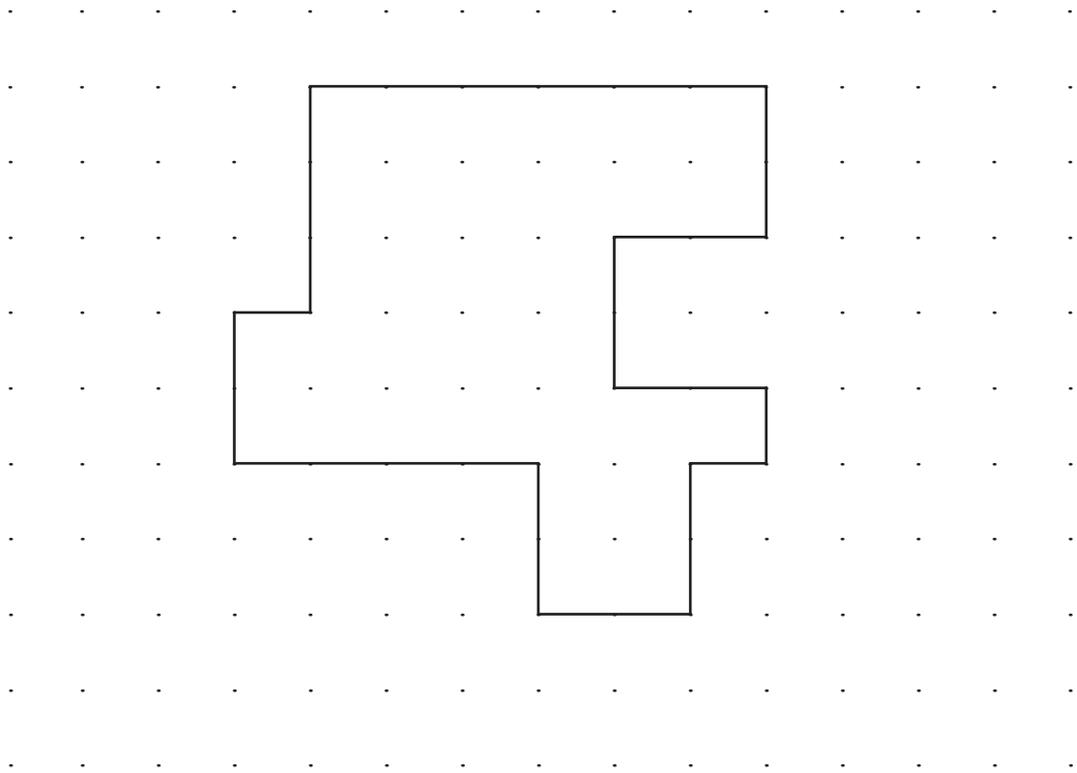
Answer \_\_\_\_\_  
\_\_\_\_\_ [1]

- (ii) She is going to draw a pie chart. What angle will she need to draw to represent the children born on a Friday?

Answer \_\_\_\_\_° [2]

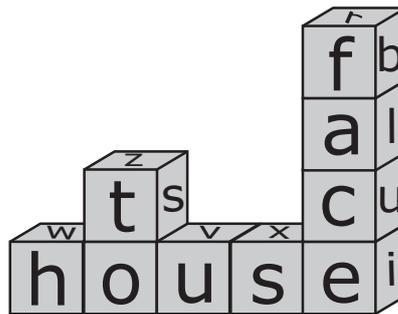


7 (a) A shape is drawn on a 1 cm grid. Calculate the perimeter of this shape.



Answer \_\_\_\_\_ cm [2]

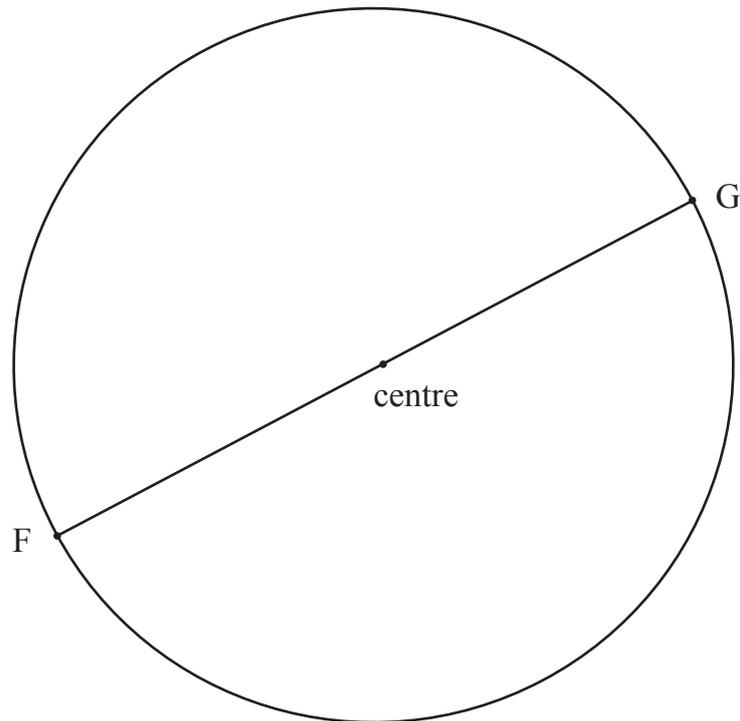
(b) Alphabet cubes of side length 1 cm are placed on top of one another in a game of Block Scrabble. What is the volume of this solid?



Answer \_\_\_\_\_ [2]



8 Here is a circle with a diameter FG.



(a) Measure the length of the diameter FG.

Answer \_\_\_\_\_ cm [1]

(b) Complete the statement:

The diameter divides the circle into 2 halves called \_\_\_\_\_ [1]

(c) (i) Draw a line parallel to FG with each end on the circumference. [1]

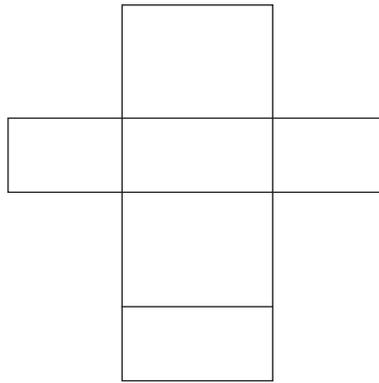
(ii) What is the special name given to this line?

Answer \_\_\_\_\_ [1]

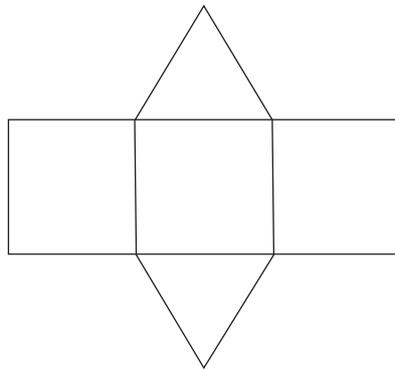
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9 (a) Name the 3D shapes which can be made by folding these nets.

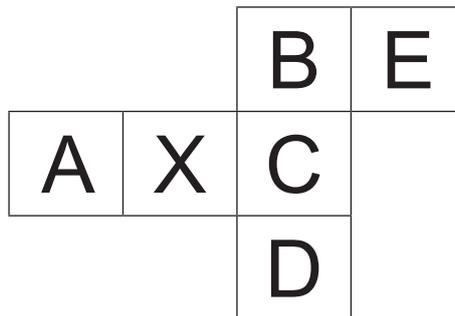


(i) \_\_\_\_\_ [1]



(ii) \_\_\_\_\_ [1]

(b) This net is folded to make a cube. Which letter will be opposite X?



Answer \_\_\_\_\_ [1]



10 Without using a calculator show how to work out  $483 - 167$

**You must show all your working.**

[2]

11 How many cartons of milk costing £1.28 each can be bought for £10?

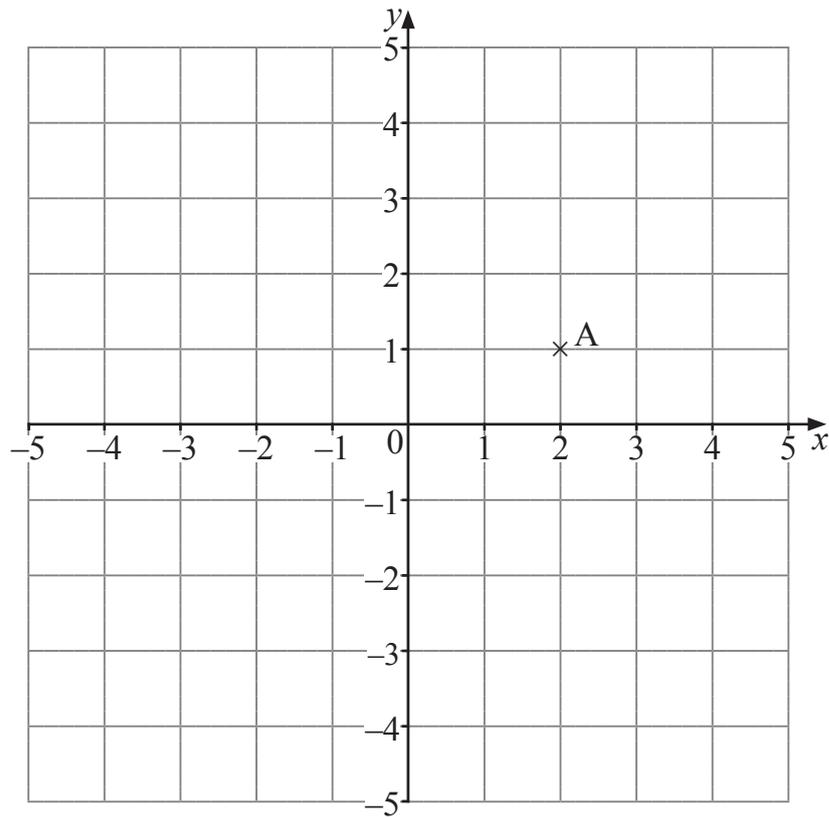
Show all your working.

Answer \_\_\_\_\_ [2]

[Turn over



12



(a) Write down the coordinates of the point A.

Answer \_\_\_\_\_ [1]

(b) Plot and label the points B (-2, 0) and C (4, -3).

[2]

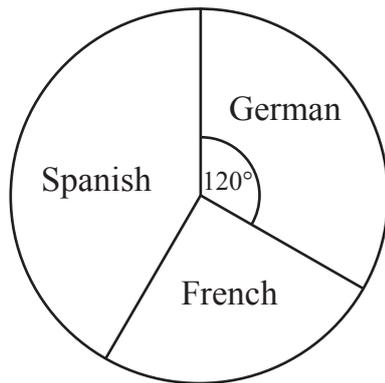
13 Write down any three numbers with a median of 8 and a range of 6

Answer \_\_\_\_\_ [2]

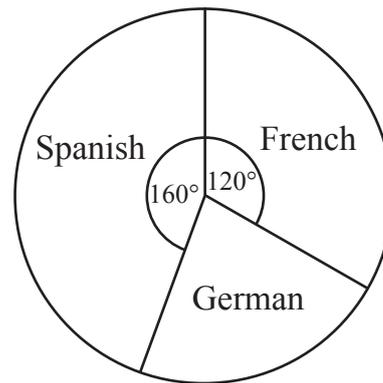


Quality of written communication will be assessed in part (c) of this question.

14



8A (24 pupils)



8B (27 pupils)

The pie charts show the languages studied by pupils in 8A and 8B.

There are 24 pupils in 8A and 27 pupils in 8B.

(a) Measure the angle for Spanish in 8A.

Answer \_\_\_\_\_° [1]

(b) What fraction of the students in 8B study German?

Answer \_\_\_\_\_ [1]

(c) Jacob says “the same number of pupils in 8A study German as those who study French in 8B”. Is he correct? Explain your answer.

\_\_\_\_\_ because \_\_\_\_\_

\_\_\_\_\_ [2]

[Turn over



15 Solve the equations

(a)  $4x = 20$

Answer  $x =$  \_\_\_\_\_ [1]

(b)  $x - 5 = 8$

Answer  $x =$  \_\_\_\_\_ [1]

16 Calculate the following:

(a)  $9^2$

Answer \_\_\_\_\_ [1]

(b)  $\sqrt{2.56}$

Answer \_\_\_\_\_ [1]

(c)  $1.8^3$

Answer \_\_\_\_\_ [1]



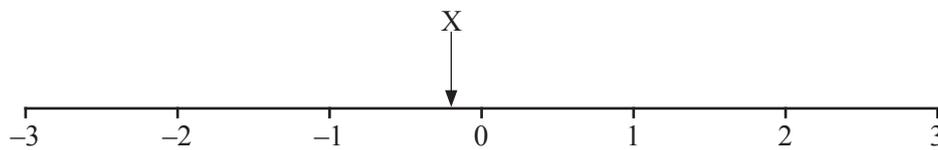
17 Write in descending order of size

$$\frac{3}{5} \quad 0.65 \quad 62\%$$

Show all your working.

Answer \_\_\_\_\_ [3]

18



(a) Using arrows to show your answers

(i) mark the position of  $-1\frac{1}{2}$  [1]

(ii) mark the position of 2.95 [1]

(b) What number is indicated by the letter X?

Answer X = \_\_\_\_\_ [1]



19 In a school there are 165 students in Year 9

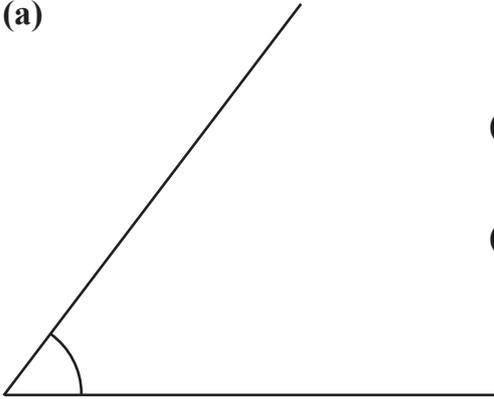
Two-fifths of the students are boys. How many girls are there?

Show all your working.

Answer \_\_\_\_\_ [3]

20 For each of the following, measure the size of the angle marked and state what type of angle it is.

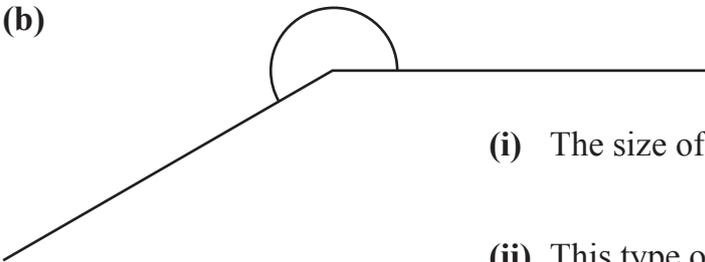
(a)



(i) The size of the angle is \_\_\_\_\_° [1]

(ii) This type of angle is \_\_\_\_\_ [1]

(b)

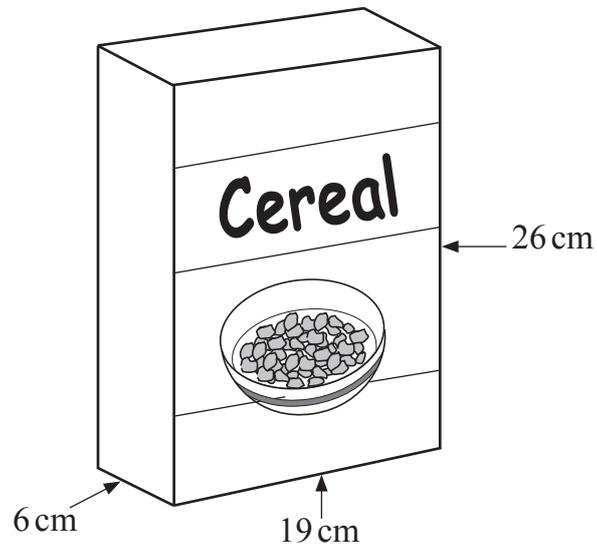


(i) The size of the angle is \_\_\_\_\_° [1]

(ii) This type of angle is \_\_\_\_\_ [1]



21 Calculate the volume of this cereal box.

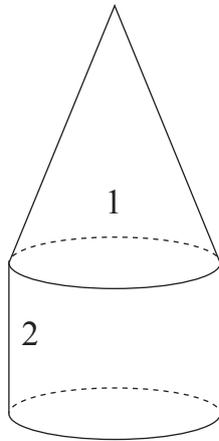


Answer \_\_\_\_\_  $\text{cm}^3$  [2]

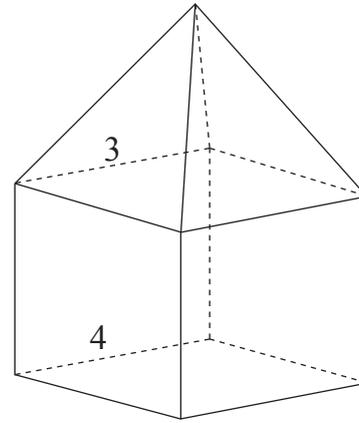


22 Each of the shapes below is made by joining two different solids together.

(a) Fill in the names of the solids under each shape.



Shape A



Shape B

Solid 1 \_\_\_\_\_ Solid 3 \_\_\_\_\_

Solid 2 \_\_\_\_\_ Solid 4 \_\_\_\_\_

[4]

(b) Complete the following table for **Shape B**.

Number of Faces	Number of Edges	Number of Vertices

[3]



23 The stem and leaf diagram illustrates the marks in a test for a group of students.

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

Key: 5 | 4 = 54%

- (a) The mark for the top student has been left out of the diagram.

The range for the whole class of twenty students was 35.

Calculate the mark for the top student and insert it correctly in the stem and leaf diagram.

[2]

- (b) What was the mean of the lowest four marks?

Answer \_\_\_\_\_ [2]

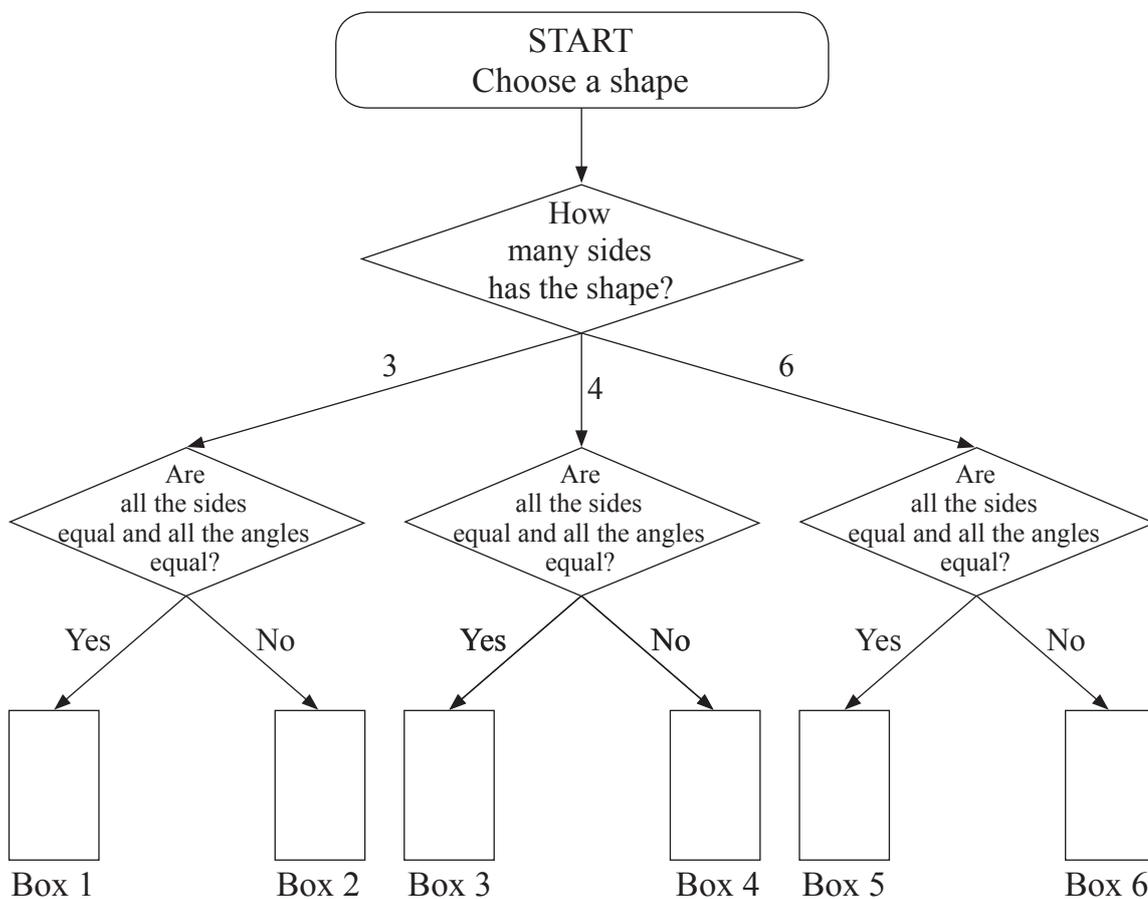
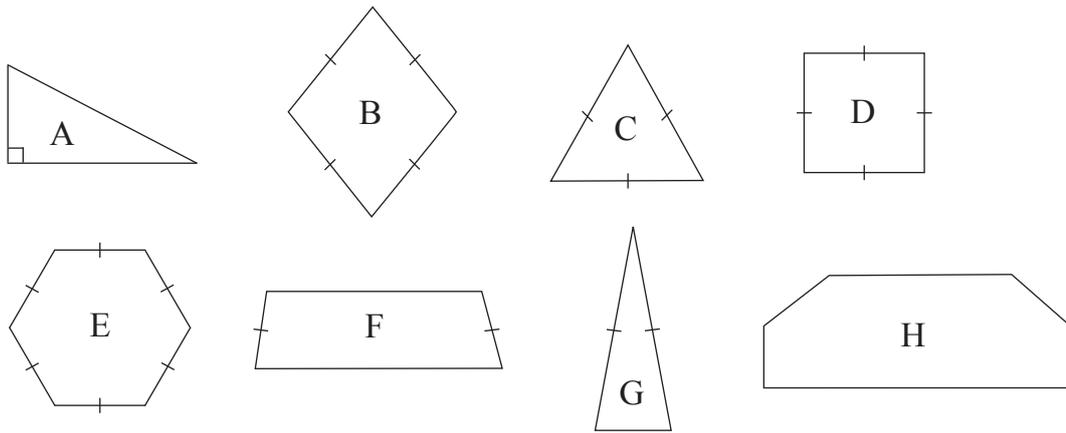
- (c) The top 15% of all the students in the class were awarded an A\* grade. What was the lowest mark needed to obtain the A\* grade?

Answer \_\_\_\_\_ % [2]

[Turn over



24 (a) Use the decision tree to sort the shapes A, B, C, D, E, F, G and H.



[2]

(b) Complete the sentence:

the shapes in Boxes 1, 3 and 5 are all \_\_\_\_\_ polygons.

[1]



25 (a) Simplify

$$3p - 4r + 7p - 2r$$

Answer \_\_\_\_\_ [2]

(b) Solve

$$\frac{x}{20} = 100$$

Answer  $x =$  \_\_\_\_\_ [1]

(c) Expand

$$4(y - 6)$$

Answer \_\_\_\_\_ [2]

(d) Solve

$$6 - 2x = 12$$

Answer  $x =$  \_\_\_\_\_ [2]

[Turn over



26 3.2 metres of electrical cable and 0.6 metres of copper wire cost a total of £4.07

The electrical cable costs 85p per metre.

How much does the copper wire cost per metre?

Show clearly all your working.

Answer £ \_\_\_\_\_ per metre [4]

27 (a) Write down the next two numbers in the sequence

25      24      20      13      \_\_\_\_\_      \_\_\_\_\_      [2]

(b) Explain the rule for this sequence.

Answer \_\_\_\_\_ [2]





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