

Surname						Other Names					
Centre Number						Candidate Number					
Candidate Signature											

For Examiner's Use

General Certificate of Secondary Education
June 2009



MATHEMATICS (SPECIFICATION A)
Foundation Tier
Paper 1 Non-calculator

4306/1F
F

Monday 18 May 2009 1.30 pm to 3.00 pm

<p>For this paper you must have:</p> <ul style="list-style-type: none"> mathematical instruments. <p>You must not use a calculator.</p>	
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For Examiner's Use	
Pages	Mark
3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20	
TOTAL	
Examiner's Initials	

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.

Information

- The maximum mark for this paper is 100.
- The marks for questions are shown in brackets.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer booklet.

Advice

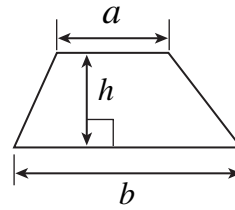
- In all calculations, show clearly how you work out your answer.



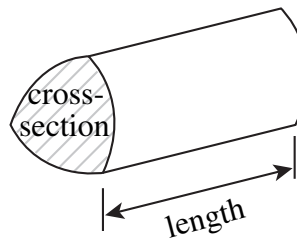
J U N 0 9 4 3 0 6 1 F 0 1

Formulae Sheet: Foundation Tier

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

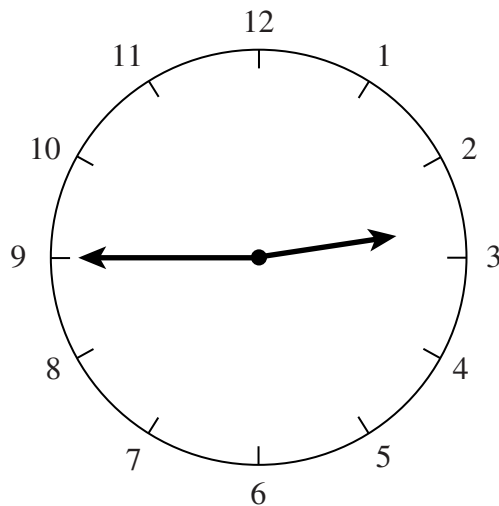


Volume of prism = area of cross-section \times length



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

- 1 Sam's mathematics lesson is in the afternoon.
The clock shows the time when the lesson starts.

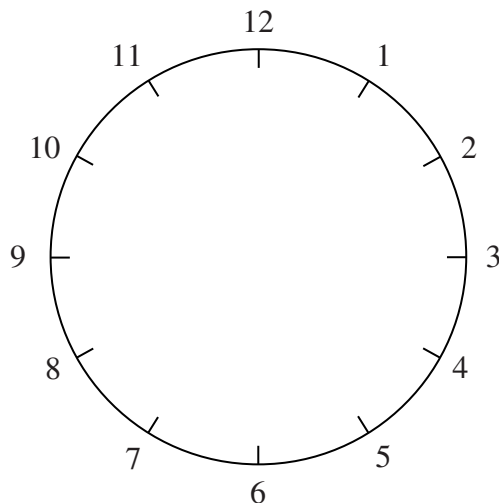


- 1 (a) Write down the time shown on the clock.

Answer (1 mark)

- 1 (b) (i) The lesson finishes 45 minutes later.

Show the time when the lesson finishes on this clock.



(1 mark)

- 1 (b) (ii) Write the time the lesson finishes, using the 24 hour clock.

Answer (1 mark)

Turn over ►



2 (a) Here is a list of numbers.

4020 2040 2400 2004 4200 4002

2 (a) (i) From the list, write down the smallest number.

Answer (1 mark)

2 (a) (ii) From the list, write down the largest number.

Answer (1 mark)

2 (a) (iii) From the list, write down the number that is nearest to 3000

Answer (1 mark)

2 (b) Complete the boxes below.

2 (b) (i) $7200 \times 10 =$

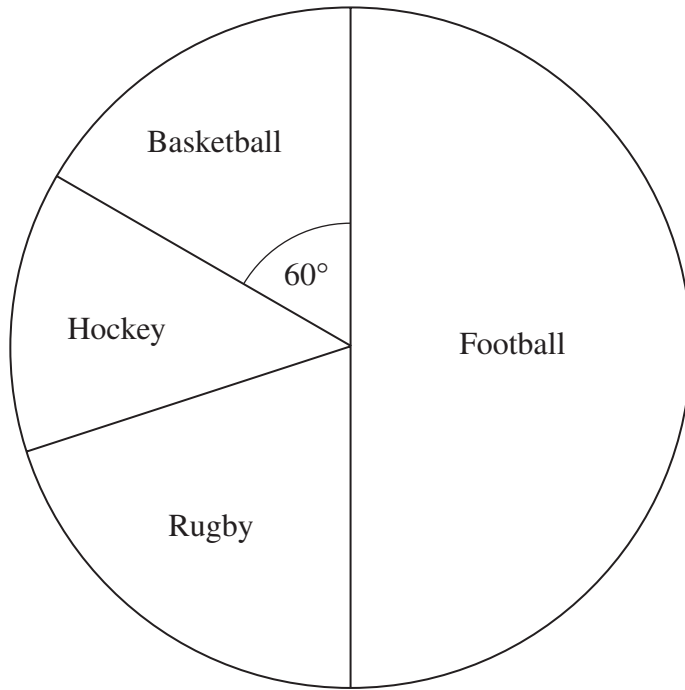
(1 mark)

2 (b) (ii) $7200 \div 100 =$

(1 mark)



3 The pie chart shows the sports played by 60 students during their games lesson.



3 (a) How many students play football?

.....

Answer (1 mark)

3 (b) How many students play hockey or rugby?

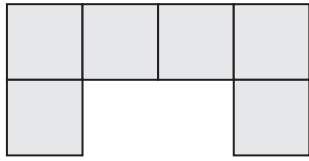
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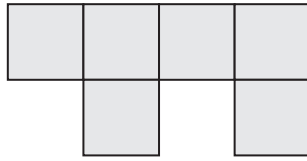
Answer (3 marks)



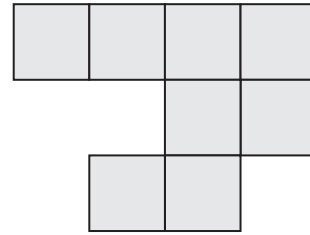
4 Here are six shapes made from centimetre squares.



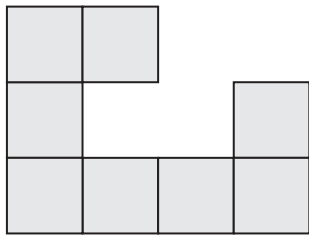
A



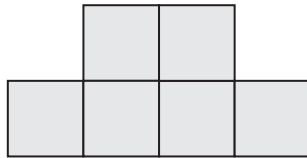
B



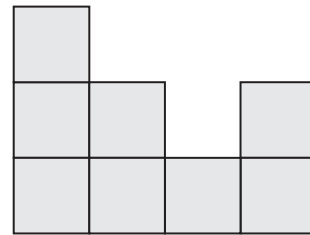
C



D



E



F

4 (a) Which **two** shapes fit together to make a rectangle?

Answer and (1 mark)

4 (b) Which **two** shapes fit together to make a square?

Answer and (1 mark)

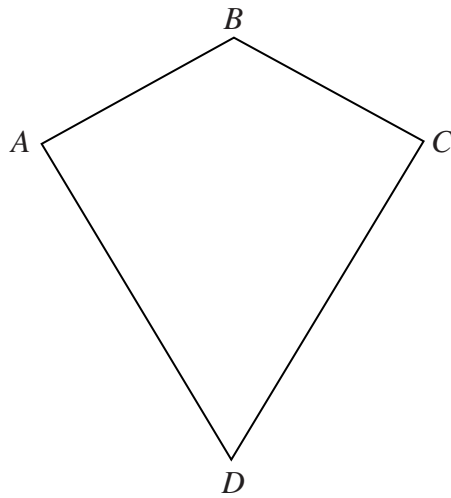
4 (c) Work out the area of shape *D*.
State the units of your answer.

.....

Answer (2 marks)



5 The diagram shows a kite $ABCD$.



Tick a box to show whether each statement is true or false.

5 (a) AB is parallel to CD .

True

False

(1 mark)

5 (b) Angle $A =$ Angle C .

True

False

(1 mark)

5 (c) The kite has two lines of symmetry.

True

False

(1 mark)

5 (d) The diagonals are at right angles to each other.

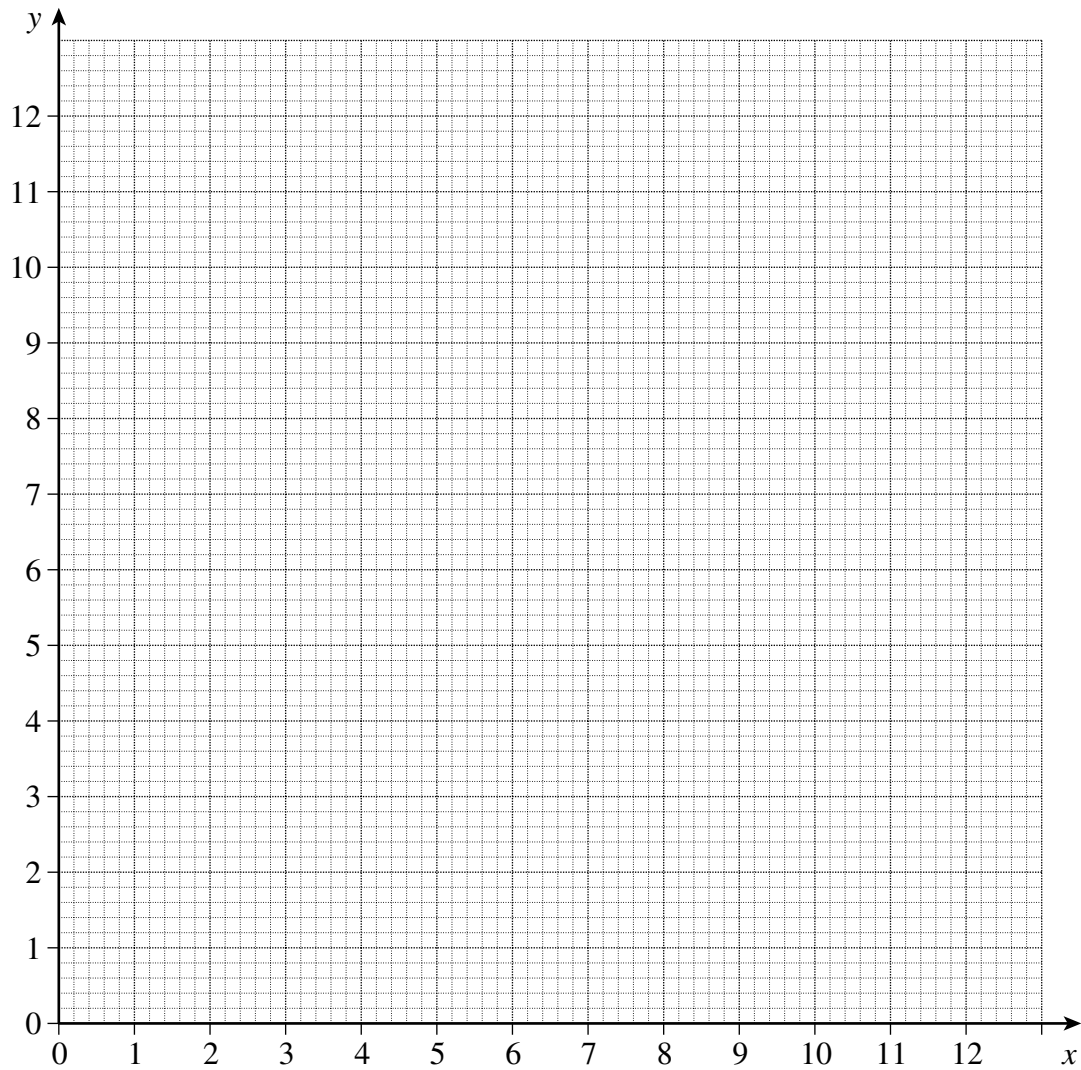
True

False

(1 mark)



- 6 (a) Plot the points $A(2, 6)$ and $B(12, 6)$ on the grid.



(2 marks)

- 6 (b) Write down the coordinates of the mid-point of AB .

Answer (..... ,) (1 mark)

- 6 (c) Draw the circle with AB as diameter.

(1 mark)



7 Mrs Wilson gives her class a mental arithmetic test.
The test is marked out of 20.

These are their marks.

17 14 16 13 9 10 17 18 16 8 17

7 (a) Work out the mode.

.....

Answer (1 mark)

7 (b) Work out the median.

.....

.....

Answer (2 marks)

7 (c) Write down the range.

.....

Answer (1 mark)

7 (d) Mrs Wilson tells her class that the pass mark is 75%.

How many students pass the test?

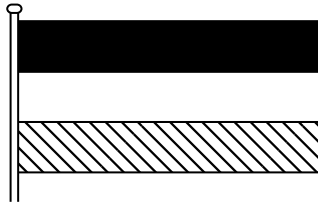
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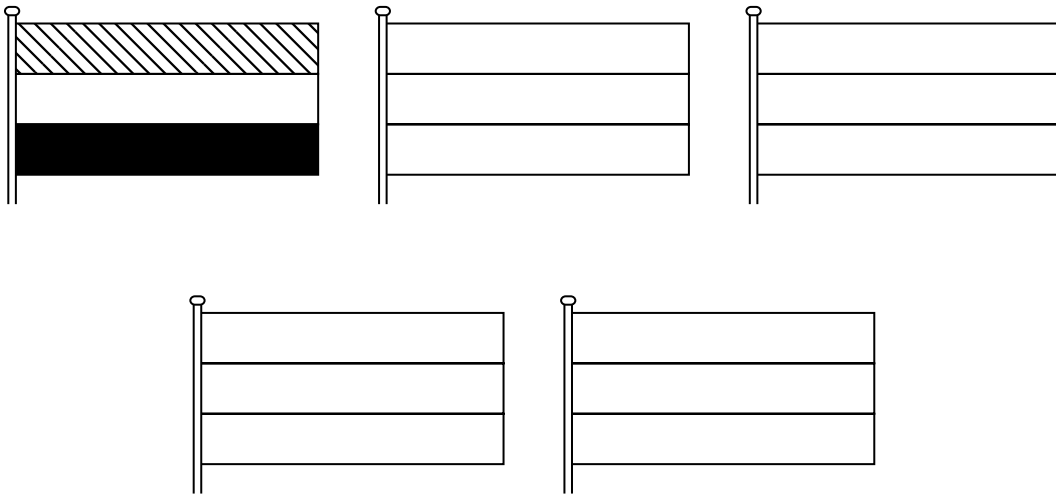
Answer (2 marks)



8 Here is a flag with three stripes.



8 (a) Show the other different flags that can be made using each stripe once only.
One has been done for you.



(3 marks)

8 (b) A flag with three stripes can be made in 6 different ways.
A flag with four stripes can be made in 24 different ways.
The table shows how to work it out.

Number of stripes	Calculation	Number of ways
2	2×1	2
3	$3 \times 2 \times 1$	6
4	$4 \times 3 \times 2 \times 1$	24

How many different flags with five stripes can be made?

.....

.....

Answer (2 marks)



9 (a) (i) Simplify $\frac{5}{10}$

Answer (1 mark)

9 (a) (ii) Write 30% as a fraction in its simplest form.

.....

Answer (1 mark)

9 (a) (iii) Write 15% as a decimal.

.....

Answer (1 mark)

9 (b) Put these numbers in order, with the smallest first.

$\frac{3}{4}$ 0.8 70%

.....
.....

Answer , , (3 marks)

9 (c) Find $\frac{2}{3}$ of £60

.....

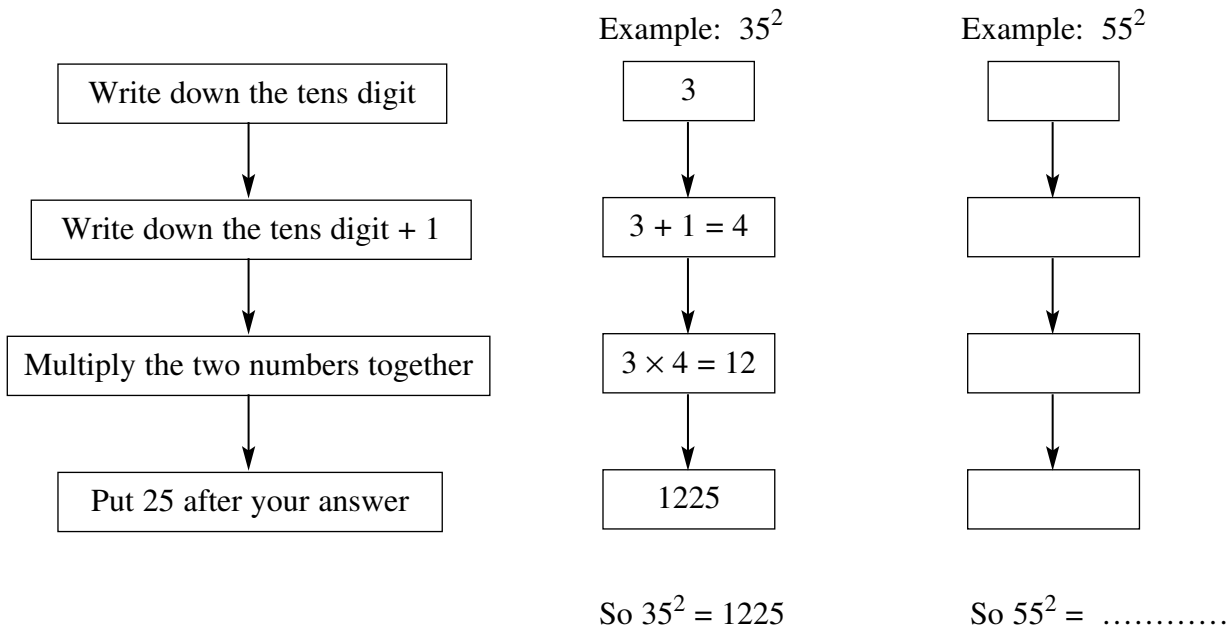
Answer £ (2 marks)

9 (d) Work out $\frac{2}{3} \times \frac{4}{5}$

Answer (1 mark)



10 The flow chart shows, with a worked example, how to square a two-digit number ending in 5



10 (a) Complete the flow chart to work out 55^2 (2 marks)

10 (b) Find $\sqrt{4225}$

.....

.....

Answer (2 marks)

11 Katie has a weekend job.
 Her basic rate of pay is £4.80 per hour for the first 10 hours of work.
 Any extra hours are paid at the overtime rate.
 The overtime rate is one and a half times the basic rate.

Calculate Katie's total pay for a weekend when she works for 12 hours.

.....

.....

.....

.....

Answer £ (4 marks)



12 Two fair dice are thrown and their scores added together.
The table shows some of the possible total scores.

	+	1	2	3	4	5	6
1	2	3	4				
2				6	7	8	
3							
4							
5	6	7	8				
6				10	11	12	

12 (a) Complete the table. (2 marks)

12 (b) What is the probability of scoring a total of 8?
Answer (1 mark)

12 (c) What is the probability of scoring a total of 10 or more?
.....
Answer (2 marks)

13 Ann is x years old.
David is 3 years younger than Ann.
Ken is twice as old as Ann.
The total of their ages is 25

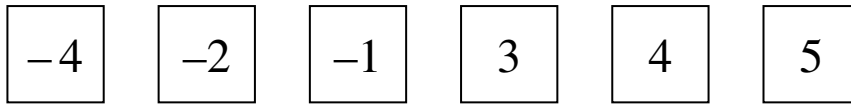
13 (a) Write an expression for David's age in terms of x .
Answer (1 mark)

13 (b) Write an expression for Ken's age in terms of x .
Answer (1 mark)

13 (c) Form an equation in x and use it to work out Ann's age.
.....
.....
.....
Answer (2 marks)



14 Here is a set of number cards.



Using any of the cards, fill in the boxes below.

14 (a) \times = -10

(1 mark)

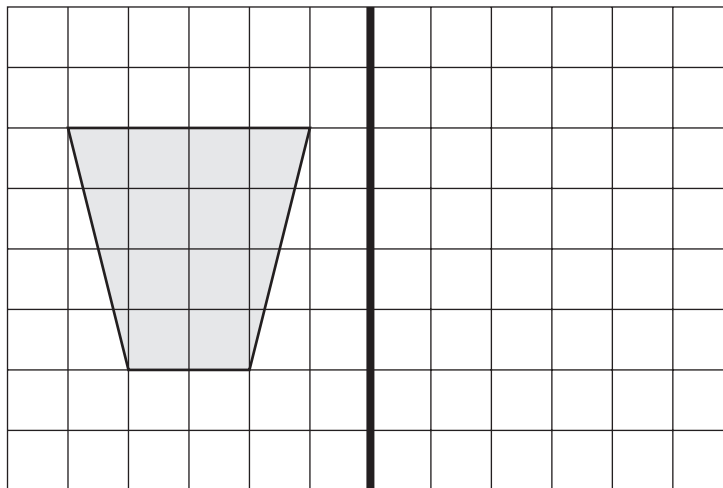
14 (b) \times = 8

(1 mark)

14 (c) \div = -1

(1 mark)

15



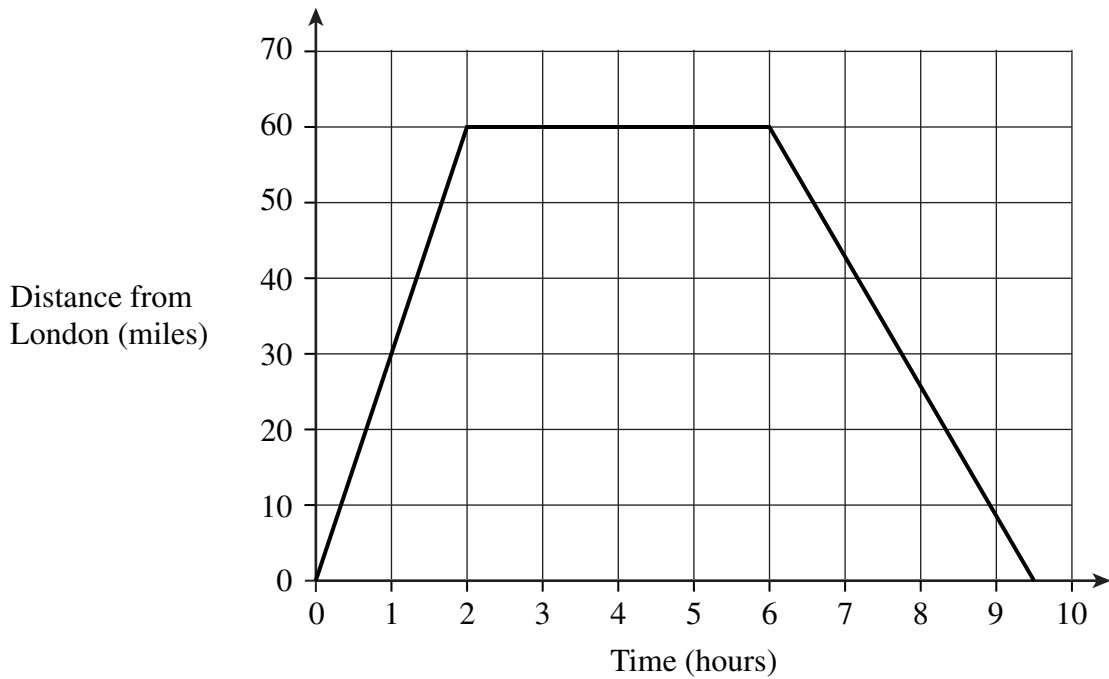
Mirror line

Draw the reflection of the shape in the mirror line.

(2 marks)



16 The graph shows a car journey from London to Brighton and back.



16 (a) How long does the journey to Brighton take?

Answer hours (1 mark)

16 (b) How long is the stay in Brighton?

Answer hours (1 mark)

16 (c) What is the average speed of the car on the journey to Brighton?

.....

Answer mph (2 marks)

16 (d) Is the average speed on the return journey faster or slower?
 Explain your answer.

.....

(1 mark)

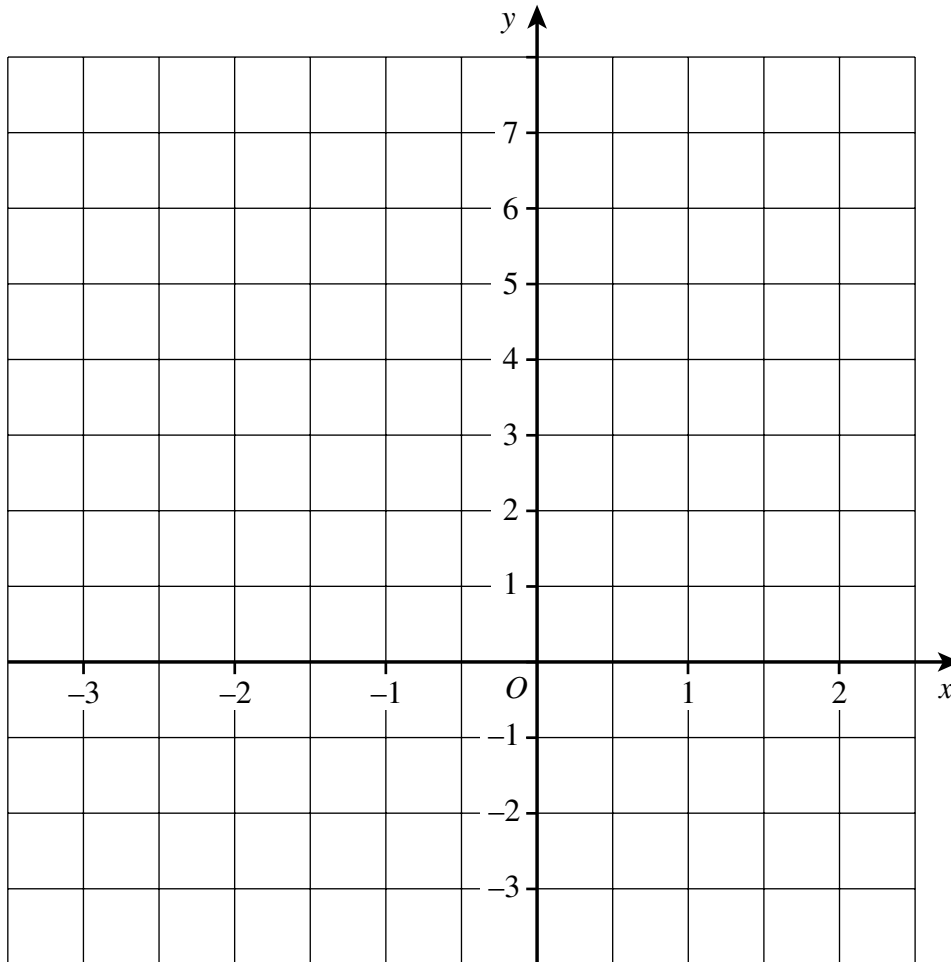


17 (a) Complete the table of values for $y = 2x + 3$

x	-3	-2	-1	0	1	2
y		-1	1	3	5	7

(1 mark)

17 (b) On the grid draw the graph of $y = 2x + 3$ for values of x from -3 to 2



(2 marks)

17 (c) Use your graph to solve $2x + 3 = 0$
Explain how you obtained your answer.

Answer $x = \dots\dots\dots$

Reason $\dots\dots\dots$

$\dots\dots\dots$

$\dots\dots\dots$

(2 marks)



18 George wants to buy a new television.
He sees the same television on special offer at two different stores.

Teleworld

40% off



Normal price £480

SuperSave

$\frac{1}{3}$ off



Normal price £420

Which store sells the television more cheaply?
You **must** show your working.

.....
.....
.....
.....
.....

Answer (5 marks)

19 Leah, Chloe and Maya share £400 between them.
Leah receives the smallest amount of £90
The ratio of Leah's share to Chloe's share is 2 : 3

Work out how much Maya receives.

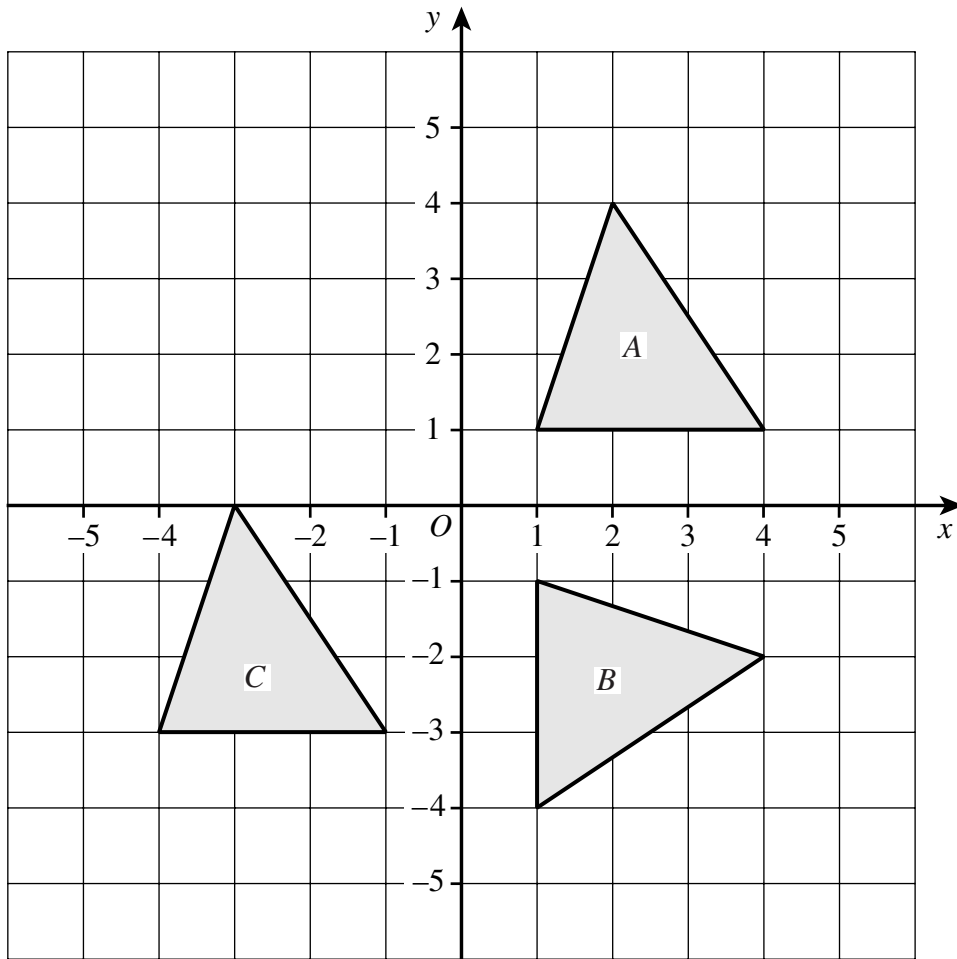
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Answer £ (3 marks)

Turn over ►



20 Triangles *A*, *B* and *C* are shown on the grid.



20 (a) Describe fully the **single** transformation that maps triangle *A* onto triangle *B*.

.....

(3 marks)

20 (b) Write down the vector which describes the translation of triangle *A* onto triangle *C*.

Answer $\begin{pmatrix} \dots \\ \dots \end{pmatrix}$ (1 mark)



21 (a) Solve the inequality $3x + 2 \leq 8$

.....

Answer (2 marks)

21 (b) Write down all the integer values of x satisfying this inequality $-4 \leq 2x < 4$

.....

Answer (2 marks)

22 The table shows the distances that 100 people travel to work each day.

Distance, d , km	Frequency	Midpoint	
$0 < d \leq 4$	11		
$4 < d \leq 8$	23		
$8 < d \leq 12$	36		
$12 < d \leq 16$	20		
$16 < d \leq 20$	10		

Calculate an estimate of the mean distance travelled.

.....

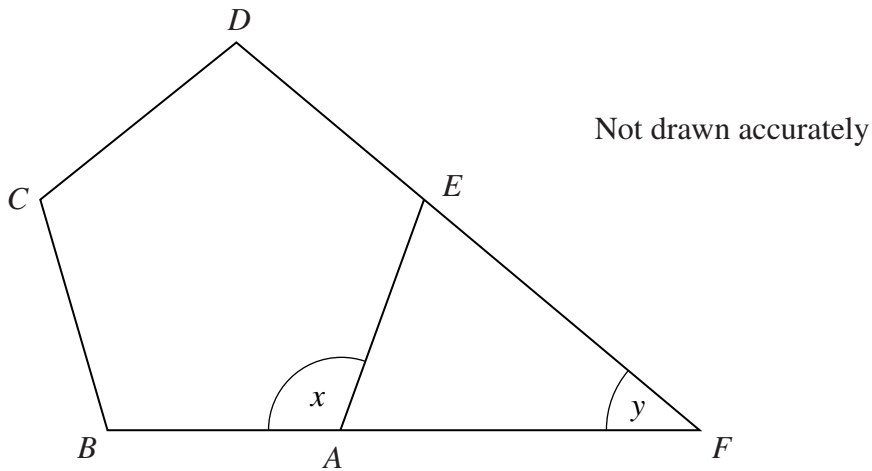
Answer km (4 marks)

Turn over for the next question

Turn over ►



23 *ABCDE* is a regular pentagon.
DEF and *BAF* are straight lines.



23 (a) Which **one** of these statements is true?

- 1 The exterior angle of a regular pentagon is equal to $360^\circ \div 5 = 72^\circ$
- 2 The interior angle of a regular pentagon is equal to $360^\circ \div 5 = 72^\circ$
- 3 The exterior angle of a regular pentagon is equal to $360^\circ - 72^\circ = 288^\circ$
- 4 The interior angle of a regular pentagon is equal to $360^\circ - 72^\circ = 288^\circ$

Answer (1 mark)

23 (b) (i) Work out the size of the angle marked x on the diagram.

.....
.....

Answer degrees (1 mark)

23 (b) (ii) Work out the size of the angle marked y on the diagram.

.....
.....

Answer degrees (2 marks)

END OF QUESTIONS

