

Surname											Other Names														
Centre Number							Candidate Number																		
Candidate Signature																									

For Examiner's Use

General Certificate of Secondary Education
June 2008

MATHEMATICS (SPECIFICATION A)
Foundation Tier
Paper 2 Calculator

4301/2F

F



Monday 2 June 2008 1.30 pm to 3.00 pm

<p>For this paper you must have:</p> <ul style="list-style-type: none"> a calculator mathematical instruments. 	
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Time allowed: 1 hour 30 minutes

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Answers written in margins or on blank pages will not be marked.
- Do all rough work in this book.
- If your calculator does not have a π button, take the value of π to be 3.14 unless another value is given in the question.

Information

- The maximum mark for this paper is 100.
- The marks for questions are shown in brackets.
- Additional answer paper, graph paper and tracing paper will be issued on request and must be tagged securely to this answer booklet.
- You are expected to use a calculator where appropriate.

Advice

- In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	Mark
3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
TOTAL	
Examiner's Initials	



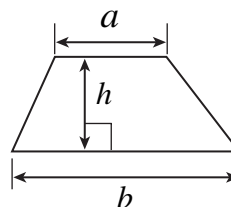
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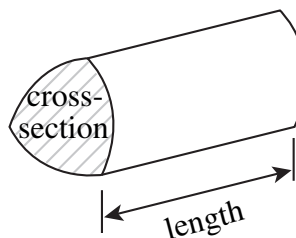
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Formulae Sheet: Foundation Tier

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



Volume of prism = area of cross-section \times length



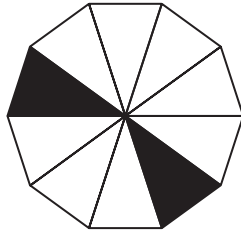
Answer **all** questions in the spaces provided.

1 Complete this shopping bill.

4 oranges at 26p each	
$\frac{1}{2}$ kg of grapes at £3.20 per kg	
Total	£

(3 marks)

2



2 (a) What percentage of the shape is shaded?

.....

Answer (2 marks)

2 (b) What percentage of the shape is **not** shaded?

.....

.....

Answer % (1 mark)

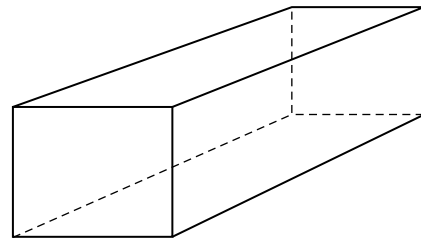
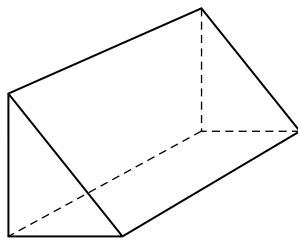
Turn over ►



- 3 (a) Draw a 3-D sketch of a square based pyramid.

(1 mark)

- 3 (b) Give the mathematical name of these solid shapes.



Answer

(2 marks)

- 4 A pattern is formed from squares.



Pattern 1

Pattern 2

Pattern 3

Pattern 4

(1 mark)

- 4 (a) Draw Pattern 4 in the space above.

- 4 (b) Find the number of squares in Pattern 6.

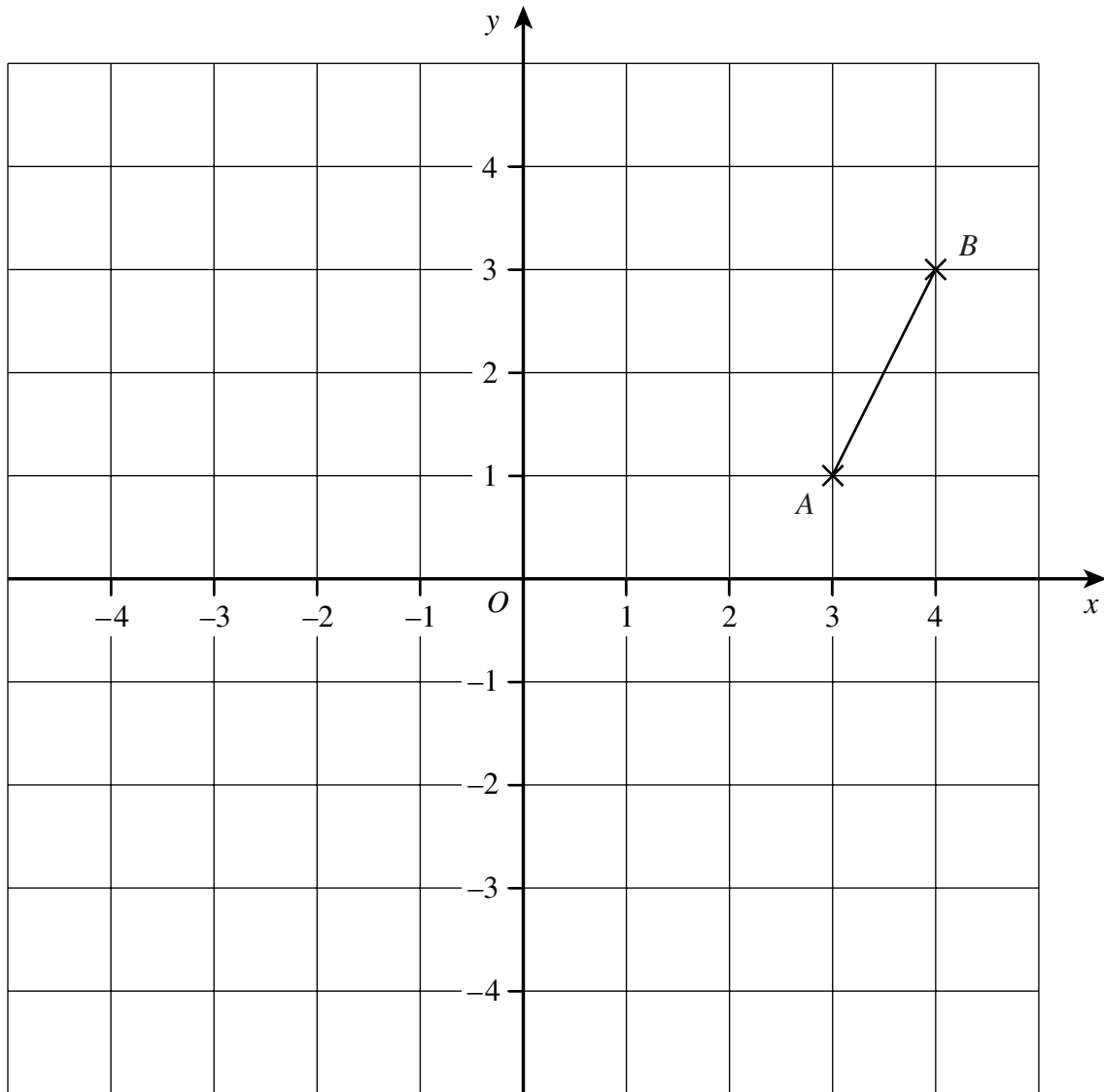
.....

.....

Answer (1 mark)



5



- 5 (a) Write down the co-ordinates of points A and B.

Answer A is (..... ,) B is (..... ,) (2 marks)

- 5 (b) Plot the points C (-1, 1) and D (-2, -1) on the diagram.

(2 marks)

- 5 (c) Join the points to form a quadrilateral ABCD.

What type of quadrilateral is ABCD?

Answer (1 mark)



6 The cost of sending airmail letters is shown.

Weight not over	Europe cost (£)	Asia cost (£)
10 g	0.44	0.50
20 g	0.44	0.72
40 g	0.64	1.12
60 g	0.83	1.51
80 g	1.02	1.91
100 g	1.21	2.31

6 (a) Find the cost of sending one letter weighing 45 g to Europe.

.....

Answer £ (1 mark)

6 (b) Find the total cost of sending two letters, each weighing 82 g, one to Europe and one to Asia.

.....

.....

Answer £ (2 marks)

6 (c) Find the total cost of sending three letters, each weighing 26 g, to Europe.

.....

.....

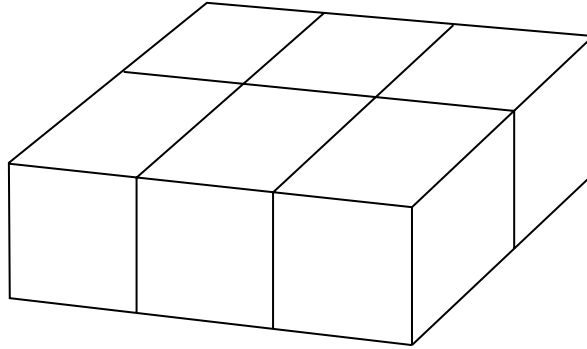
Answer £ (2 marks)



- 7 (a) How many faces does a cuboid have?

Answer (1 mark)

- 7 (b) This cuboid is made from cubes with edges of length 1 cm.



Find the total surface area of the cuboid.

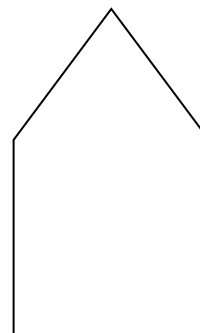
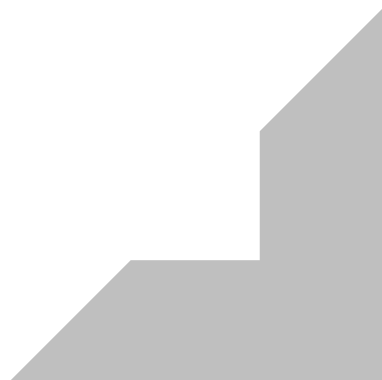
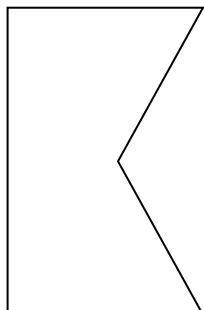
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Answer cm^2 (2 marks)

Turn over for the next question

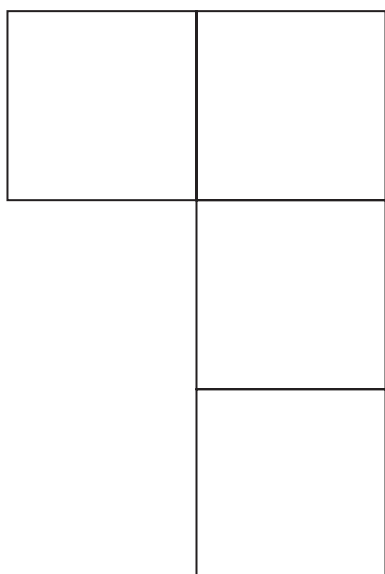


- 8 (a) Draw the lines of symmetry on these shapes.



(3 marks)

- 8 (b) The shape below is made from squares.
Add one more square to form a shape with rotational symmetry of order 2.



(1 mark)



9



The time for cooking a turkey is given by the formula

$$\text{cooking time in minutes} = \text{weight in kilograms} \times 40 + 25$$

- 9 (a) A turkey weighs 6 kilograms.

Find its cooking time.

.....

Answer minutes (2 marks)

- 9 (b) A turkey takes 165 minutes to cook.

Find its weight.

.....


.....

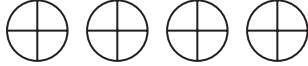
Answer kilograms (3 marks)




- 10** The pictogram shows the number of bicycles sold by a shop.

Year

2002 

2003 

2004 

 = 100 bicycles

2005 

2006 

2007

- 10** (a) How many bicycles were sold in 2003?

.....

Answer (1 mark)

- 10** (b) How many bicycles were sold in 2004?

.....

Answer (1 mark)

- 10** (c) How many more bicycles were sold in 2005 than in 2002?

.....

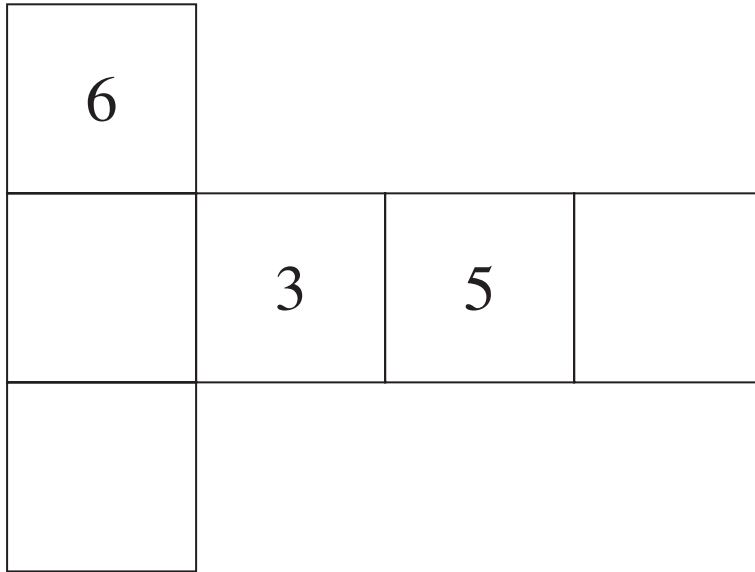
Answer (1 mark)

- 10** (d) In 2007, there were 300 bicycles sold.

Show this on the pictogram.

(1 mark)



11

The diagram shows a net of a cube.

The cube has six faces numbered 1 to 6.

When the cube is made the numbers on the opposite faces of the cube add up to 7.

Fill in the missing numbers.

(2 marks)

12 Calculate the mean of these numbers.

34 27 38 27 45 17

.....

.....

.....

Answer (3 marks)



- 13** (a) Find the square root of 1062.76

Answer (1 mark)

- 13** (b) A full calculator display for $\sqrt{860}$ is 29.325766

- 13** (b) (i) Write 29.325766 correct to 3 decimal places.

Answer (1 mark)

- 13** (b) (ii) Write 29.325766 correct to 1 decimal place.

Answer (1 mark)

- 13** (b) (iii) Write 29.325766 correct to 1 significant figure.

Answer (1 mark)

- 14** (a) A formula connecting the variables P , Q and R is given by

$$R = 6P + 7Q$$

- 14** (a) (i) Find the value of R when $P = 8$ and $Q = 11$

.....
.....

Answer $R =$ (2 marks)

- 14** (a) (ii) Find the value of Q when $R = 38$ and $P = 4$

.....
.....

Answer $Q =$ (2 marks)

- 14** (b) Simplify

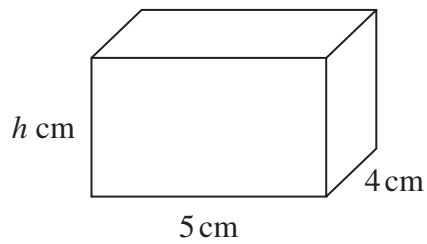
$$2a + 8b + 3a - 2b$$

.....

Answer (2 marks)



- 15** A cuboid has a volume of 75 cm^3 .



Not drawn accurately

The length is 5 cm.

The width is 4 cm.

Find the height, h cm.

.....

.....

Answer cm (2 marks)

- 16** Ron spins two fair four-sided spinners numbered from 1 to 4.
He multiplies the two scores to get a result.

- 16** (a) Complete the two-way table of possible results.

		First Spinner				
		×	1	2	3	4
Second Spinner	1					
	2				6	8
	3				9	12
	4			8		

(1 mark)

- 16** (b) What is the probability that Ron gets an odd number as his result?

Answer (2 marks)



- 17** (a) A water meter at a house records the volume of water used, in cubic metres. The meter readings at the start and end of a 3 month period are as follows.

	Reading in cubic metres
End	4205
Start	4154

Water costs 104p per cubic metre.

Find the cost of the water used in this period.

Give your answer in pounds.

.....

.....

.....

Answer £ (4 marks)

- 17** (b) In this period the cost of water at another house is £62. The sewage charge is 97% of the cost of the water.

Find the sewage charge.

.....

.....

Answer £ (2 marks)

- 17** (c) A factory uses 34 cubic metres of water one week and 39 cubic metres in the following week.

Calculate the percentage increase in the consumption of water.

.....

.....

.....

.....

Answer % (3 marks)



- 18** Olivia goes on holiday to America.
The exchange rate is £1 = \$1.87 (dollars)

- 18** (a) She changes £500 into dollars.

How many dollars does she get?

.....

.....

Answer dollars (2 marks)

- 18** (b) When she returns home she changes \$200 back into pounds.

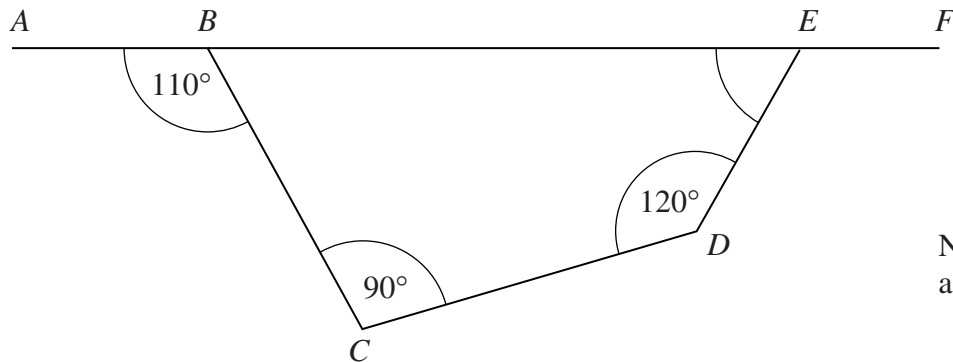
How many pounds does she get back?

.....

.....

Answer £ (2 marks)

- 19** $ABEF$ is a straight line.
 $BCDE$ is a quadrilateral.



Not drawn
accurately

Find angle BED .

.....

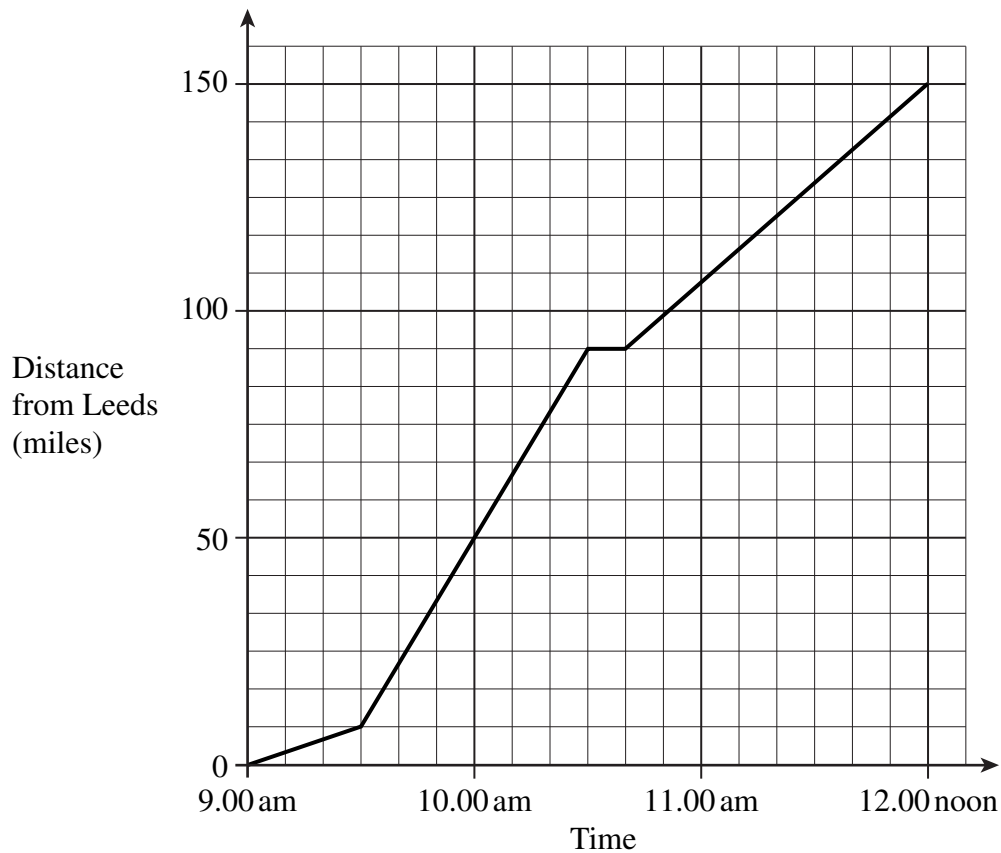
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Answer degrees (3 marks)



- 20** Kevin drove from Leeds to Luton.
The distance – time graph shows his journey.



- 20** (a) How far is it from Leeds to Luton?

.....

Answer miles (1 mark)

- 20** (b) Kevin stopped at a service station for petrol.

How long did he stop for?

.....

Answer minutes (1 mark)

- 20** (c) What was Kevin's average speed for the whole journey?

.....

Answer miles per hour (2 marks)



21 Two drivers measure the petrol consumption of their cars.

Alice's car travels 580 kilometres on a full tank of 51 litres.

Beryl's car travels 370 kilometres on a full tank of 32 litres.

Whose car travels more kilometres to the litre?

You **must** show your working.

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.....

.....

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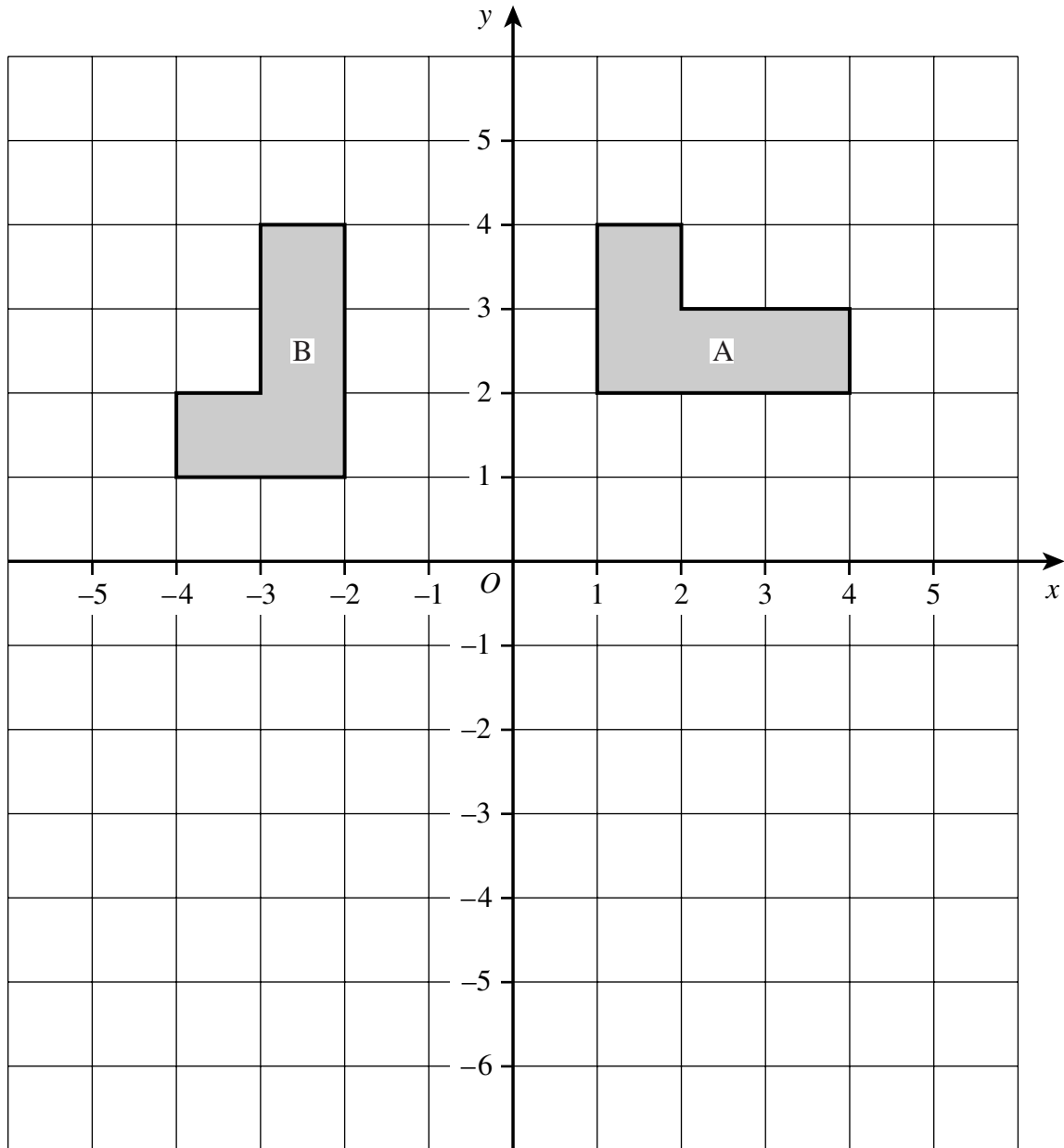
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Answer (3 marks)

Turn over for the next question



22



- 22 (a) Describe the **single** transformation that takes shape A to shape B.

.....

Answer (3 marks)

- 22 (b) Reflect shape B in the line $y = -1$.

(2 marks)



- 23** (a) There are 200 pupils in year 10.
All pupils study at least one language.
No pupil studies all three languages.
The table shows how many students study each language.

	French	Spanish	German
Number of pupils	97	116	45

How many pupils study two languages?

.....

Answer (1 mark)

- 23** (b) There are also 200 pupils in year 11.
The table shows the mathematics GCSE paper they are taking.

	Foundation	Higher
Boys	32	76
Girls	28	64

- 23** (b) (i) What percentage of the pupils are taking the Foundation paper?

.....

Answer % (1 mark)

- 23** (b) (ii) One of the pupils is absent for the examination.

What is the probability that it is a girl taking the Higher paper?

.....

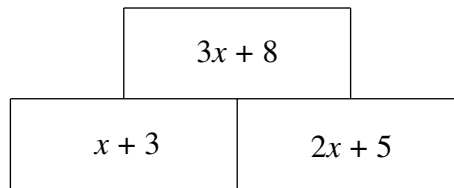
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Answer (1 mark)



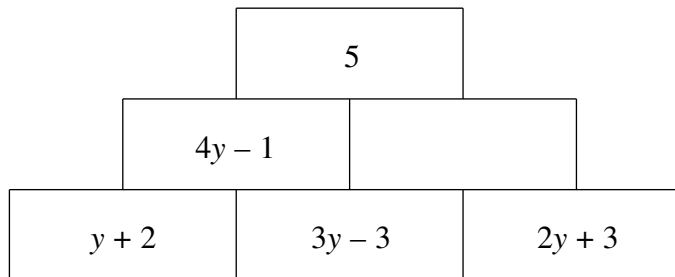
- 24** Each expression in this wall is formed by adding the two supporting expressions from the row below.

For example



$$x + 3 + 2x + 5 = 3x + 8$$

Use the wall below to find the value of y .



.....

.....

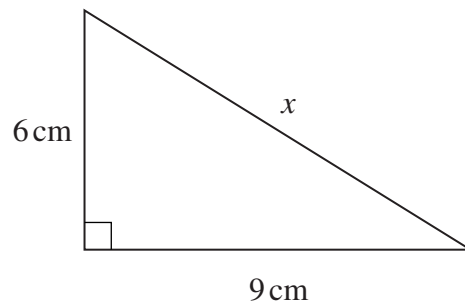
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Answer $y =$ (3 marks)



- 25 Calculate the length, x cm, in the triangle below.



Not drawn
accurately

.....

.....

.....

.....

.....

Answer cm (3 marks)

- 26 Adam is aged 12.
Brenda is aged 8.
They share £170 between them in the ratio of their ages.

How much does each receive?

.....

.....

.....

.....

Answer Adam £

Brenda £ (2 marks)



- 27 The table shows the frequency of the variable, x , for various values.

x	Frequency
25	16
35	38
45	26
55	14
65	6
Total	100

The mean value of x is 40.6

- 27 (a) The table shows the heights, h (in centimetres), of 100 girls in year 10.

Height, h (cm)	Frequency
$120 < h \leq 130$	16
$130 < h \leq 140$	38
$140 < h \leq 150$	26
$150 < h \leq 160$	14
$160 < h \leq 170$	6
Total	100

- 27 (a) (i) What is the mid-point of the group $120 < h \leq 130$?

Answer cm (1 mark)

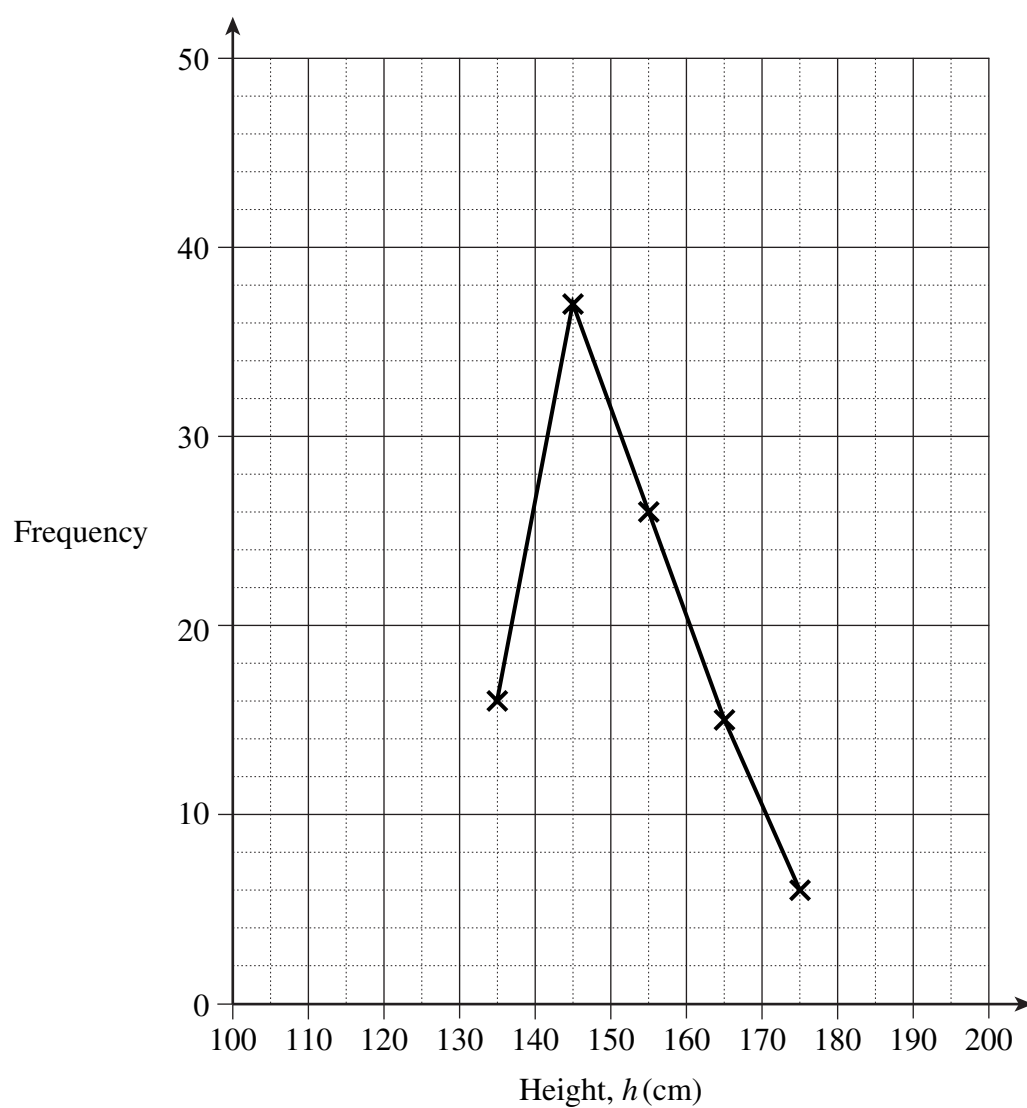
- 27 (a) (ii) Using the mean value of x , write down an estimate for the mean height of the 100 girls.

.....

Answer cm (1 mark)



- 27 (b) The frequency diagram shows the distribution of the heights of 100 boys in year 10.



On the same grid, draw a frequency diagram for the heights of the girls in year 10.

(2 marks)

END OF QUESTIONS



There are no questions printed on this page

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