Surname		Other Names	
Centre Number			Candidate Number									
Candidate Signature												

For Examiner's Use

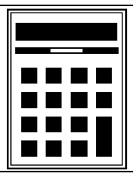
General Certificate of Secondary Education
November 2008

MATHEMATICS (SPECIFICATION A) **4301/2F**
Foundation Tier
Paper 2 Calculator

F

Wednesday 12 November 2008 9.00 am to 10.30 am

For this paper you must have:
- a calculator
- mathematical instruments.



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. This must be tagged securely to this answer booklet.

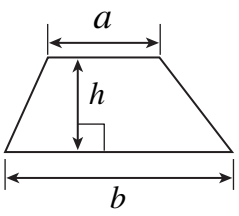
Advice

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

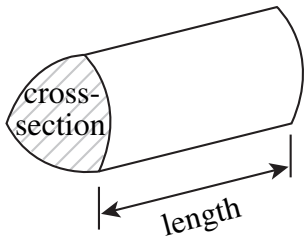
For Examiner's Use	
Pages	Mark
3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
24–25	
TOTAL	
Examiner's Initials	

Formulae Sheet: Foundation Tier

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



Volume of prism = area of cross-section × length



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

1 (a) Write the number 8207 in words.

Answer ..... *(1 mark)*

1 (b) In the number 8207, write down the value of the figure 2

Answer ..... *(1 mark)*

1 (c) Write the number 8207 to the nearest hundred.

Answer ..... *(1 mark)*

1 (d) Write the number seven thousand and six in figures.

Answer ..... *(1 mark)*

2 The heights of five children are measured in centimetres.

121 137 121 150 138

2 (a) Which height is the mode?

.....

Answer ..... cm *(1 mark)*

2 (b) Which height is the median?

.....

Answer ..... cm *(1 mark)*

2 (c) What is the range of these heights?

.....

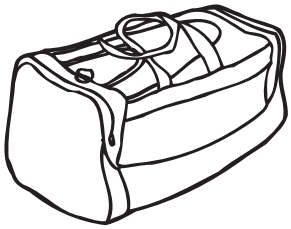
Answer ..... cm *(1 mark)*

7

3 A shop sells sports equipment.

Football £6.99

Sports bag £15.99



Tennis racket £17.99

3 (a) Ali buys a sports bag and a football.

How much does he pay altogether?

.....

.....

Answer £ ..... *(1 mark)*

3 (b) Brian pays for two footballs with a £20 note.

How much change does he receive?

.....

.....

Answer £ ..... *(2 marks)*

3 (c) Camilla has £60 to spend.

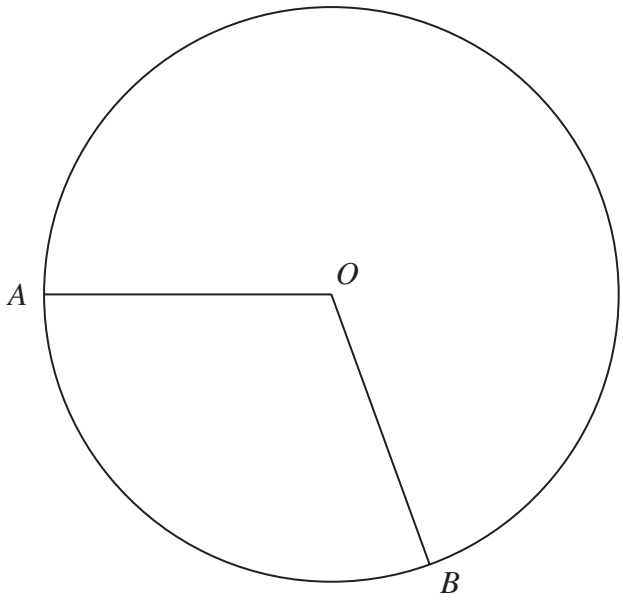
How many tennis rackets can she buy?

.....

.....

Answer ..... *(2 marks)*

4 *O* is the centre of the circle.
A and *B* are two points on the circumference.



4 (a) Measure and write down the radius of the circle.

Answer ..... cm *(1 mark)*

4 (b) Measure and write down the size of the angle *AOB*.

Answer ..... degrees *(1 mark)*

4 (c) Draw the line of symmetry of the sector *AOB*.

(1 mark)

4 (d) Draw the tangent to the circle at *A*.

(1 mark)

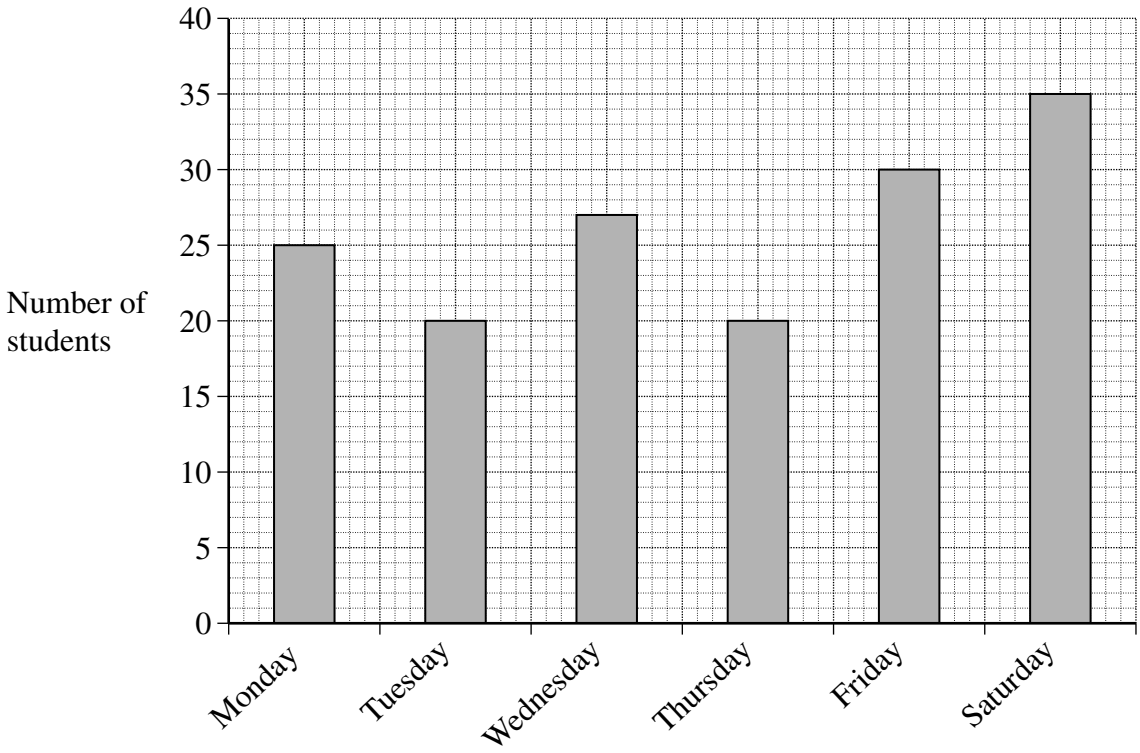
4 (e) Draw the chord *AB*.

(1 mark)

Turn over for the next question

10

5 The bar chart shows the number of students who go to a Youth Club in one week.



5 (a) On which day did most students go to the Youth Club?

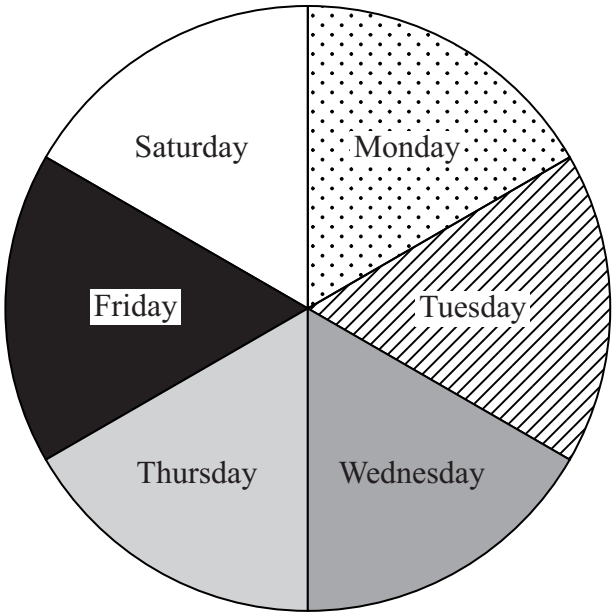
Answer ..... *(1 mark)*

5 (b) What is the difference in the numbers of students who go on Tuesday and Wednesday?

.....

Answer ..... *(1 mark)*

5 (c) Zara decides to draw a pie chart to show the same information given in the bar chart.



Explain what is wrong with her pie chart.

.....

.....

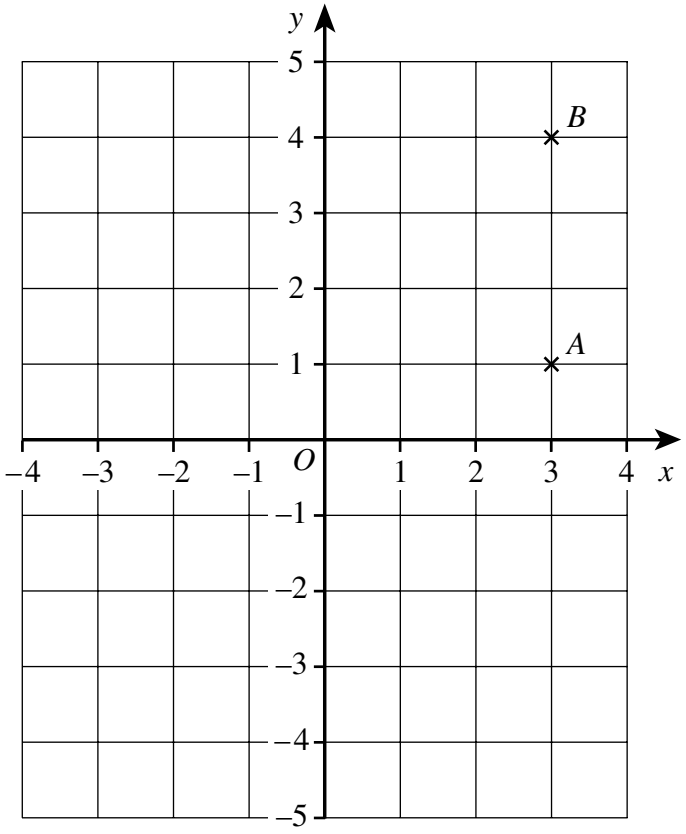
.....

(1 mark)

Turn over for the next question

3

6 The points *A* and *B* are shown on the grid.



6 (a) Write down the coordinates of *A* and *B*.

Answer *A* (…… , ……)

B (…… , ……)

(2 marks)

6 (b) Plot the points *C* (–2, 4) and *D* (–2, 2).

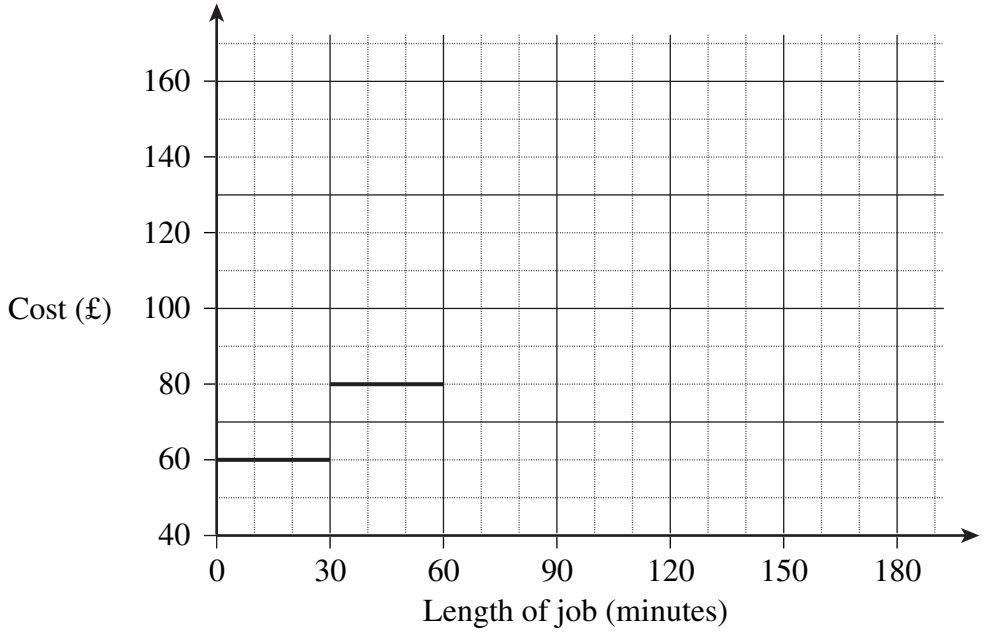
(2 marks)

6 (c) Join the points *ABCD*.

What is the name of the shape *ABCD*?

Answer ..... *(1 mark)*

7 A plumber charges £40 to go to a job.
He then charges £20 for every 30 minutes or part of each 30 minutes while he is working on a job.
The graph shows how much he charges for jobs that last up to one hour.



7 (a) How much does he charge for a job that takes 40 minutes?

Answer £ ..... *(1 mark)*

7 (b) Complete the step graph to show how much he charges for jobs that take up to 150 minutes ($2\frac{1}{2}$ hours).

(2 marks)

7 (c) How much does he charge for a job that takes 1 hour and 20 minutes?

Answer £ ..... *(1 mark)*

7 (d) The total cost of a job is £160

What is the longest time that the job could have taken?

.....

Answer ..... minutes *(2 marks)*

11

8 (a) Write down all the factors of 22

.....

.....

Answer ..... *(2 marks)*

8 (b) Write down a square number between 20 and 30

.....

Answer ..... *(1 mark)*

8 (c) Calculate the square root of 38

.....

Answer ..... *(1 mark)*

8 (d) Jo says that 8 is a multiple of 16

Explain why Jo is wrong.

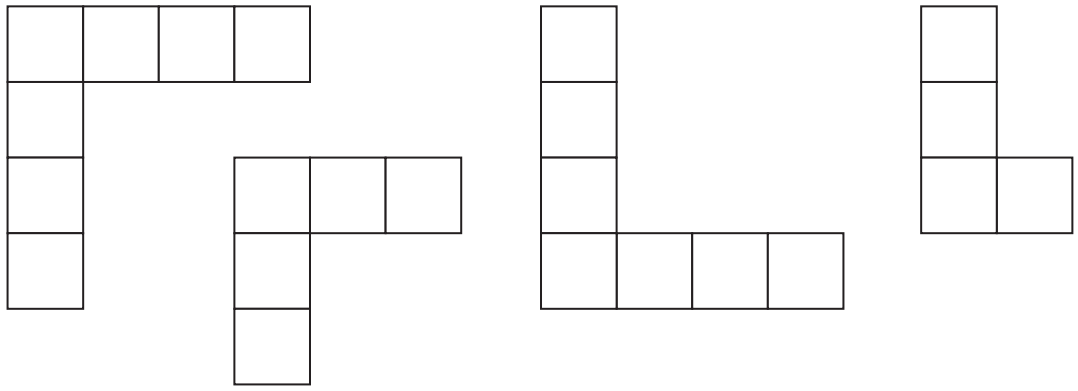
.....

.....

.....

(1 mark)

9 Shapes *A*, *B*, *C* and *D* are made from squares of sides 1 cm.



A *B* *C* *D*

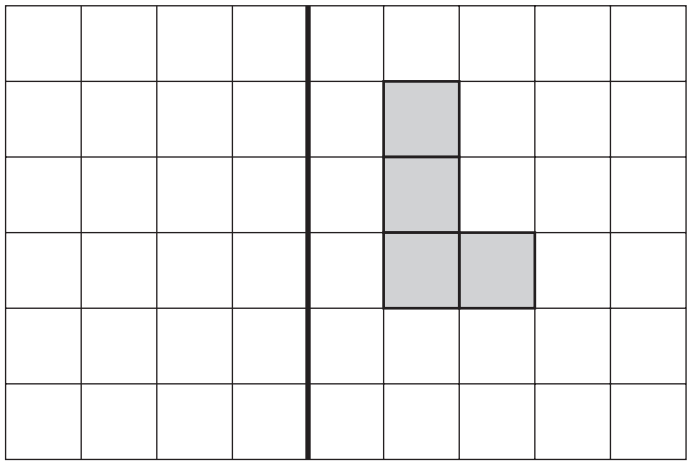
9 (a) Which **two** shapes are congruent?

Answer Shape ..... and Shape .....

(1 mark)

9 (b) Shape *D* is drawn on the grid.

Reflect shape *D* in the mirror line.

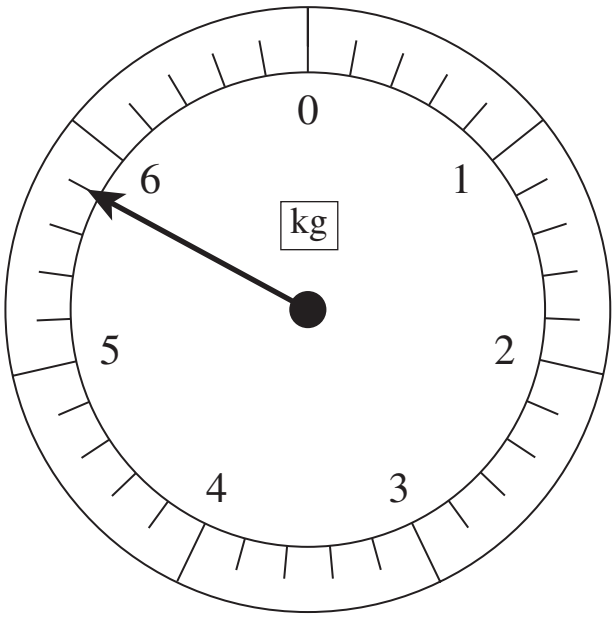


Mirror line

(2 marks)

8

10 The diagram shows a weighing scale for measuring kilograms.



10 (a) What is the reading on the scale?

.....

Answer ..... kg *(1 mark)*

10 (b) Draw a line on the diagram to indicate a reading of 3.1 kg.

(1 mark)

10 (c) Convert 3 kg to pounds.

.....

.....

Answer ..... pounds *(2 marks)*

11 (a) Work out $\frac{3}{7}$ of 56

.....

.....

Answer ..... *(2 marks)*

11 (b) Fill in the missing numbers to make these three fractions equivalent.

$$\frac{2}{5} = \frac{\square}{15} = \frac{14}{\square}$$

(2 marks)

11 (c) Abdul says that 3 times a prime number is always an odd number.

Give an example to show that he is wrong.

.....

.....

(2 marks)

Turn over for the next question

10

12 (a) (i) Calculate $\frac{5}{8} - 0.46$

.....

.....

Answer ..... *(1 mark)*

12 (a) (ii) Write your answer to part (a)(i) to one significant figure.

.....

.....

Answer ..... *(1 mark)*

12 (b) Calculate $\frac{13.6}{18.4 - 16.7}$

Answer ..... *(1 mark)*

12 (c) Calculate 6.3^2 + the square root of 22

.....

.....

Answer ..... *(2 marks)*

13 (a) Simplify $7x + 8x - 2x$

.....

Answer ..... *(1 mark)*

13 (b) Use the formula $H = 5P + 3L$ to find P when $H = 26$ and $L = 2$

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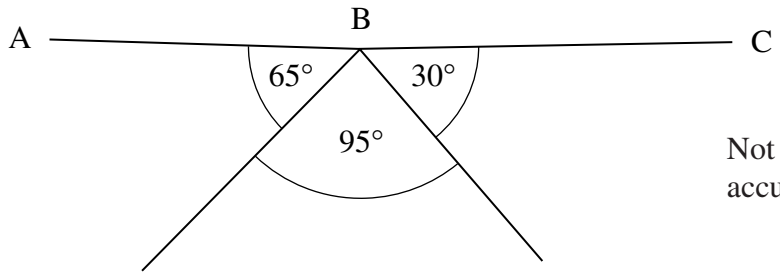
.....

.....

Answer ..... *(3 marks)*

14 The diagram shows three angles.



Not drawn accurately

Suki says that ABC is a straight line.

Explain whether she is correct.

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.....

(2 marks)

11

15 (a) Complete the table of values for $y = 2x + 6$

x	0	1	2	3	4	5
y	6		10		14	16

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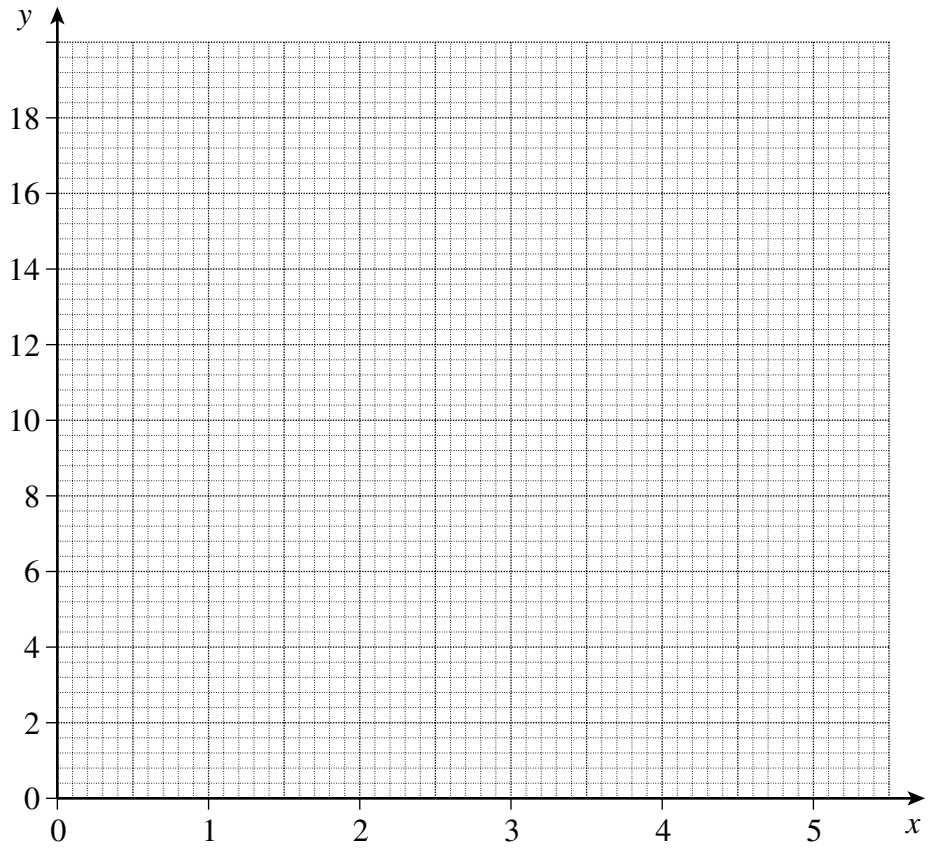
(1 mark)

15 (b) On the grid draw the graph of $y = 2x + 6$ for values of x from 0 to 5

(2 marks)



16 A survey is to be carried out on how teenagers prefer to buy their music.
They buy their music from CDs (C) or from downloads (D).
A pilot survey of ten teenagers is carried out first.

Boy	C	Girl	C
Girl	D	Boy	D
Girl	D	Girl	D
Boy	C	Boy	C
Boy	D	Girl	D

16 (a) Construct a two-way table to show these results.

.....

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.....

.....

(3 marks)

16 (b) In the full survey, the probability of a teenager preferring CDs is 0.3

What is the probability of a teenager **not** preferring CDs?

.....

Answer ..... *(1 mark)*

7

17 Part of a train timetable is shown.

Liverpool	1618		1648	
Manchester	1725		1757	
Huddersfield	1812	1816	1842	1845
Ravensthorpe		1826		1853
Dewsbury	1822	1831	1852	1858

John travels from Manchester to Ravensthorpe.
He has to change trains in Huddersfield.

17 (a) (i) He arrives in Manchester at 1730 to catch the next train.

How long does he have to wait in Huddersfield for the train to Ravensthorpe?

.....

.....

Answer ..... minutes *(1 mark)*

17 (a) (ii) How long does his journey take from Manchester to Ravensthorpe?

.....

.....

Answer ..... minutes *(2 marks)*

17 (b) Sam also travels from Manchester to Ravensthorpe.
He arrives in Manchester ten minutes earlier than John.

How much earlier does Sam arrive in Ravensthorpe?

.....

.....

Answer ..... minutes *(1 mark)*

18 A household has one pint of milk delivered each day from Monday to Friday.
On Saturday they have three pints of milk and one carton of cream delivered.
There is no delivery on a Sunday.
A carton of cream costs £1.20
The weekly bill is £4.80

How much does a pint of milk cost?

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.....

.....

.....

.....

.....

Answer ..... pence *(3 marks)*

19 The n^{th} term of a sequence is given by the expression

$$n^2 + 5$$

Write down the first **three** terms of the sequence.

.....

.....

.....

Answer ..... , ... , ... *(2 marks)*

Turn over for the next question

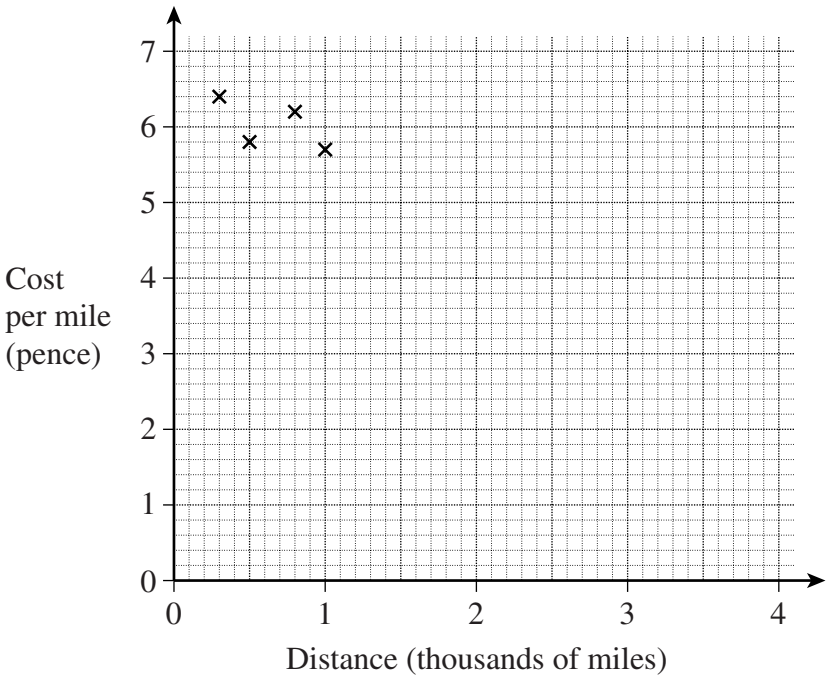
9

20 The cost per mile, in pence, and the flight distance, in thousands of miles, are shown for 10 flights on Flyaway Airlines.

Flight	A	B	C	D	E	F	G	H	I	J
Distance (Thousands of miles)	0.3	0.5	0.8	1.0	1.2	1.4	1.7	2.6	3.3	3.9
Cost per mile (pence)	6.4	5.8	6.2	5.7	5.0	4.6	4.4	3.4	2.4	1.8

20 (a) The data for the first four flights has been plotted on the scatter diagram.

Plot the data for the remaining flights.



(2 marks)

20 (b) Draw a line of best fit on the diagram.

(1 mark)

20 (c) Estimate the cost per mile, in pence, of a flight of 2000 miles.

.....

.....

Answer ..... pence *(1 mark)*

20 (d) The scatter diagram shows negative correlation.

Explain what this means for the relationship between the cost per mile and the distance of the flight.

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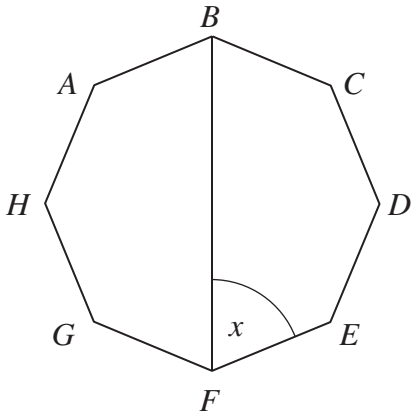
(1 mark)

Turn over for the next question

5

21 *ABCDEFGH* is a regular octagon.



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Work out the value of x.

.....

.....

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.....

Answer ..... degrees *(3 marks)*

22 The standard quadrilaterals are

Square	**Rectangle**	**Parallelogram**
Kite	**Rhombus**	**Trapezium**

22 (a) Three different quadrilaterals have these two properties.

Both pairs of opposite sides are equal.
Rotational symmetry order 2

Name the **three** quadrilaterals.

Answer .....

.....

..... *(2 marks)*

22 (b) Two of the quadrilaterals in part (a) also have this property

Diagonals do not cross at right angles.

Name the **two** quadrilaterals.

Answer .....

..... *(1 mark)*

22 (c) For one of the quadrilaterals in part (b), write down an extra property that will distinguish it from the other.

Quadrilateral chosen .....

Property .....

.....

(1 mark)

7

23 The size of a detergent bottle is increased from 500 ml to 665 ml.

What is the percentage increase?

.....

.....

.....

.....

.....

Answer ..... % *(3 marks)*

24 (a) Expand $6(x - 7)$

.....

Answer ..... *(1 mark)*

24 (b) Expand and simplify $x(2x + 3) - 4(x^2 - 1)$

.....

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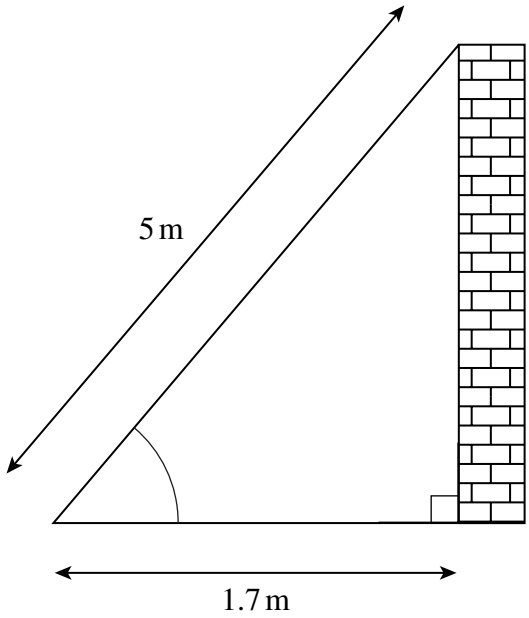
.....

Answer ..... *(2 marks)*

25 A ladder of length 5 m rests against a wall.
The foot of the ladder is 1.7 m from the base of the wall.



Not drawn accurately

How far up the wall does the ladder reach?

.....

.....

.....

.....

Answer ..... m *(3 marks)*

26 A car is worth £15 000 at the start of 2008.
It decreases in value each year by 20% of its value at the start of the year.

How much will the car be worth at the start of 2010?

.....

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.....

.....

Answer £ ..... *(3 marks)*

END OF QUESTIONS

12

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