OCR
RECOGNISING ACHIEVEMENT

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Friday 14 June 2013 – Morning

GCSE MATHEMATICS B

J567/02 Paper 2 (Foundation Tier)

Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
- Geometrical instruments
- Tracing paper (optional)
- Scientific or graphical calculator

Duration: 1 hour 30 minutes

J567702

J517120613

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.

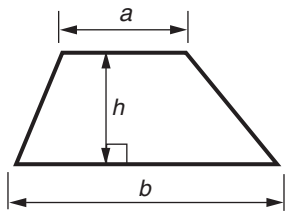
INFORMATION FOR CANDIDATES

- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- Use the π button on your calculator or take π to be 3.142 unless the question says otherwise.
- 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.

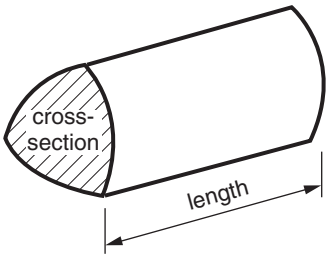
You are permitted to use a calculator for this paper

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

1 **(a)** Round 87 538 to

(i) the nearest ten,

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

(ii) the nearest thousand.

(ii) _____ **[1]**

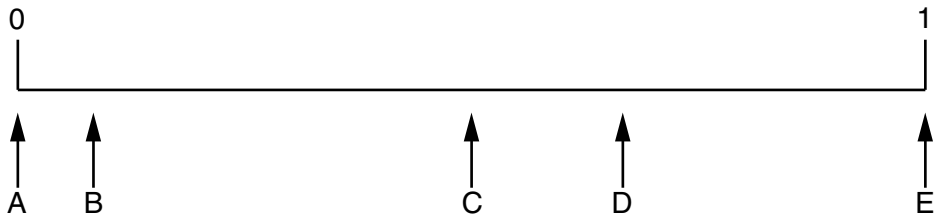
(b) Write the following in order of size, starting with the smallest.

6.903 6.0399 6.93 6.309 6.3

(b) _____ _____ _____ _____ _____ **[2]**

smallest

2 This diagram shows a probability scale.



Kim's pencil case contains 8 black pens, 3 blue pens and 1 green pen.
Kim takes a pen at random.

Which arrow shows the probability that she takes

(a) a black pen,

(a) _____ **[1]**

(b) a green pen,

(b) _____ **[1]**

(c) a red pen?

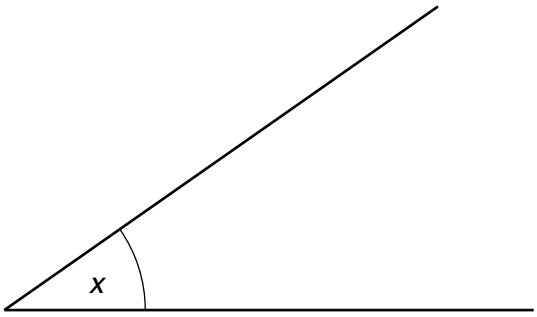
(c) _____ **[1]**

3 **(a)** Draw and label an obtuse angle at point A.

A

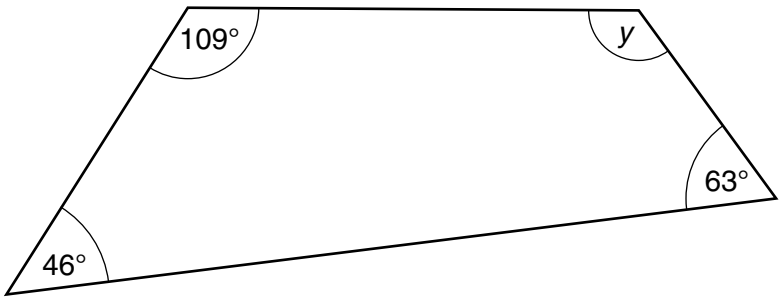
[1]

(b) Measure angle *x*.



(b) _____ ° **[1]**

(c) Calculate angle *y*.
Give a reason for your answer.

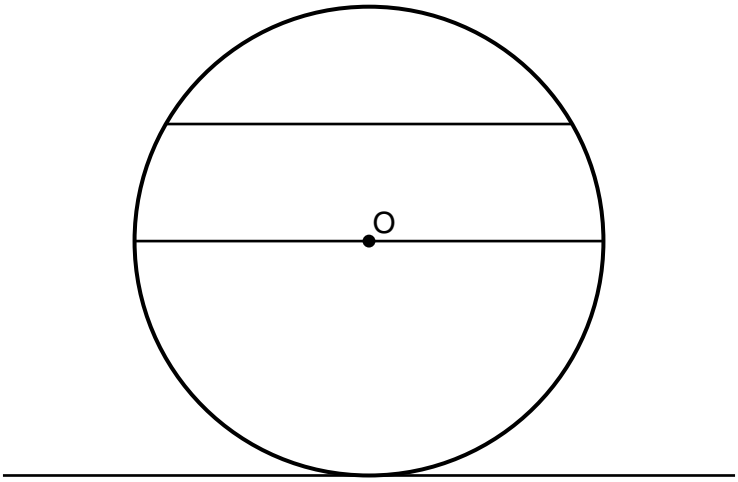


Not to scale

Angle *y* is _____ ° because _____

_____ **[3]**

4 Here is a circle with the centre marked O.

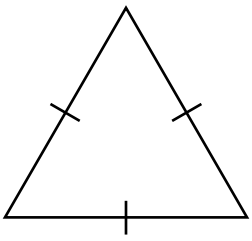


(a) (i) Write C on the circumference of the circle. **[1]**

(ii) Write D on the diameter of the circle. **[1]**

(iii) Draw a radius on the circle and label it R. **[1]**

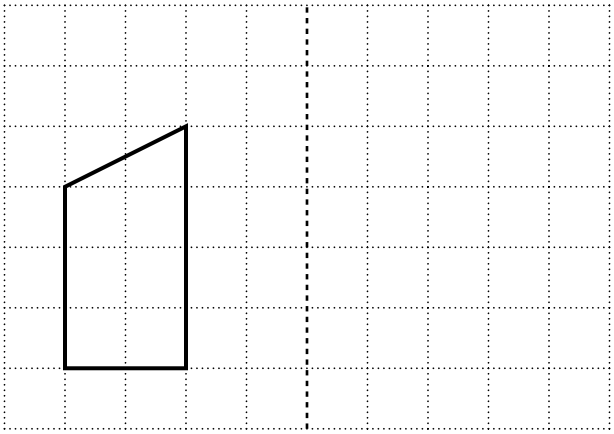
(b) Here is a triangle.



Write down the mathematical name of this triangle.

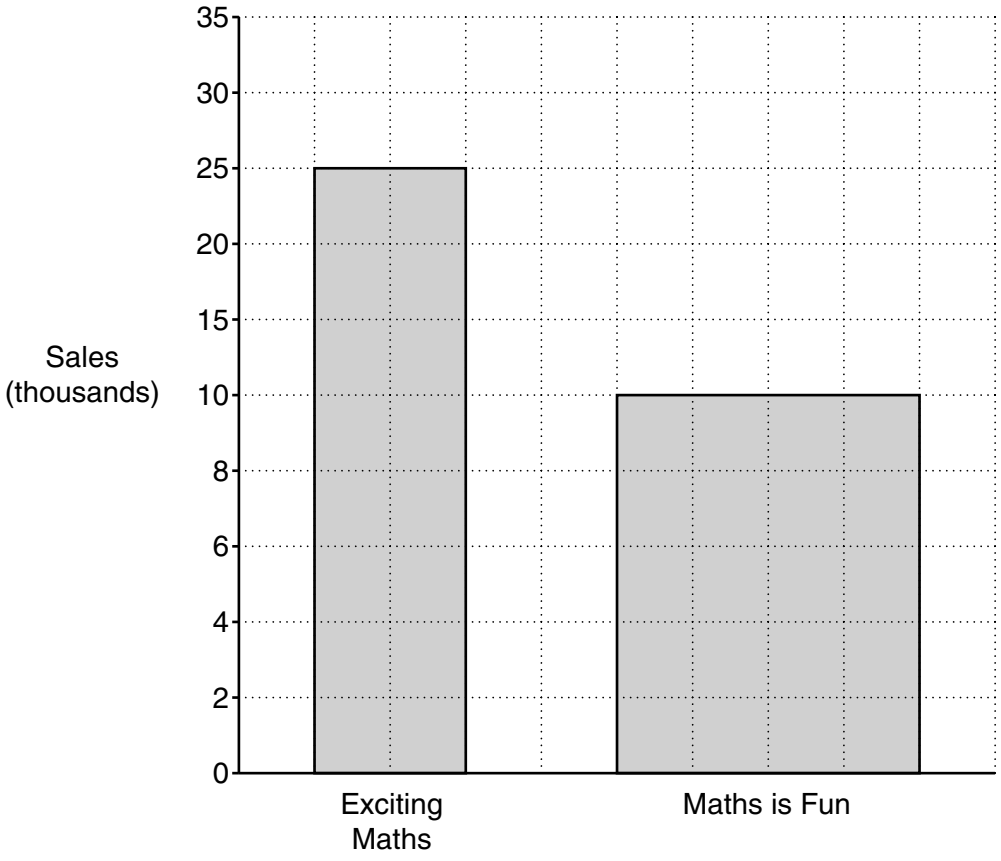
(b) _____ **[1]**

5 Reflect the shape in the mirror line.



[2]

6 This bar chart shows the sales, in thousands, of two different maths books.



State two reasons why the graph is misleading.

1 _____

2 _____

[2]

7 Mrs Hepburn takes her children to a gymnastics lesson.

(a) The lesson starts at 09:25 and lasts 40 minutes.

At what time does the lesson end?

(a) _____ **[1]**

(b) The cost of the lesson for each of her 3 children is £2.85.
Mrs Hepburn buys a coffee for herself costing £1.35.

How much does she spend altogether?

(b) £ _____ **[2]**

8 Work out.

(a) $4 \times (3 + 8) - 7$

(a) _____ **[1]**

(b) $4 + 3^2$

(b) _____ **[1]**

9 **(a)** Choose a word from the box below to complete each of the following sentences.

factor	square root	prime
cube	multiple	square

(i) 36 is a _____ of 9. **[1]**

(ii) 49 is a _____ number. **[1]**

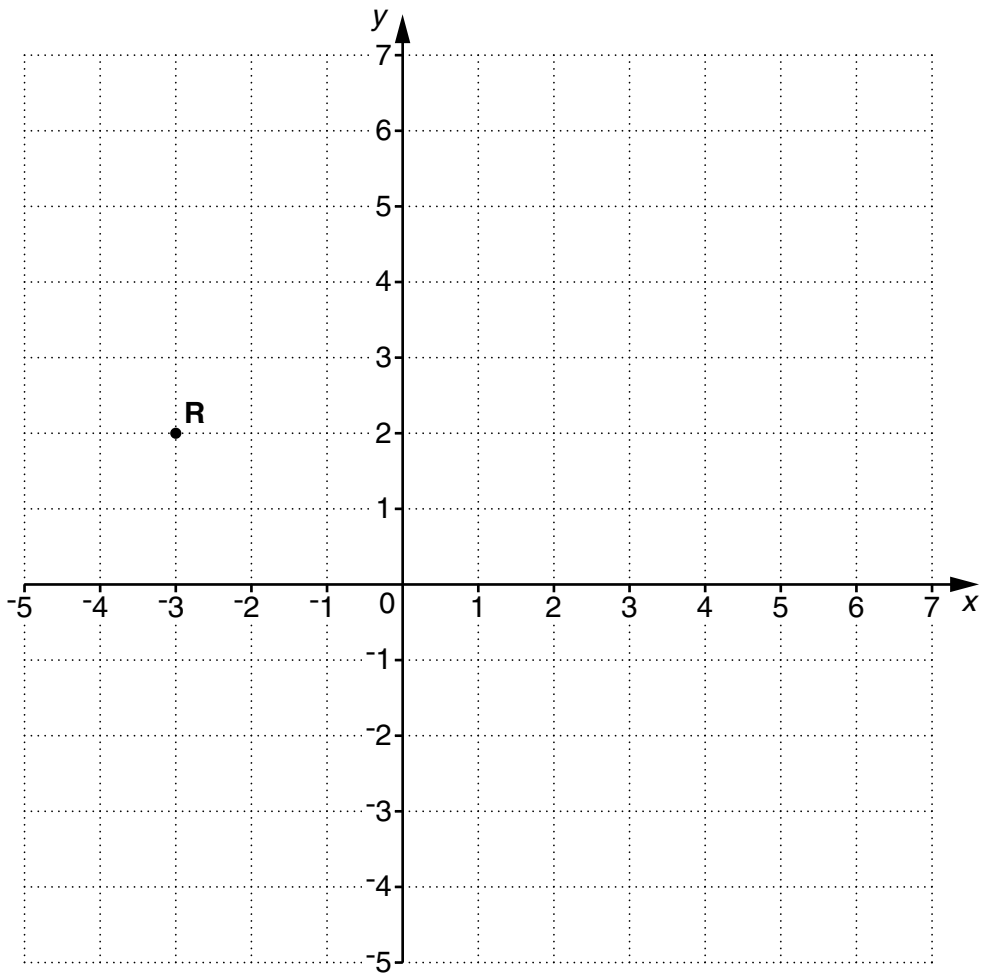
(iii) 27 is a _____ number. **[1]**

(iv) 7 is a _____ of 56. **[1]**

(b) Write $6 \times 6 \times 6 \times 6 \times 6$ as a power of 6.

(b) _____ **[1]**

10 This is a coordinate grid.



(a) Write down the coordinates of point **R**.

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

(b) Plot point **S** at (5, -3). **[1]**

11 **(a)** Robert does three moves on his driving test.

Reverse Parking (R)
Hill Start (H)
Emergency Stop (E)

Complete the table to show all the possible orders in which he could do these moves.
The first one has been done for you.

You may not need to use all the rows.

First	Second	Third
R	H	E

[2]

(b) There are five possible routes for the driving test.
The table shows the probability of each route being used for Robert's test.

Route	1	2	3	4	5
Probability	0.3	0.25	0.18		0.08

What is the probability Robert's test follows route 4?

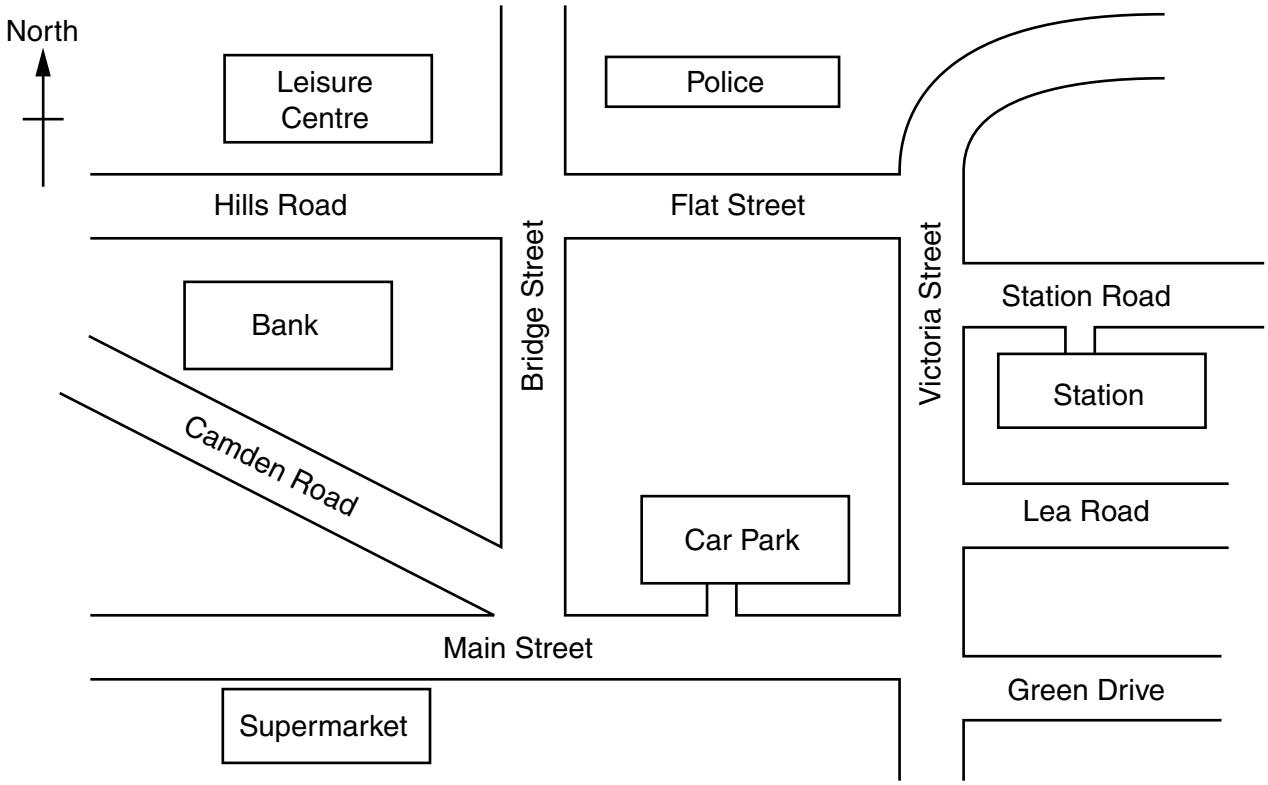
(b) _____ **[2]**

(c) Jordan drives a distance of 150 miles in two and a half hours.

Calculate his average speed in miles per hour.

(c) _____ mph **[2]**

12 This sketch map shows part of Elwood.



(a) Bethany leaves the Supermarket onto Main Street and turns right.

In which compass direction is she walking?

(a) _____ **[1]**

(b) Sarah is walking along Bridge Street.
She turns into Camden Road.

In which compass direction is she now walking?

(b) _____ **[1]**

(c) **(i)** Kirsty walks from the Car Park to the Station.

Complete these directions.

Turn ..... out of the Car Park into Main Street.

Turn left into ..... .

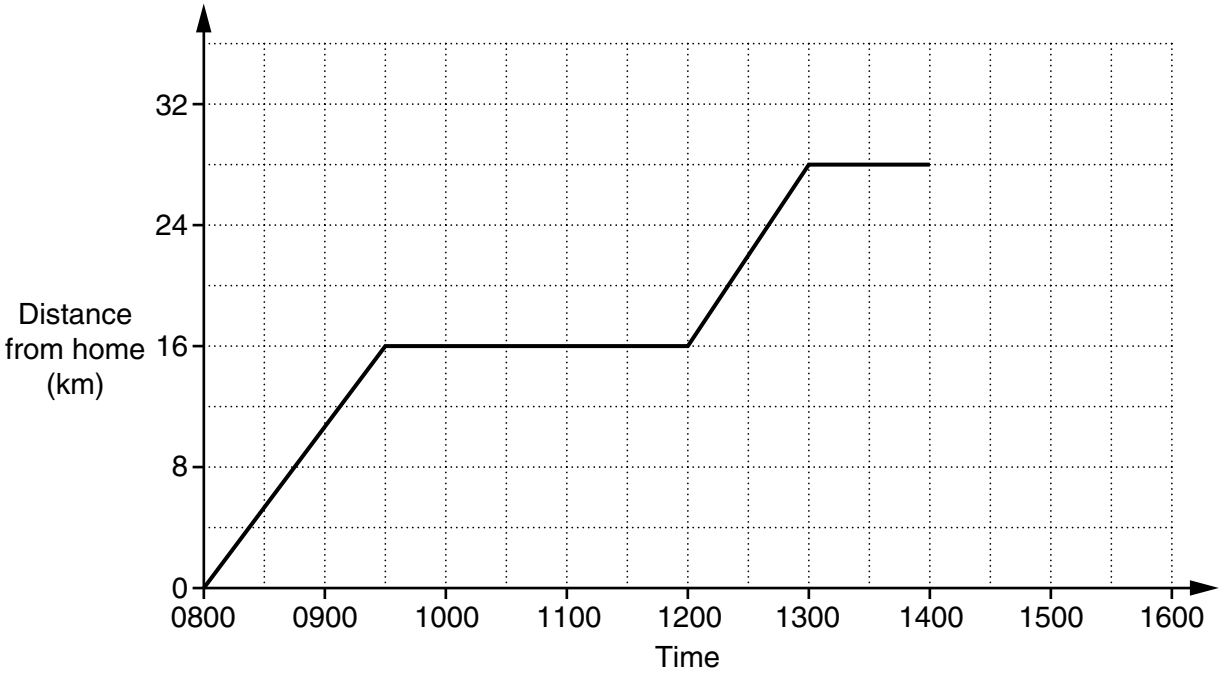
Then turn second ..... into Station Road. **[2]**

(ii) Kirsty arrives at the Station at 1445.
Her train arrives at 1517.

How long does Kirsty have to wait for the train?

(c)(ii) _____ minutes **[1]**

(d) Sylvia went by bus to Elwood to go shopping.
After shopping she went to visit a friend.
The graph shows her journey.



(i) How long did Sylvia spend shopping?

(d)(i) _____ hours **[1]**

(ii) How far was Sylvia from home at 1300?

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

(iii) Sylvia leaves her friend's house at 1400 and arrives home 30 minutes later.

Show this journey on the graph. **[1]**

13 (a) (i) Write down a fraction equivalent to $\frac{1}{2}$.

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

(ii) Write $\frac{19}{3}$ as a mixed number.

(ii) _____ **[1]**

(iii) Write 0.6 as a percentage.

(iii) _____ % **[1]**

(iv) Write 92% as a fraction, giving your answer in its simplest form.

(iv) _____ **[2]**

(b) Jo records the marks for three pieces of coursework.
The marks on her work are shown below.

$\frac{13}{50}$ $\frac{9}{40}$ 22%

Write her marks in order of size, starting with the lowest.
Show how you decide.

(b) _____ _____ _____ **[3]**
lowest

(c) A mobile phone cost £175.
The price is increased by 18%.

Calculate the increase in price.

(c) £ _____ **[2]**

14 **(a)** Simplify the following expression.

$$6p + 3r - 4p + 7r$$

(a) _____ **[2]**

(b) Solve.

(i) $6x + 4 = 22$

(b)(i) $x =$ _____ **[2]**

(ii) $\frac{x}{4} - 8 = 18$

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

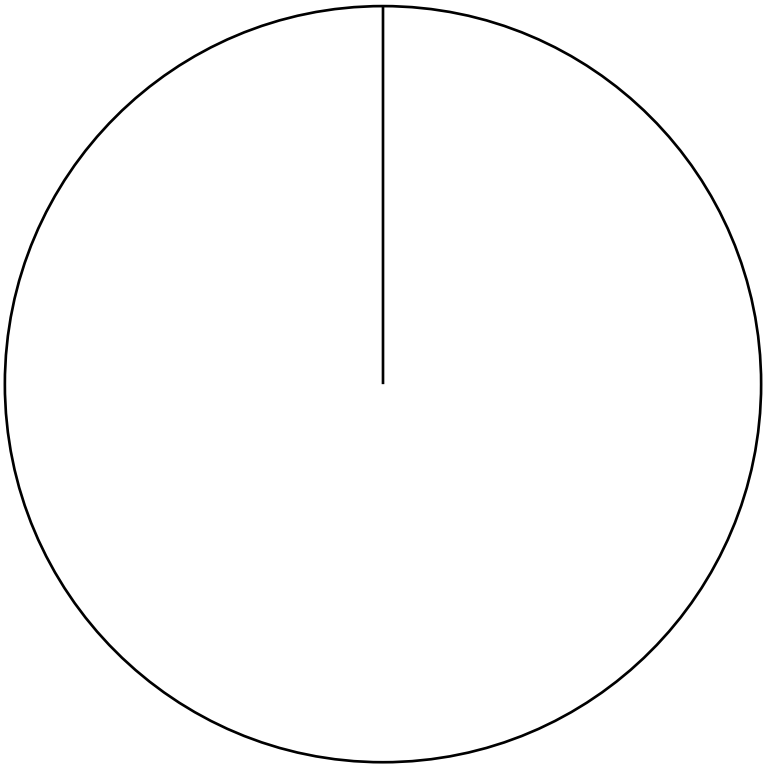
15 Alec asked 120 people on holiday where they were going to spend the afternoon.
He then drew a pie chart from his results.
His results and the angles he worked out are shown below.

(a) Complete the table.

Number of people	Activity	Size of angle
42	Swimming pool	
	Beach	138°
5	Lounge	
	Sightseeing	81°

[3]

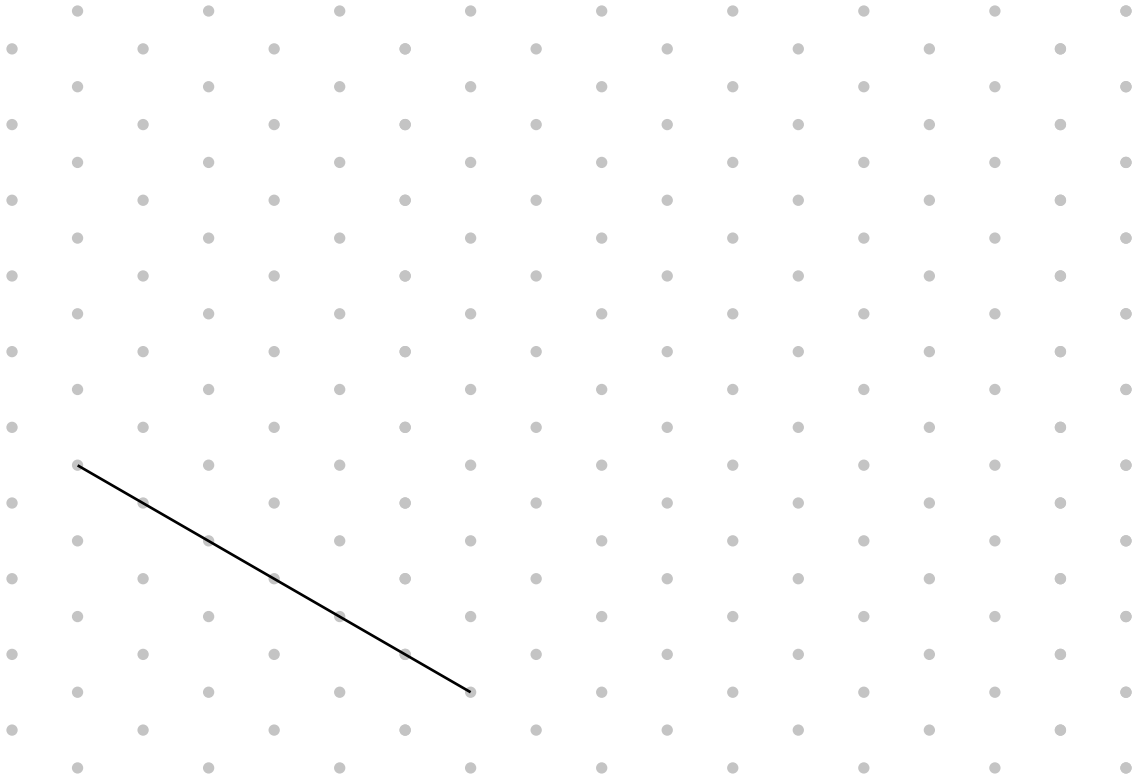
(b) Complete the pie chart for Alec.



[2]

16 A cuboid measures 6 cm by 4 cm by 2 cm.

(a) Make a full-size drawing of the cuboid on the isometric grid.
One line has been drawn for you.

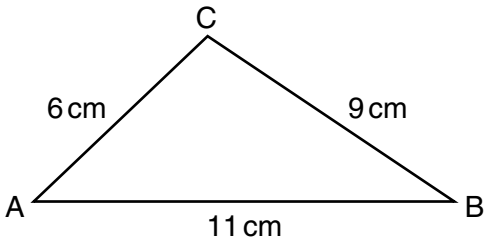


[2]

(b) Calculate the volume of the cuboid.
Give the units of your answer.

(b) _____ **[3]**

17 (a) ABC is a triangle.



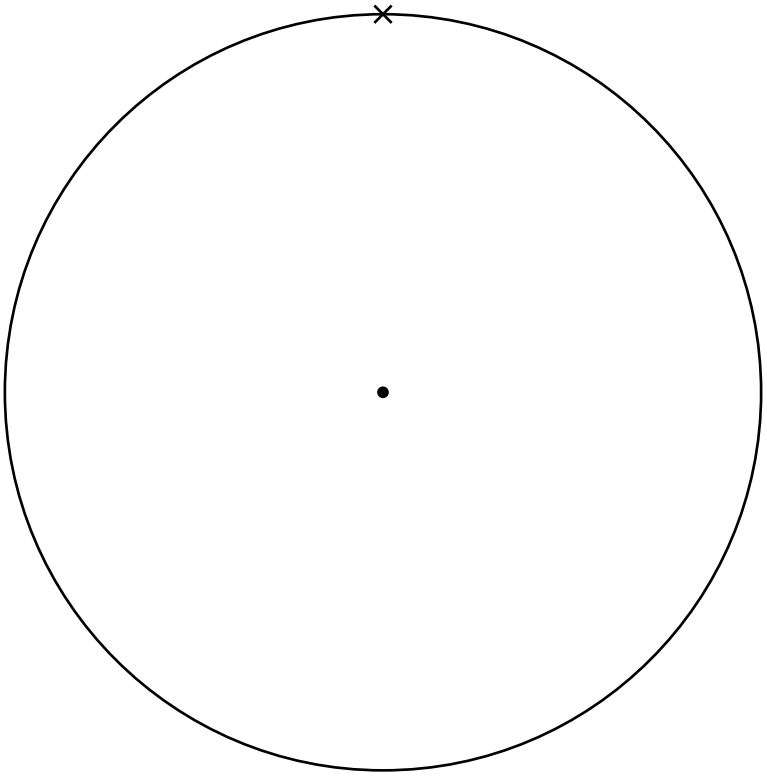
Not to scale

Make a full-size drawing of triangle ABC in the space below.
The line AB has been drawn for you.
Leave in all your construction lines.

A B

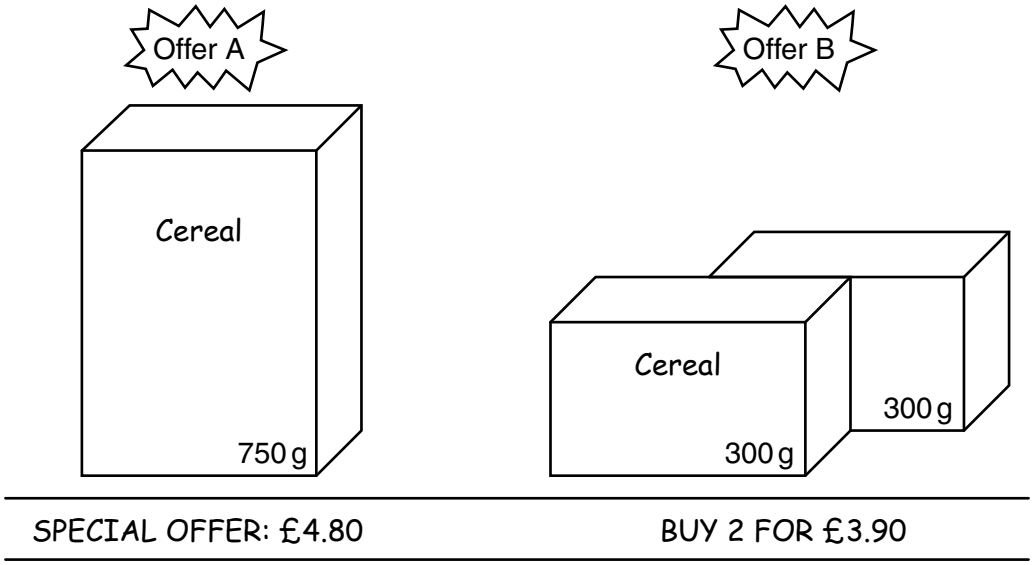
[2]

(b) Construct a regular pentagon inside this circle.
Make sure the vertices of the pentagon lie on the circumference of the circle.
One vertex has been marked for you.



[2]

18 A shop sells boxes of a cereal in two sizes.

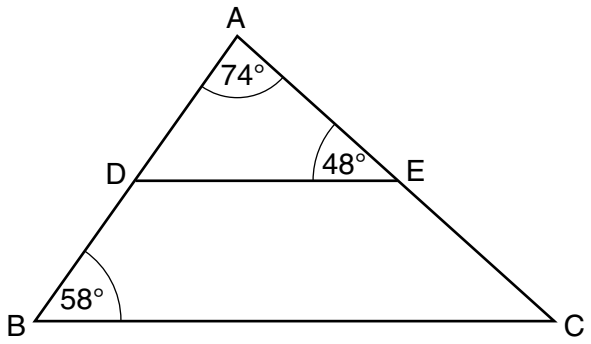


SPECIAL OFFER: £4.80	BUY 2 FOR £3.90

Which offer gives the better value?
Show how you decide.

[3]

19 ABC is a triangle with point D on AB and point E on AC.



Not to scale

Explain why DE is parallel to BC.
Use angle properties to explain your reasons.

_____

_____

_____

_____

_____ **[3]**

20 Henry's class is given a test.
The mean mark for all 20 pupils is 3.3.

Henry's test paper is lost.
Here is a summary of the marks for the rest of his class.

Test mark	1	2	3	4	5
Number of pupils	4	2	4	3	6

Work out Henry's mark.
You must show all your working.

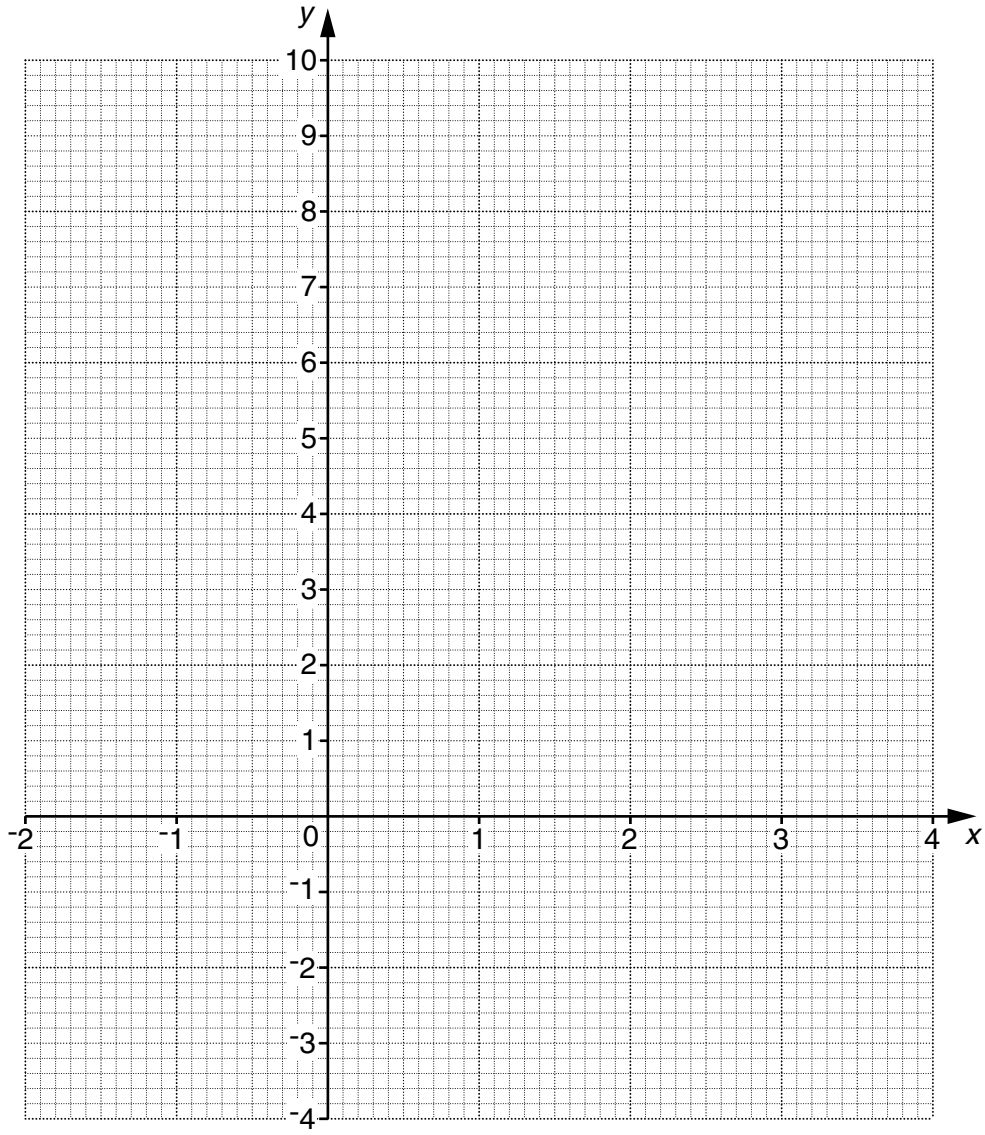
_____ **[4]**

21 **(a)** Complete this table for $y = x^2 - 3x$.

x	-2	-1	0	1	2	3	4
y		4	0	-2		0	4

[2]

(b) On the grid draw the graph of $y = x^2 - 3x$.



[2]

(c) Use your graph to solve the equation $x^2 - 3x = 2$.

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

22* Webtravel advertise holidays on their website.
Some of these holidays, and their prices, are shown in this table.

Destination	7 nights	14 nights
Majorca	£380 pp	£600 pp
Cyprus	£620 pp	£980 pp
Madeira	£478 pp	£768 pp
Rhodes	£840 pp	£1400 pp
Portugal	£890 pp	£1380 pp

Note:
- prices are per person (pp)
- holidays include flights from London Heathrow airport
- flights from other airports have an extra charge of £50 pp per holiday.

Webtravel offer an online discount of 8% off the total cost of each booking.

Mr Dawe has £1850 for a holiday for himself and his wife.
They want to book online and fly from Birmingham airport.

Can they afford to go to Cyprus for 14 nights?
Show all your working clearly.

_____

_____

_____ **[5]**

TURN OVER FOR QUESTION 23

23 Solve.

$$7x + 6 = 3x - 4$$

$x =$ _____ **[3]**