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F

Wednesday 6 November 2013 – Morning

GCSE MATHEMATICS B

J567/01 Paper 1 (Foundation Tier)

J517150313

Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
- Geometrical instruments
- Tracing paper (optional)

Duration: 1 hour 30 minutes

J567701

Candidate forename		Candidate surname	

Centre number						Candidate number				

INSTRUCTIONS TO CANDIDATES

- Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
- Use black ink. HB pencil may be used for graphs and diagrams only.
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
- Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- Your quality of written communication is assessed in questions marked with an asterisk (*).
- The total number of marks for this paper is **100**.
- This document consists of **24** pages. Any blank pages are indicated.

WARNING

No calculator can be used for this paper

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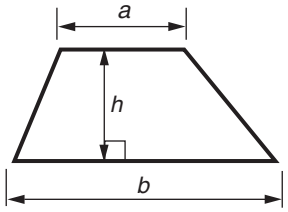
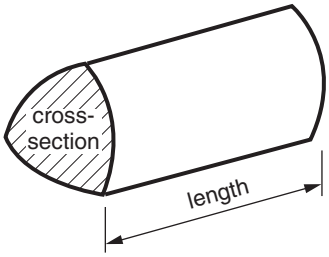
Formulae Sheet: Foundation Tier

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



Volume of prism = (area of cross-section) × length



PLEASE DO NOT WRITE ON THIS PAGE

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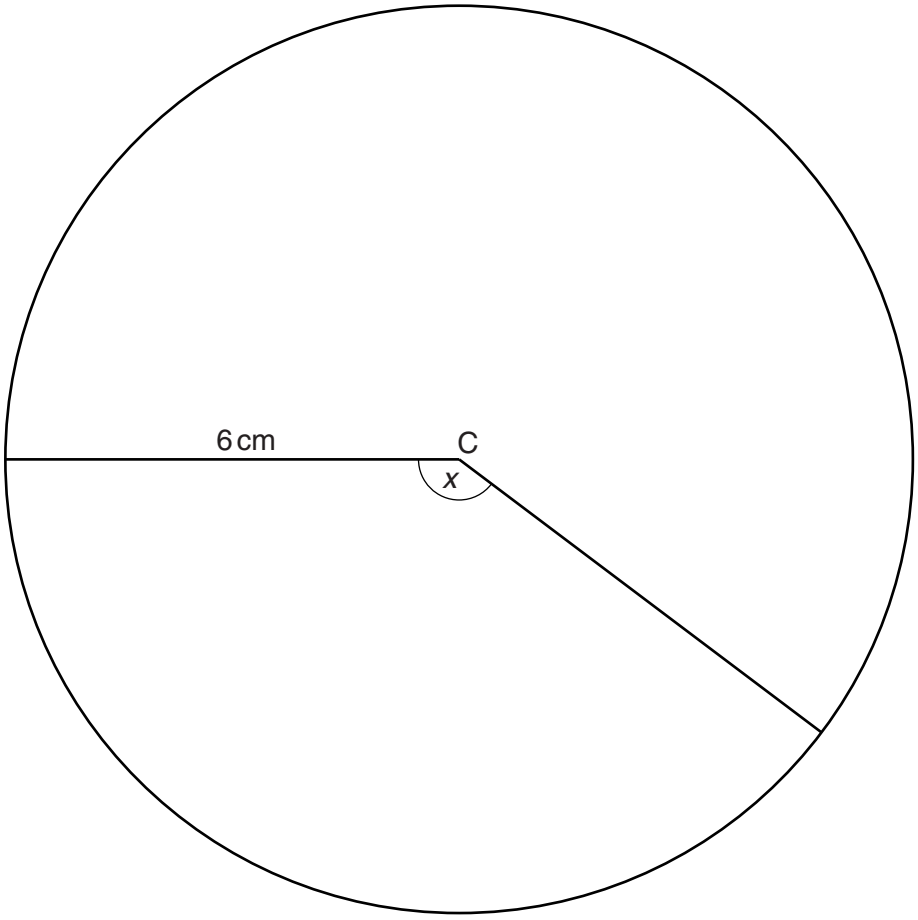
Answer **all** the questions.

1 Here is a circle.



(a) Complete the sentences below using words from this list.

perimeter	radius	circumference	centre	diameter

The _____ of the circle is at C.

The circle has a _____ of 6 cm.

The _____ of the circle is 12 cm.

[3]

(b) Measure and write down angle *x*.

(b) _____° **[1]**

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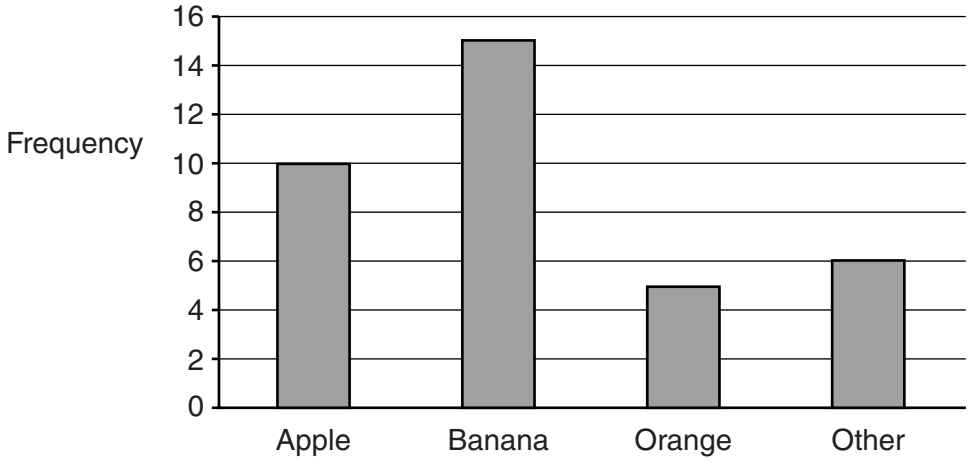
2 Teifi asks some pupils in her school the following question.

What is your favourite fruit?

She records her results in this bar chart.



(a) (i) How many pupils replied orange?

(a)(i) _____ **[1]**

(ii) Which is the most popular fruit of the pupils?

(ii) _____ **[1]**

(iii) How many pupils did Teifi ask altogether?

(iii) _____ **[2]**

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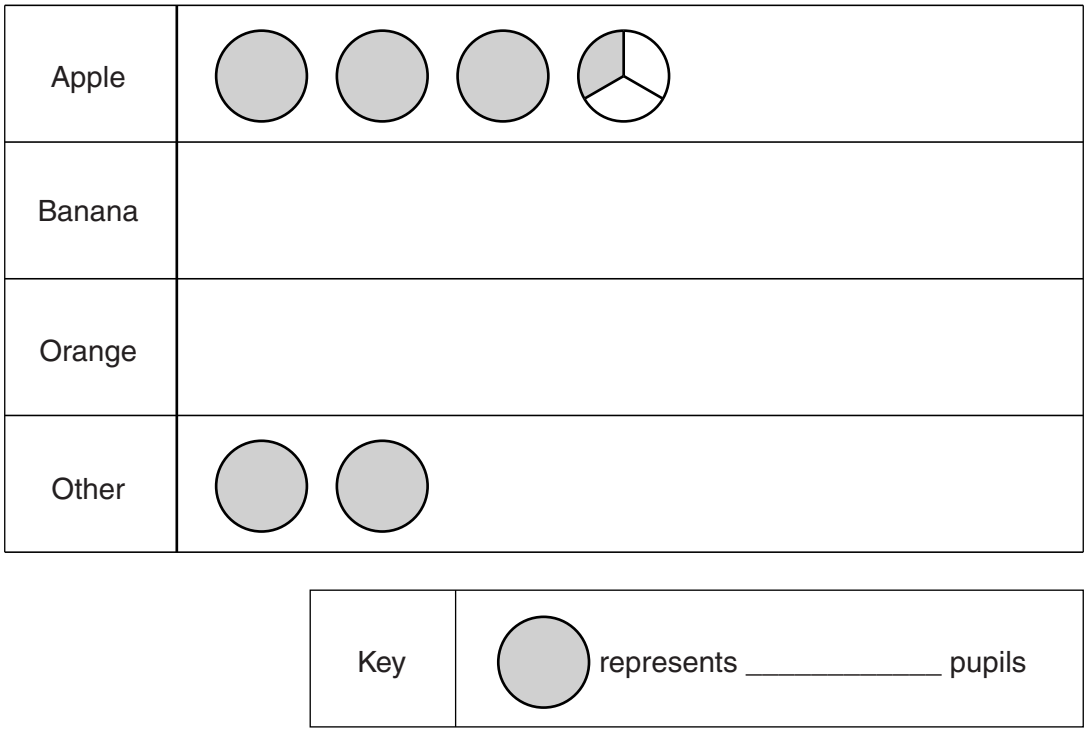
(b) Teifi also begins to record her results in a pictogram.



(i) Complete the key for the pictogram. **[1]**

(ii) Complete the pictogram. **[2]**

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3 **(a)** Work out.

(i) $3 + 4 \times 6$

(a)(i) _____ **[1]**

(ii) $30 - 5 \times (3 + 1)$

(ii) _____ **[2]**

(b) Put brackets into these sums so that the answer is correct.

(i) $15 - 6 - 4 = 13$ **[1]**

(ii) $2 + 2 \times 3 + 8 = 24$ **[1]**

4 Solve.

(a) $x - 10 = 57$

(a) $x =$ _____ **[1]**

(b) $\frac{x}{2} = 13$

(b) $x =$ _____ **[1]**

(c) $5x + 4 = 34$

(c) $x =$ _____ **[2]**

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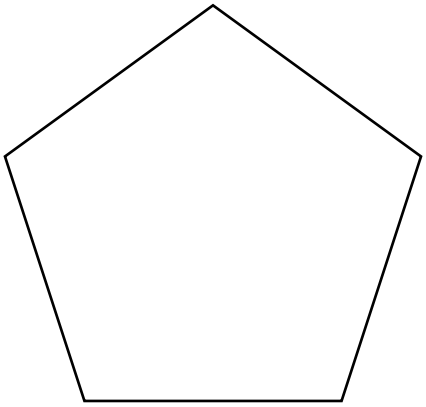
5 Here is a regular polygon.



(a) What is the mathematical name of this polygon?

(a) _____ **[1]**

(b) How many lines of symmetry does this polygon have?

(b) _____ **[1]**

(c) What is the order of rotation symmetry of this polygon?

(c) _____ **[1]**

(d) In this polygon each side has length x cm.

Write down an algebraic expression, in cm, for the perimeter of this polygon.

(d) _____ **[1]**

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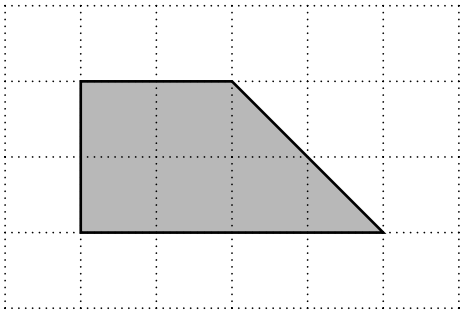
6 This quadrilateral is drawn on a centimetre square grid.



(a) (i) What is the mathematical name of the quadrilateral?
Choose from the words in the box.

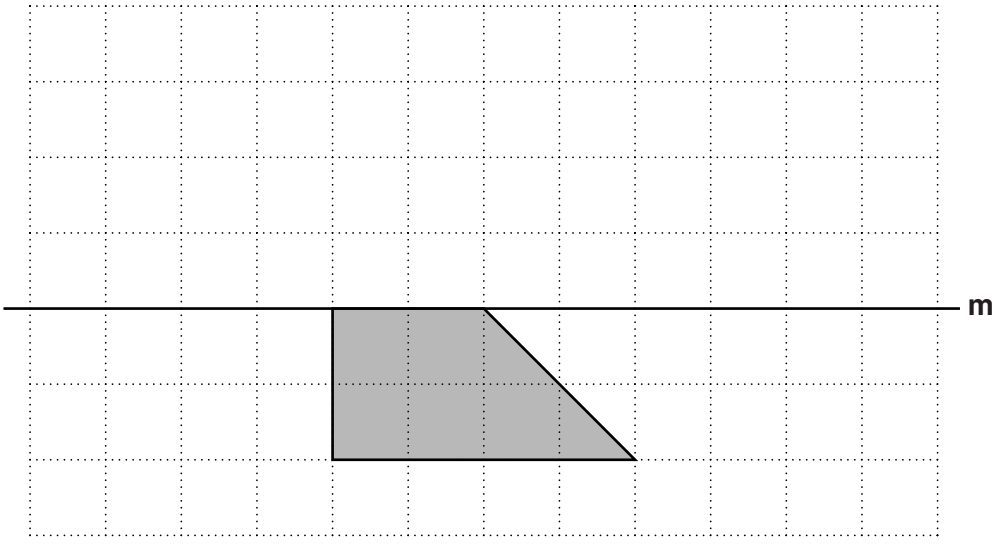
kite	trapezium	parallelogram	rhombus

(a)(i) _____ **[1]**

(ii) Work out the area of the quadrilateral.

(ii) _____ cm^2 **[1]**

(b) In the diagram below, reflect the quadrilateral in the line **m**.



[1]

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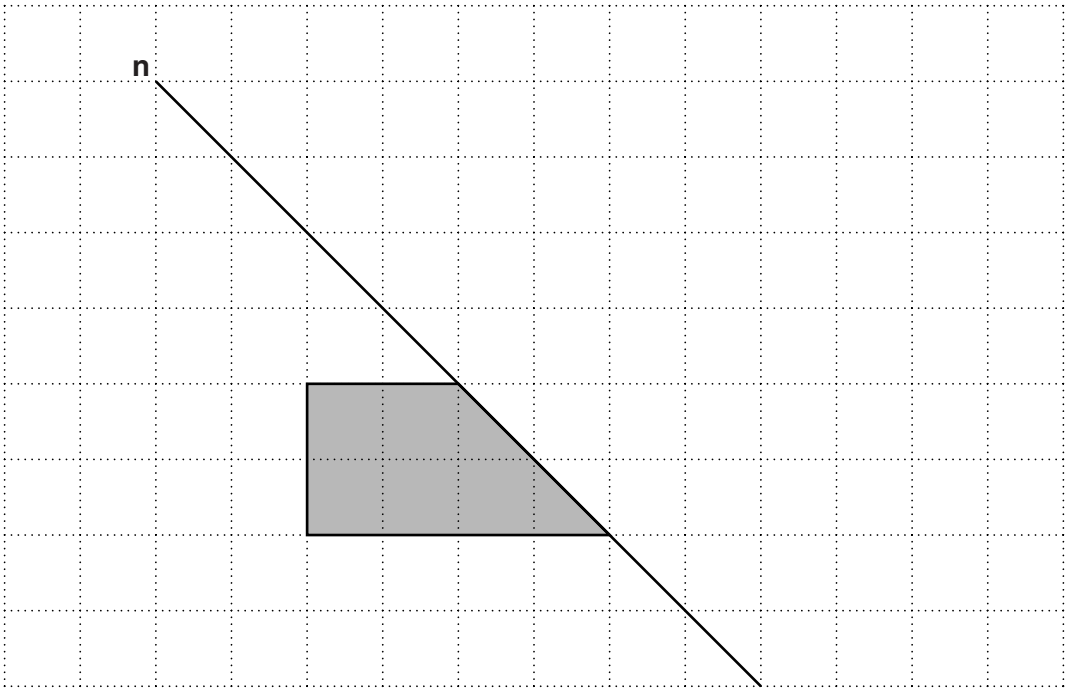
(c) In the diagram below, reflect the quadrilateral in the line **n**.



[1]

7 Complete this table of equivalent fractions, decimals and percentages.

Fraction		Decimal		Percentage
	=	0.37	=	37%
$\frac{1}{5}$	=	0.2	=	
$\frac{1}{4}$	=		=	
	=		=	7%

[4]

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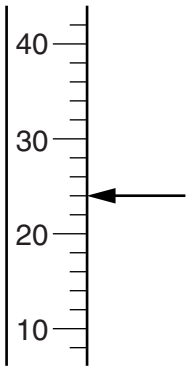
8 **(a)** **(i)** The diagram below is part of a thermometer marked in °C.

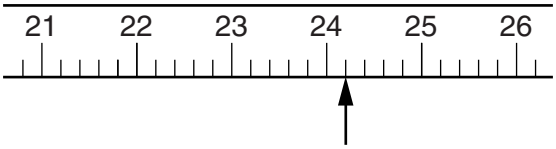
What temperature does the arrow point to?



(a)(i) _____ °C **[1]**

(ii) The diagram below is part of a measuring tape marked in centimetres.

What measurement does the arrow point to?



(ii) _____ cm **[1]**

(b) Vernon needs $2\frac{1}{2}$ litres of water to make some tomato fertiliser.

His measuring jug holds 500 ml of water when full.

How many full jugs of water will he need?

(b) _____ **[2]**

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9 **(a)** Write down **all** the multiples of 2 that are bigger than 30 and smaller than 40.

(a) _____ **[1]**

(b) Write down the multiple of 7 that is bigger than 30 and smaller than 40.

(b) _____ **[1]**

(c) Write down **all** the prime numbers that are bigger than 30 and smaller than 40.

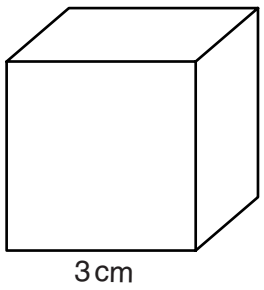
(c) _____ **[2]**

10 **(a)** Work out 6^2.

(a) _____ **[1]**

(b) In this cube each side has length 3 cm.

What is the volume of the cube?



(b) _____ cm^3 **[2]**

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11 **(a)** Simplify fully.

(i) $p + 7p - 5p$

(a)(i) _____ **[1]**

(ii) $3x + 4y - 4 + 5x - y$

(ii) _____ **[2]**

(b) Use the formula $B = \frac{n}{5}$ to find B when $n = 45$.

(b) _____ **[1]**

(c) Use the formula $K = 2g - 3h$ to find K when $g = 7$ and $h = 4$.

(c) _____ **[2]**

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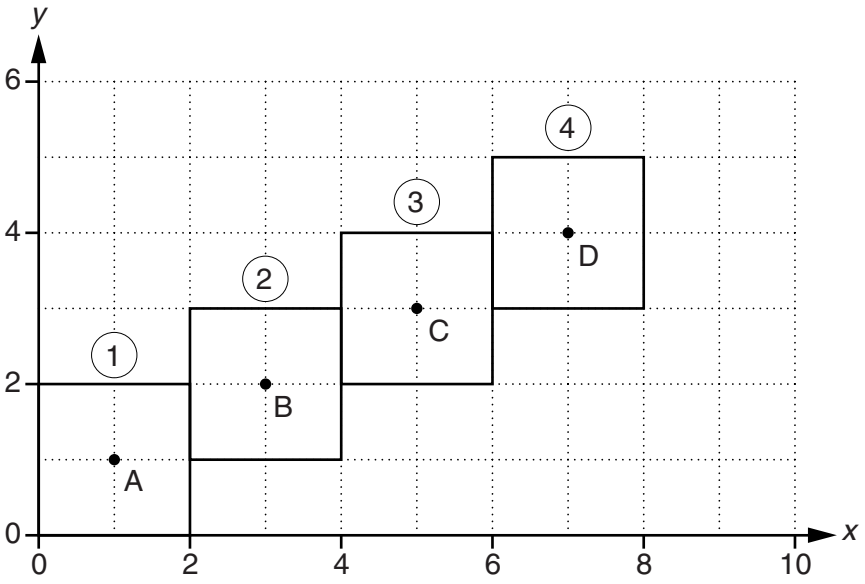
12 This is the start of a pattern of squares.



(a) This table shows the coordinates of the centres of the first four squares.

Complete the table.

Point A, the centre of Square (1)	(1 , 1)
Point B, the centre of Square (2)	(_____ , _____)
Point C, the centre of Square (3)	(_____ , _____)
Point D, the centre of Square (4)	(_____ , _____)

[2]

(b) The pattern of squares is continued.

Write down the coordinates of the centre of Square (20).
Show any working that you do.

(b) (_____ , _____) **[4]**

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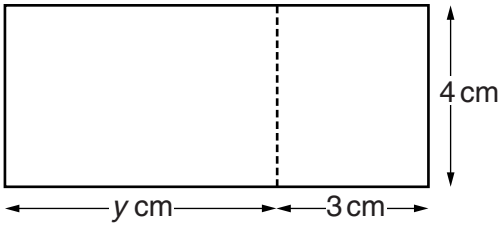
13 The total area of this rectangle is 42 cm^2.



Not to scale

Work out length *y*.

_____ **[3]**

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14 **(a)** Work out.

(i) 10% of 270

(a)(i) _____ **[1]**

(ii) 5% of 270

(ii) _____ **[1]**

(b) Fran earns £1700 in a month.
She does not pay any tax on the first £500 that she earns.
She pays tax at a rate of 20% on the rest.

Work out how much tax Fran pays in this month.

(b) £ _____ **[3]**

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15 21 students completed a Science test.
Their teacher recorded their results in this table.

Mark	Frequency
4	1
5	1
6	4
7	2
8	5
9	6
10	2

(a) What is the mode of the marks?

(a) _____ **[1]**

(b) Work out the range of the marks.

(b) _____ **[1]**

(c) Work out the median of the marks.

(c) _____ **[2]**

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16 Jamie is doing a survey on how people travel to work during the week.

(a) Here is one of his questions.

Which form of transport do you use to travel to work?
Tick one box only.

Car	Bus	Train	Walk
☐	☐	☐	☐

This is not a good question and set of response boxes.
Explain why.

_____

_____ **[1]**

(b) Here is another of his questions.

How long, in minutes, does it take you to travel to work?
Tick one box only.

0 to 10	10 to 20	20 to 30	30 to 50

Give two reasons why some people may find it difficult to decide which box to tick.

1 _____

_____

_____

2 _____

_____

_____

[2]

(c) Jamie does his survey at the train station on a Tuesday morning.
Explain why this is not sensible.

_____

_____ **[1]**

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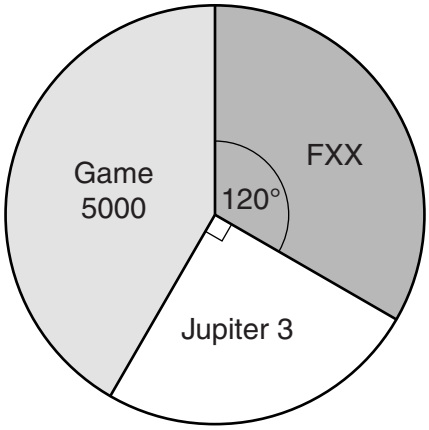
17 This pie chart shows the number of games consoles owned by some students.

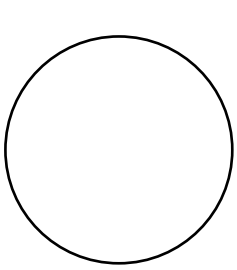


There are nine Jupiter 3 consoles.

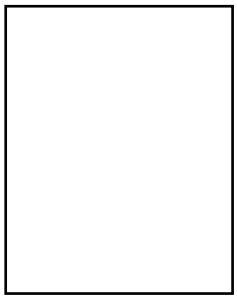
How many Game 5000 consoles are there?

_____ **[3]**

18 **(a)** This is the plan and side elevation of a solid.



Plan



Side Elevation

What is the mathematical name of this solid?

(a) _____ **[1]**

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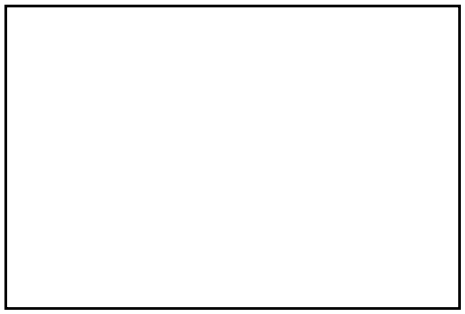
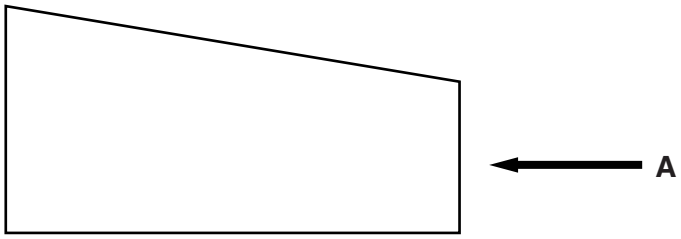
(b) This is the plan and side elevation of a different solid.
They are drawn full size.



Plan



Side Elevation

Draw accurately the front elevation of this solid, from direction **A**, on the square paper below.

[3]

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19 **(a)** Written as the product of its prime factors, $108 = 2^2 \times 3^3$.

(i) Write 96 as the product of its prime factors.

(a)(i) _____ **[2]**

(ii) Find the highest common factor of 96 and 108.

(ii) _____ **[2]**

(b) Work out.

$$1\frac{3}{4} + 3\frac{5}{12}$$

Give your answer as a mixed number in its simplest form.

(b) _____ **[3]**

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20 Felix wants to work out how much it costs him to use his tumble dryer.
The tumble dryer uses 1.9 units of electricity to dry one load of washing.
Felix dries four loads of washing each week.
He pays 12.8 p for every unit of electricity he uses.

Work out the weekly cost, in pence, of using the tumble dryer.

_____ p **[4]**

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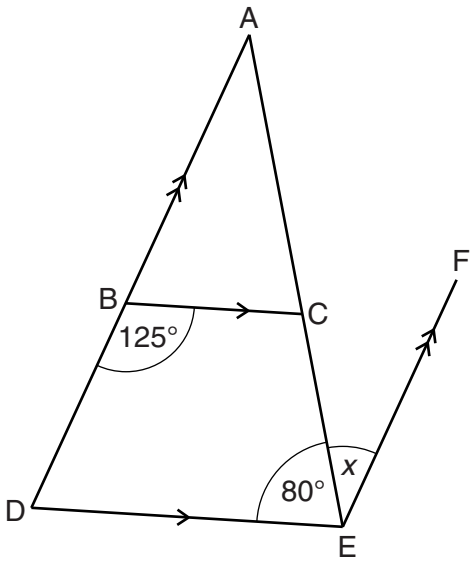
21* In the diagram ADE is a triangle.
BC is parallel to DE and DBA is parallel to EF.



Not to scale

Work out angle *x*.
Give a reason for each step of your working. **[5]**

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22 Wanda asked a random sample of 120 students from a college what they were planning to do when they left college.
The table shows the results of Wanda's survey.

University	Apprenticeship	Job
74	16	30

(a) One of these students is selected at random.

What is the probability that the student is planning to go to university?

(a) _____ **[1]**

(b) There are 2400 students at the college.

Estimate the number of these students who plan to get a job.

(b) _____ **[2]**

TURN OVER FOR QUESTION 23

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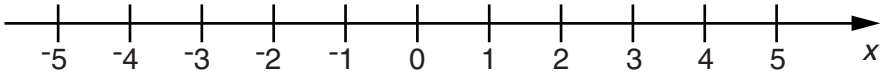
23 **(a)** Solve this inequality.

$$3x - 4 \leqslant 8$$

(a) _____ **[2]**

(b) Represent your solution on the number line.



[1]

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