

**Tuesday 6 November 2012 – Morning**

**GCSE MATHEMATICS B**

**J567/01** Paper 1 (Foundation Tier)

Candidates answer on the Question Paper.

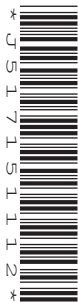
**OCR supplied materials:**

None

**Other materials required:**

- Geometrical instruments
- Tracing paper (optional)

**Duration:** 1 hour 30 minutes



Candidate forename		Candidate surname	
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Centre number						Candidate number				
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**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**

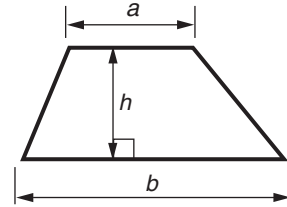


**No calculator can be used for this paper**

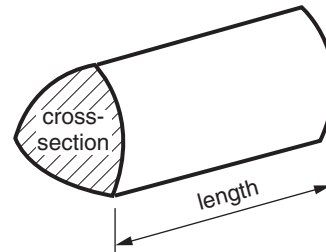
This paper has been pre modified for carrier language

## Formulae Sheet: Foundation Tier

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



$$\text{Volume of prism} = (\text{area of cross-section}) \times \text{length}$$



**PLEASE DO NOT WRITE ON THIS PAGE**

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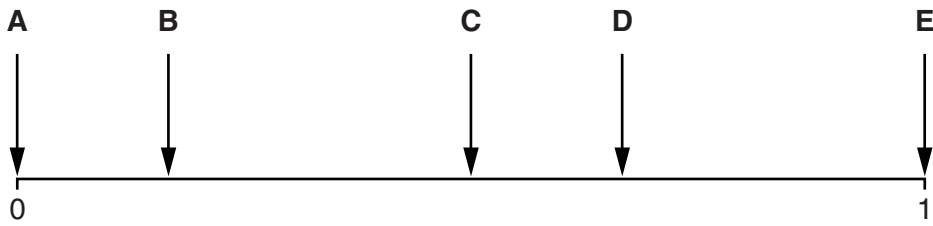
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- 1 This probability scale shows the probability of some of the outcomes when a fair six-sided dice is thrown.



Match a letter on the probability scale with each of the following outcomes.

- (a) Throwing an even number.

(a) Letter \_\_\_\_\_ [1]

- (b) Throwing a 5.

(b) Letter \_\_\_\_\_ [1]

- (c) Throwing a 7.

(c) Letter \_\_\_\_\_ [1]

- (d) Throwing a number bigger than 2.

(d) Letter \_\_\_\_\_ [1]

- 2 Tommy goes shopping in the supermarket.  
He buys some food products that are on special offer.

- (a) Packets of king prawns are half price.  
A packet usually costs £6.80.  
Tommy buys one packet of king prawns.

Work out how much he pays.

(a) £ \_\_\_\_\_ [2]

- (b) Pizzas cost £2.60 each.  
You can buy a box of two for £4.

How much cheaper is a box of pizzas rather than two single pizzas?

(b) £ \_\_\_\_\_ [2]

- (c) Packets of spaghetti usually cost 80p each.  
The price is reduced by 25%.

Work out how much cheaper the new price is.

(c) \_\_\_\_\_ p [2]

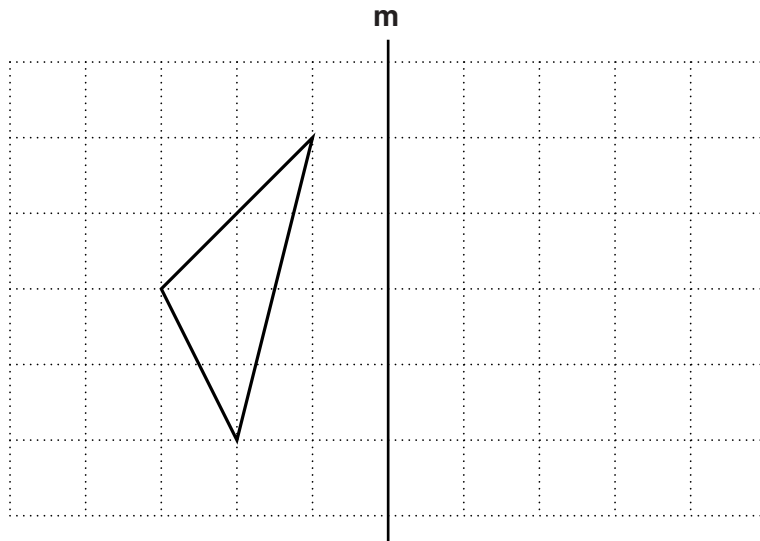
5

- (d) Cartons of tomato soup usually cost £1.80 each.  
The price is reduced by one third.

Work out how much cheaper the new price is.

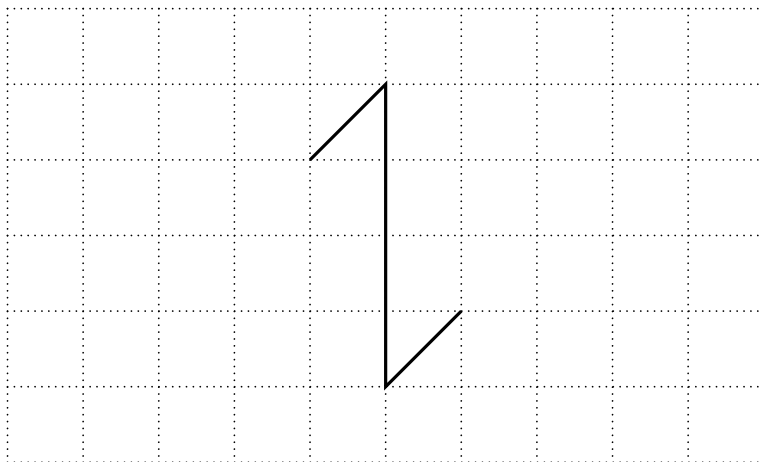
(d) £ \_\_\_\_\_ [2]

- 3 (a) Reflect the triangle in the line **m**.



[2]

- (b) This shape has rotation symmetry of **order 2**.



Draw three more straight lines to give this shape rotation symmetry of **order 4**.

[2]

4 This is the bus timetable from Norford to Wenton.

Norford	8:05	9:05	11:35	13:05	15:35	17:05	18:35	20:05
End Lane	8:17	9:17	11:47	13:17	15:47	17:17	18:47	20:17
Church Street	8:31	9:31		13:31		17:31		20:31
Village Hall	8:39	9:39	12:06	13:39	16:06	17:39	19:06	20:39
Queens Road	8:47	9:47		13:47		17:47		20:47
Wenton	8:51	9:51	12:15	13:51	16:15	17:51	19:15	20:51

- (a) Oliver is going from End Lane to Queens Road.  
He catches the bus at 9:17.

At what time should the bus get to Queens Road?

(a) \_\_\_\_\_ [1]

- (b) Katie is travelling to Wenton.  
She catches the bus from Norford at 11:35.

How long should it take her?

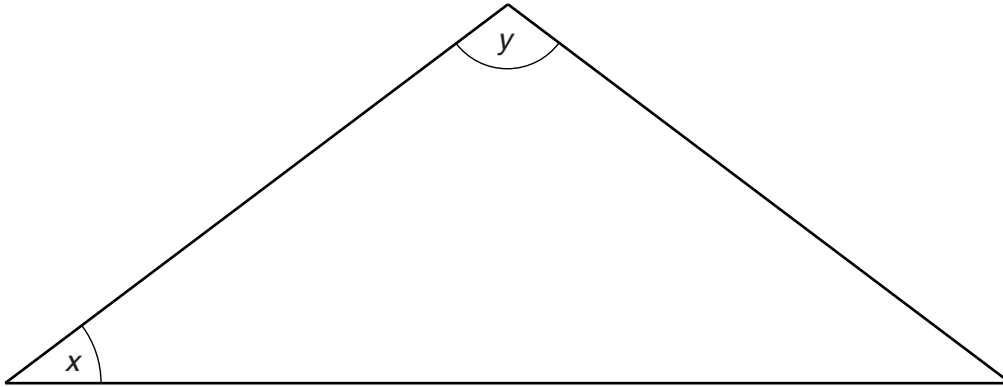
(b) \_\_\_\_\_ minutes [2]

- (c) Charlie must be at the Village Hall by 6 o'clock in the evening.  
It takes him 18 minutes to walk from his home to the bus stop at Norford.

What is the latest time he can leave home?

(c) \_\_\_\_\_ [2]

5 Here is a triangle.



(a) (i) Measure and write down angle  $x$ .

(a)(i) \_\_\_\_\_ ° [1]

(ii) Measure and write down angle  $y$ .

(ii) \_\_\_\_\_ ° [1]

(b) Complete each of the following statements using a term from the list.

obtuse   reflex   a right angle   acute

(i) Angle  $x$  is \_\_\_\_\_ . [1]

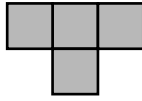
(ii) Angle  $y$  is \_\_\_\_\_ . [1]



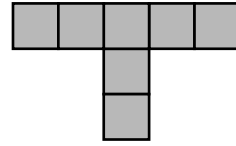
6 Ewan is drawing a sequence of patterns.



Pattern 1

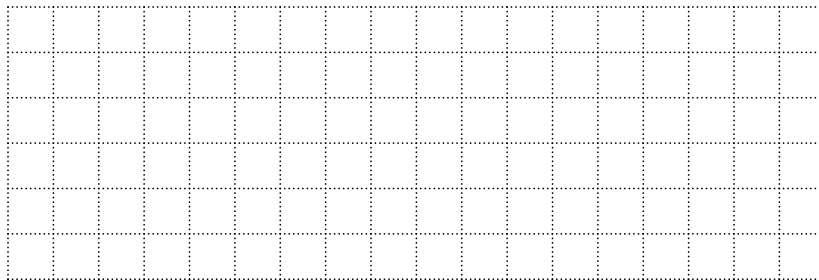


Pattern 2



Pattern 3

(a) Draw Pattern 4 on the grid below.



[1]

(b) Complete this table.

Pattern	1	2	3	4	5
Number of squares	1	4	7		

[1]

(c) How many squares will there be in

(i) Pattern 6,

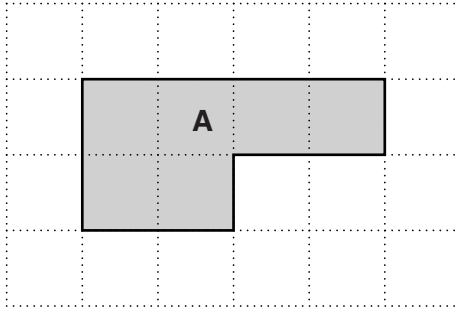
(c)(i) \_\_\_\_\_ [1]

(ii) Pattern 10?

(ii) \_\_\_\_\_ [1]

7 Shapes **A** and **B** are drawn on centimetre square grids.

(a)



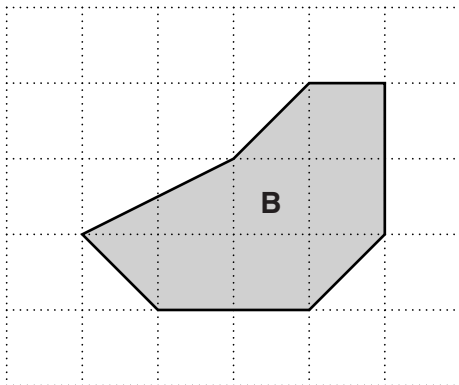
(i) Work out the area of shape **A**.

(a)(i) \_\_\_\_\_ cm<sup>2</sup> [1]

(ii) Work out the perimeter of shape **A**.

(ii) \_\_\_\_\_ cm [1]

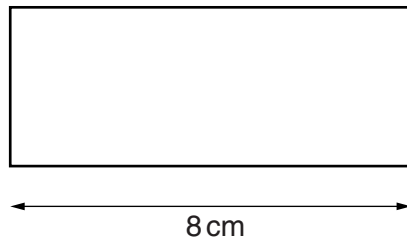
(b)



Work out the area of shape **B**.

(b) \_\_\_\_\_ cm<sup>2</sup> [2]

- (c) This rectangle has a perimeter of 26 cm.



Not to scale

The length of the rectangle is 8 cm.

Work out the area of the rectangle.

(c) \_\_\_\_\_ cm<sup>2</sup> [3]

8 Jolene is cooking a meal.

(a) For the starter she is cooking fish cakes.

Recipe for Fish Cakes	
Serves 4 people	
Fish	300 grams
Potatoes	400 grams
Butter	20 grams
Bread	120 grams
Eggs	2
Salt and pepper	

Jolene needs to make fish cakes for **6 people**.

(i) How many eggs will she need?

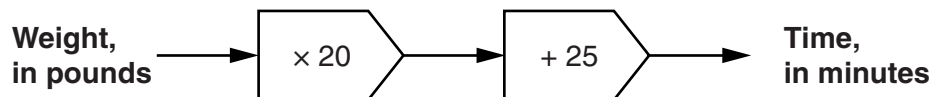
(a)(i) \_\_\_\_\_ [1]

(ii) How much fish will she need?

(ii) \_\_\_\_\_ g [1]

(b) For the main course she is roasting a chicken.

This is the rule Jolene is using to find the length of time, in minutes, needed to roast the chicken.



The chicken weighs 4 pounds.

How long will it take to roast?

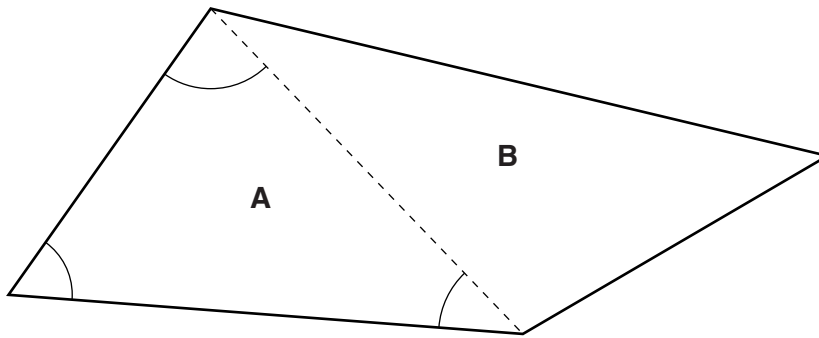
(b) \_\_\_\_\_ minutes [2]

(c) The recipe for her pudding says that Jolene needs half a litre of cream.

How many millilitres are there in half a litre?

(c) \_\_\_\_\_ ml [1]

9 This quadrilateral is split into two triangles, **A** and **B**.



(a) (i) What is the sum of the angles in triangle **A**?

(a)(i) \_\_\_\_\_ ° [1]

(ii) Explain why the sum of the angles in the quadrilateral is 360°.

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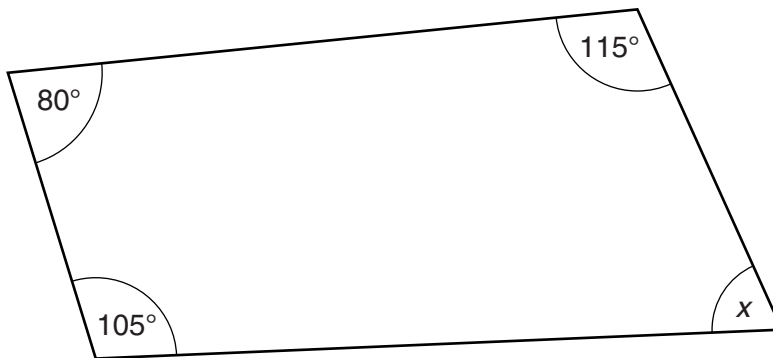
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[1]

(b) Here is another quadrilateral.



Not to scale

Work out angle  $x$ .

(b) \_\_\_\_\_ ° [2]

10 (a) Here is a list of numbers.

3      7      8      16      33      42      70

From this list write down a number which is

(i) a multiple of 11,

(a)(i) \_\_\_\_\_ [1]

(ii) a cube,

(ii) \_\_\_\_\_ [1]

(iii) a common factor of 21 and 35.

(iii) \_\_\_\_\_ [1]

(b) Hannah and David are playing a game.

(i) Hannah thinks of a number.  
She tells David that it is:

- less than 50
- a square
- a multiple of 2 **and** a multiple of 3.

What is the number that Hannah is thinking of?

(b)(i) \_\_\_\_\_ [2]

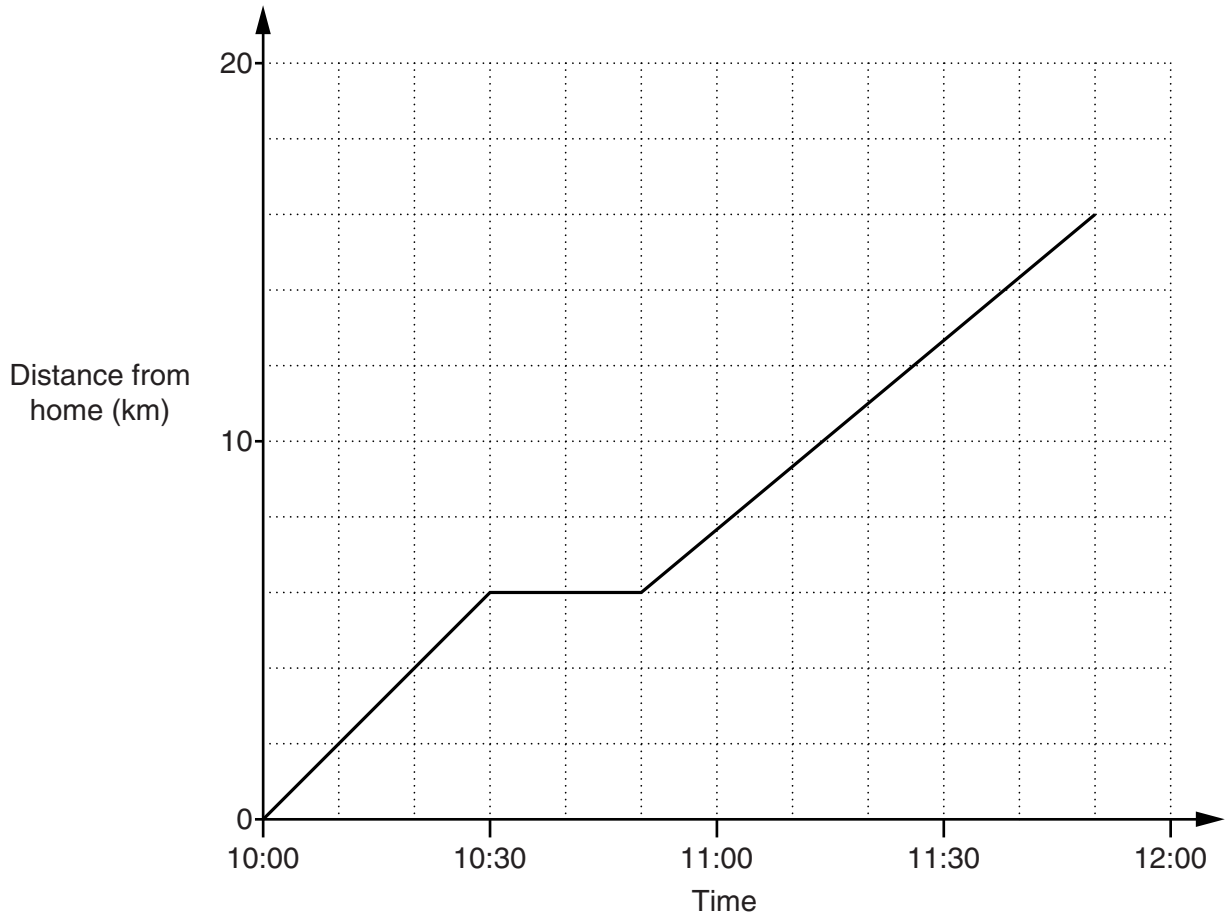
(ii) David thinks of a number.  
He tells Hannah that it is:

- an odd number
- a prime number
- a factor of 52.

What is the number that David is thinking of?

(ii) \_\_\_\_\_ [2]

- 11 Jackie goes on a bike ride, starting from home. This graph shows her journey.



- (a) At what time did she stop for a rest?

(a) \_\_\_\_\_ [1]

- (b) For how long did she stop?

(b) \_\_\_\_\_ minutes [1]

- (c) How far did she ride on her journey altogether?

(c) \_\_\_\_\_ km [1]  
**Turn over**

12 (a) Work out.

(i)  $-3 + 7$

(a)(i) \_\_\_\_\_ [1]

(ii)  $-5 - -2$

(ii) \_\_\_\_\_ [1]

(b) (i) Siobhan is putting her drill bits in order of size.  
The diameters, measured in inches, are

$$\frac{1}{4} \quad \frac{3}{8} \quad \frac{5}{16} \quad \frac{7}{32}$$

Write these diameters in order of size, smallest first.  
Show your working.

(b)(i) \_\_\_\_\_ [2]  
*smallest*

(ii) Siobhan is drilling a hole.

She measures the depth of the hole and finds that it is  $1\frac{1}{2}$  inches.

Siobhan needs the hole to be  $3\frac{1}{4}$  inches deep.

How much deeper does she need to drill?

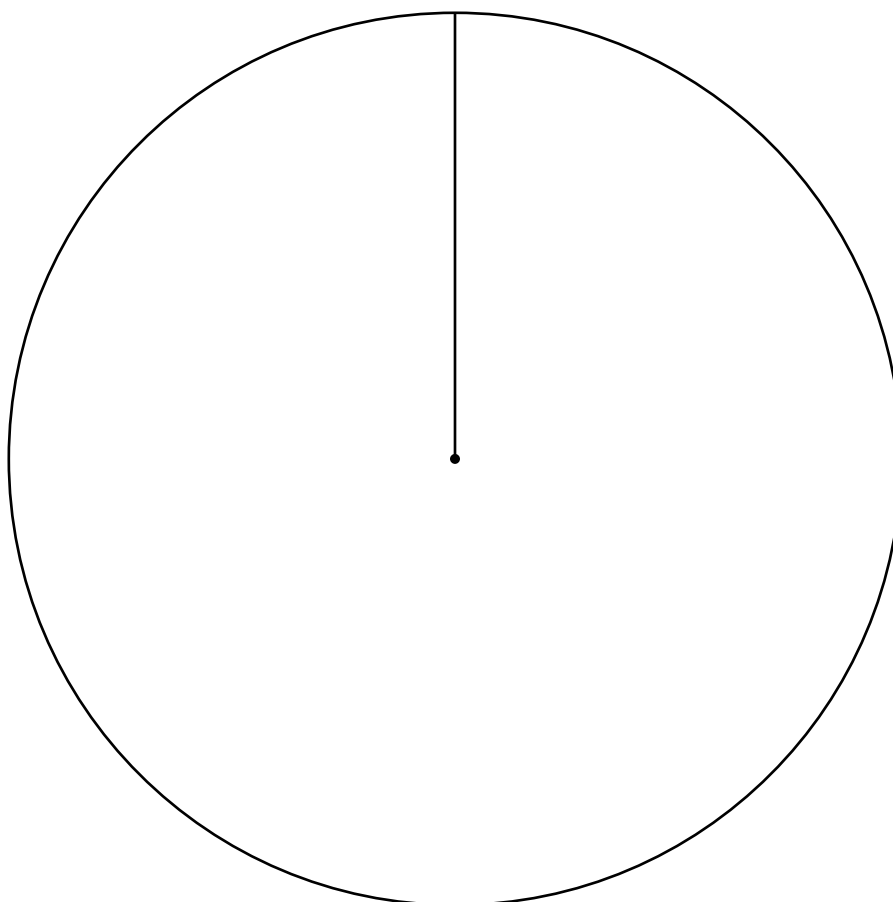
(ii) \_\_\_\_\_ inches [2]



- 13** 36 patients were asked their opinion of the local health centre. The results are recorded in this table.

Excellent	7
Good	18
Satisfactory	8
Poor	3

Draw and label a pie chart to represent this data in the circle below.



[4]

14 (a) The ages of 21 members of a tennis club are shown in this stem and leaf diagram.

1	7 9	
2	2 3 5 7 9	
3	1 4 6 7 8	
4	2 2 5 8	
5	3 4 8	
6	4 7	<b>Key:</b> 6   4 represents 64

(i) Write down the age of the youngest member of the club.

(a)(i) \_\_\_\_\_ [1]

(ii) Work out the range of the ages of members of the club.

(ii) \_\_\_\_\_ [1]

(iii) Work out the median of the ages of the members of the club.

(iii) \_\_\_\_\_ [1]

(b) Henry and Natasha have 5 children.

The two eldest are twins, all the others are different ages.

The median of their ages is 8 years and the range is 4 years.

The youngest child is 6 years old.

What are the ages of the four older children?

(b) 6 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_ [3]

- 15 (a) A plumber uses the following formula to work out the charge for a job.

$$C = d + 20h$$

$C$  is the charge in pounds.

$d$  is the distance in miles to travel to the job.

$h$  is the number of hours worked.

The plumber travels 13 miles to a job and works for 3 hours.

Work out how much he charges.

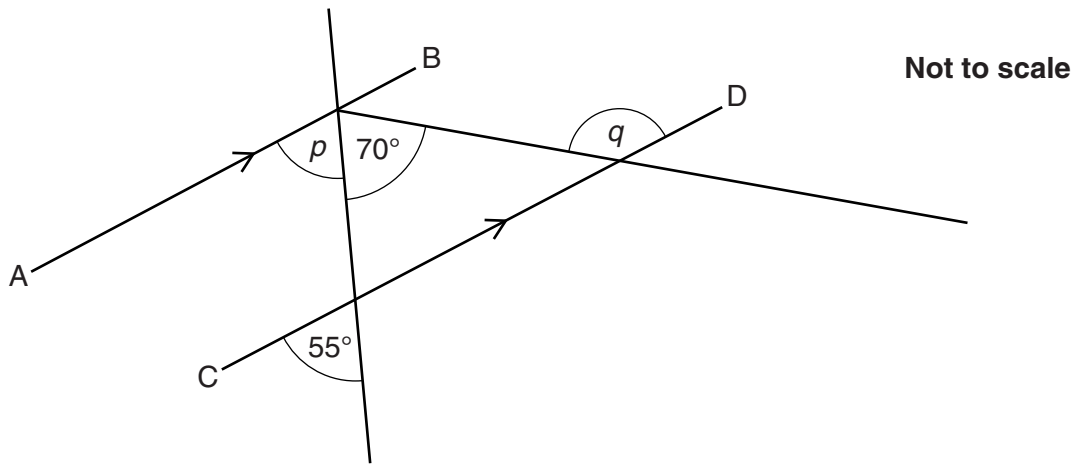
(a) £ \_\_\_\_\_ [2]

- (b) Rearrange this formula to make  $h$  the subject.

$$C = d + 20h$$

(b)  $h =$  \_\_\_\_\_ [2]

16 (a) In the diagram below, AB is parallel to CD.



Work out angle  $p$  and angle  $q$ .  
Give a reason for each answer.

(i)  $p =$  \_\_\_\_\_  $^{\circ}$  because \_\_\_\_\_  
\_\_\_\_\_ [2]

(ii)  $q =$  \_\_\_\_\_  $^{\circ}$  because \_\_\_\_\_  
\_\_\_\_\_ [2]

(b) The exterior angle of a regular polygon is  $40^{\circ}$ .

How many sides does the polygon have?

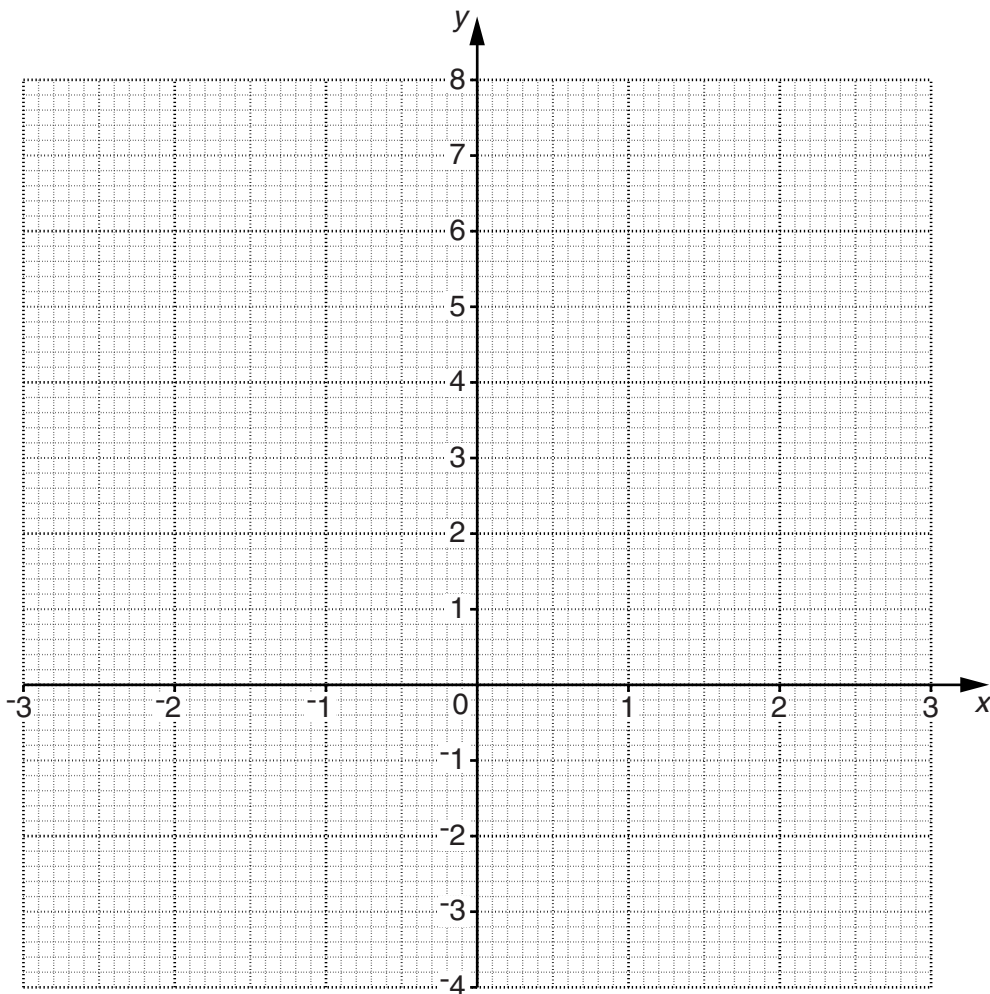
(b) \_\_\_\_\_ [2]

17 (a) Complete the table for  $y = x^2 - 2$ .

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

[2]

(b) Draw the graph of  $y = x^2 - 2$ .



[2]

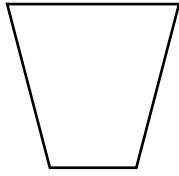
(c) Use your graph to solve the equation  $x^2 - 2 = 0$ .

(c)  $x =$  \_\_\_\_\_ and  $x =$  \_\_\_\_\_ [2]

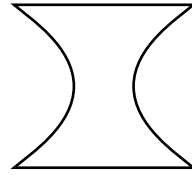
18 Here are some vases.



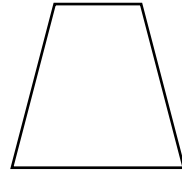
A



B



C



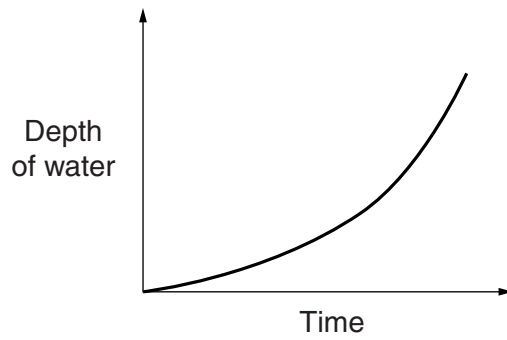
D

The vases are filled with water at a constant rate.

The graphs below show the depth of water as a vase is filled to the top.

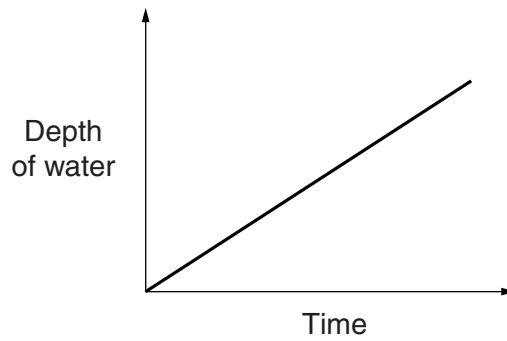
Match each of these graphs with the letter from the vase.

(a)



(a) Letter \_\_\_\_\_ [1]

(b)



(b) Letter \_\_\_\_\_ [1]

- 19 (a) Ivan pays £120 rent each week.  
He earns £300 each week.

Work out his rent as a percentage of his earnings.

(a) \_\_\_\_\_ % [2]

- (b) Ivan joins a gym.  
Membership usually costs £34.50 per month.  
He gets a discount of 20% for the first six months.

Work out how much he pays altogether for his first **six months'** membership.

(b) £ \_\_\_\_\_ [4]

**TURN OVER FOR QUESTION 20**

20\* Each week Mike drives 195 miles travelling to and from work.

Average fuel consumption for Mike's car: 51.4 miles per gallon  
Cost of 1 litre of fuel: 138.9p  
1 gallon = 4.55 litres

A weekly train pass for Mike's journey costs £31.50.

Mike says:

I will save money if I travel to and from work by train.

Is Mike correct?

Use estimation to justify your answer.

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[5]