

## GCSE (9–1) Mathematics

J560/01 Paper 1 (Foundation Tier)

**Thursday 2 November 2017 – Morning**

**Time allowed: 1 hour 30 minutes**



**You may use:**

- A scientific or graphical calculator
- Geometrical instruments
- Tracing paper



First name										
Last name										
Centre number						Candidate number				

### INSTRUCTIONS

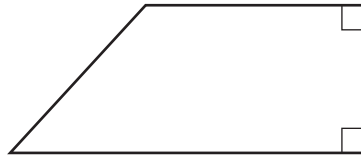
- Use black ink. You may use an HB pencil for graphs and diagrams.
- Complete the boxes above with your name, centre number and candidate number.
- Answer **all** the questions.
- Read each question carefully before you start to write your answer.
- Where appropriate, your answers should be supported with 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 required but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the barcodes.

### INFORMATION

- The total mark for this paper is **100**.
- The marks for each question are shown in brackets [ ].
- Use the  $\pi$  button on your calculator or take  $\pi$  to be 3.142 unless the question says otherwise.
- This document consists of **16** pages.

Answer **all** the questions.

1 (a) Write down the mathematical name of this shape.



(a) ..... [1]

(b) How many faces does a cube have?

(b) ..... [1]

2 (a) Write down

(i) a multiple of 13,

(a)(i) ..... [1]

(ii) a prime number between 40 and 50.

(ii) ..... [1]

(b) Find the lowest common multiple (LCM) of 16 and 28.

(b) ..... [2]

3 (a) Round 7874 to

(i) the nearest hundred,

(a)(i) ..... [1]

(ii) 1 significant figure.

(ii) ..... [1]

(b) Find the value of  $x$ .

$$3^5 \times 3^2 = 3^x$$

(b)  $x =$  ..... [1]

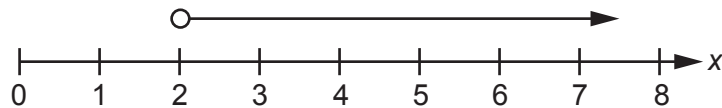
4 (a) Use one of these symbols  $<$ ,  $>$  or  $=$  to make each statement true.

(i)  $\frac{1}{4}$  ..... 0.25 [1]

(ii) 0.66 .....  $\frac{2}{3}$  [1]

(iii) 6 .....  $2^3$  [1]

(b) Write down the inequality for  $x$  that is shown on this number line.



(b) ..... [1]

5 Write the following in order of size, smallest first.

28%       $\frac{7}{26}$       2.7

..... [2]  
*smallest*

6 (a) Simplify.

(i)  $2p + 5p - 3p$

(a)(i) ..... [1]

(ii)  $6j + 3k - j - 5k$

(ii) ..... [2]

(b) Find the value of  $10h + 6t$  when  $h = 12$  and  $t = 4$ .

(b) ..... [2]

(c) Rearrange this formula to make  $d$  the subject.

$$e = f - 7d$$

(c) ..... [2]

7 Bill owns four cars. Each car is a different colour. Each day, he drives to work in one of his cars. The table shows the probability that Bill chooses a car of a particular colour.

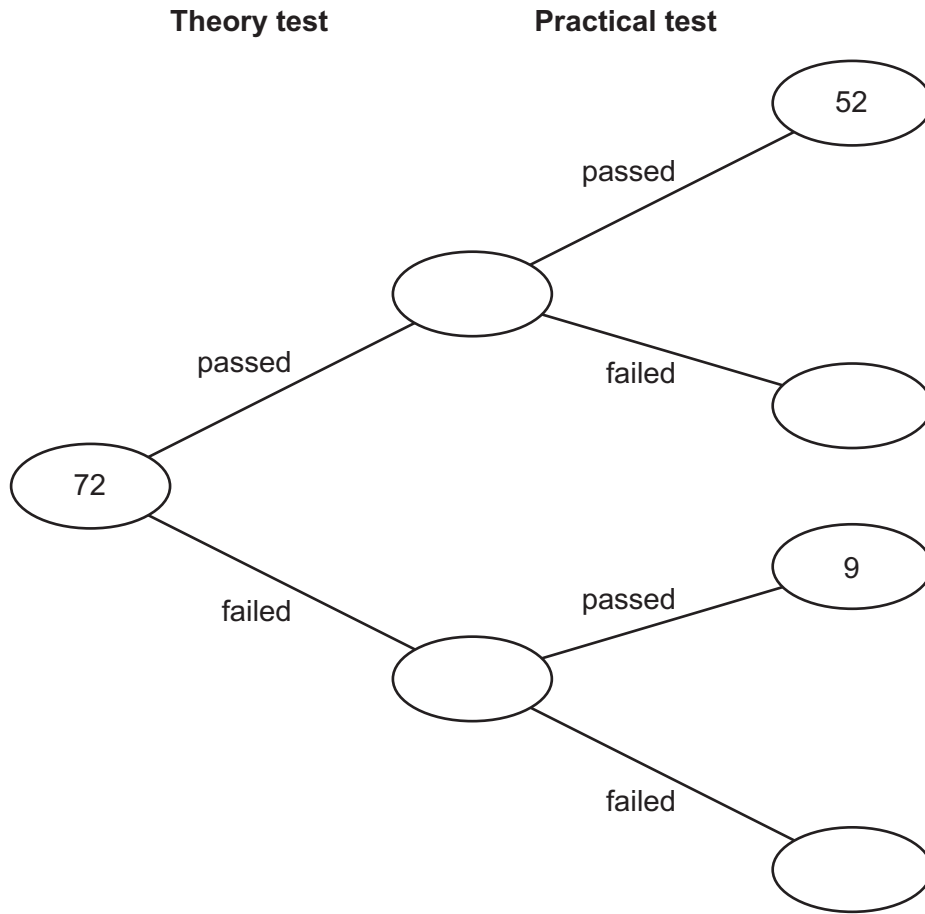
Car	red	blue	yellow	white
Probability	0.4	0.17	0.05	

Work out the probability that Bill chooses the white car.

..... [2]

- 8 72 students each took a theory test followed by a practical test. They either passed or failed each test.

This frequency tree shows some of the results.



- (a) How many students passed both tests?

(a) ..... [1]

- (b)  $\frac{5}{6}$  of the 72 students passed the theory test.

Complete the frequency tree. [4]

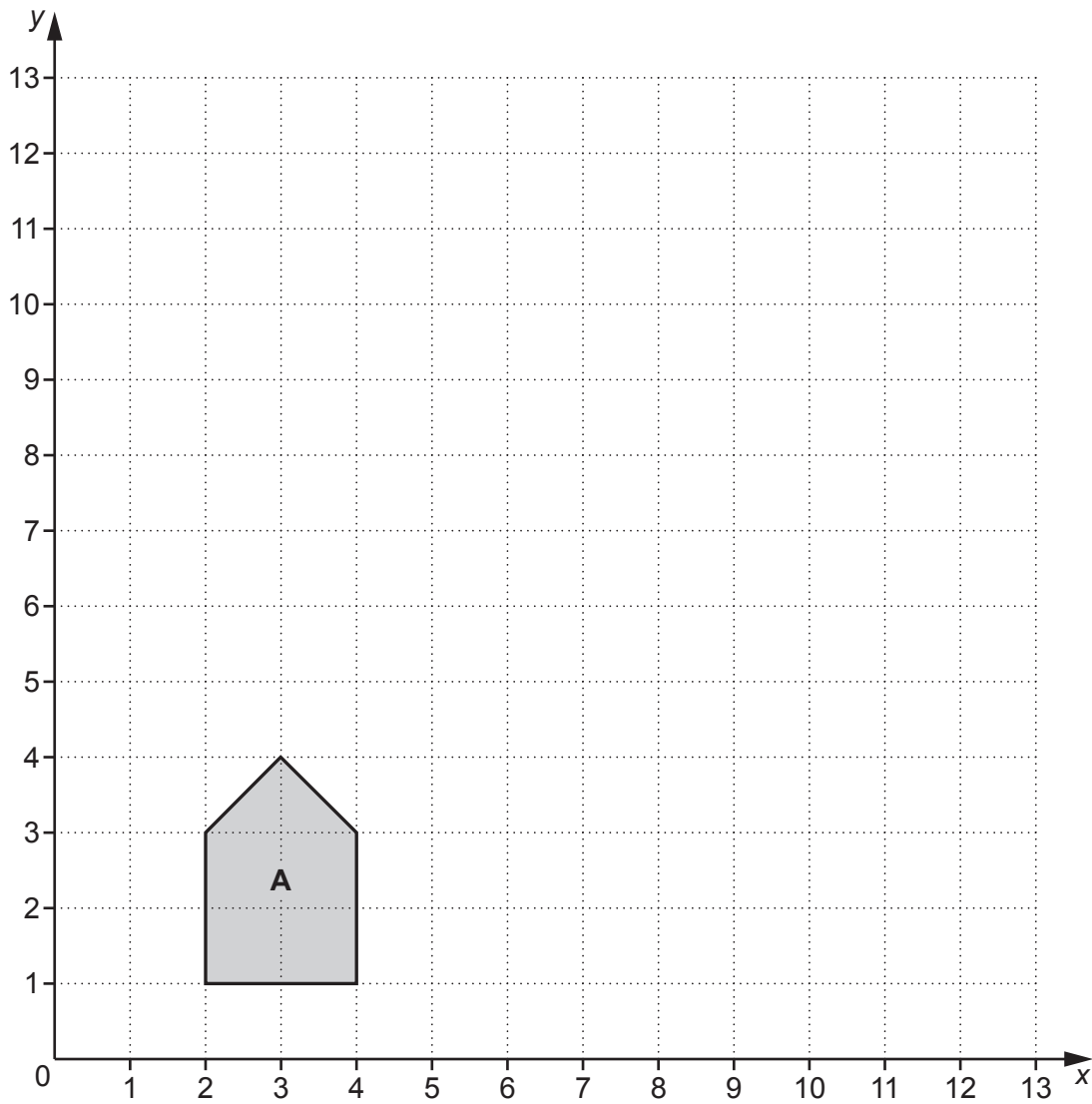
- (c) Which test was passed by more students?  
Explain your reasoning.

..... because .....

.....

..... [3]

9 Shape **A** is drawn on the grid below.



Enlarge shape **A** with scale factor 3 and centre of enlargement (0, 0).

[3]

10 (a) Write 62 as a percentage of 500.

(a) ..... % [3]

(b) Increase £196 by 9%.

(b) £ ..... [3]

- 11 Students deliver catalogues and leaflets to houses.  
One day, they have to deliver 360 catalogues and 1440 leaflets.  
Each student can deliver either 15 catalogues **or** 80 leaflets in 1 hour.  
Each student can only work for 8 hours.

Work out the **minimum** number of students needed.

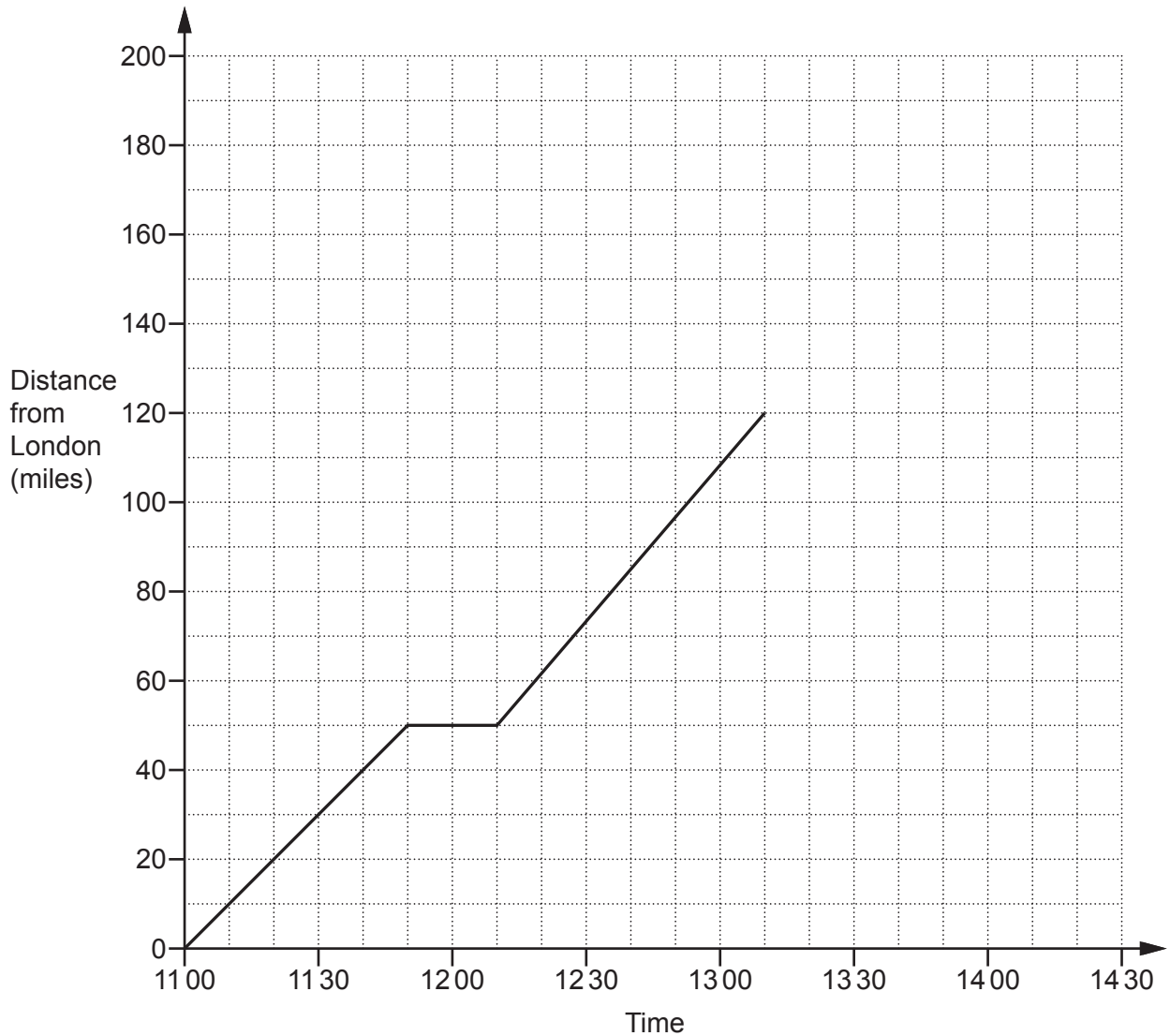
..... [4]

- 12 Leo, Kush and Mai share some money in the ratio 3 : 5 : 8.  
Kush receives £750 more than Leo.

Calculate the total amount of money that they shared.

£ ..... [4]

- 13 This graph shows part of Lucy's car journey from London to Sheffield. The car made one stop at a service station.



Use the graph to answer these questions.

- (a) For how long did the car stop at the service station?

(a) ..... minutes [1]

- (b) Work out the average speed of the car, in miles per hour, between London and the service station.

(b) ..... mph [2]

- (c) Sheffield is 180 miles from London.  
Lucy arrived in Sheffield at 14 20.

Complete the graph.

[2]

- 14 Katy buys  $x$  cakes.  
Gugu buys 3 times as many cakes as Katy.  
Deanna buys 2 more cakes than Katy.

Each cake costs 85p.  
The total cost of the cakes is £52.70.

How many cakes did each girl buy?

Katy: ..... cakes

Gugu: ..... cakes

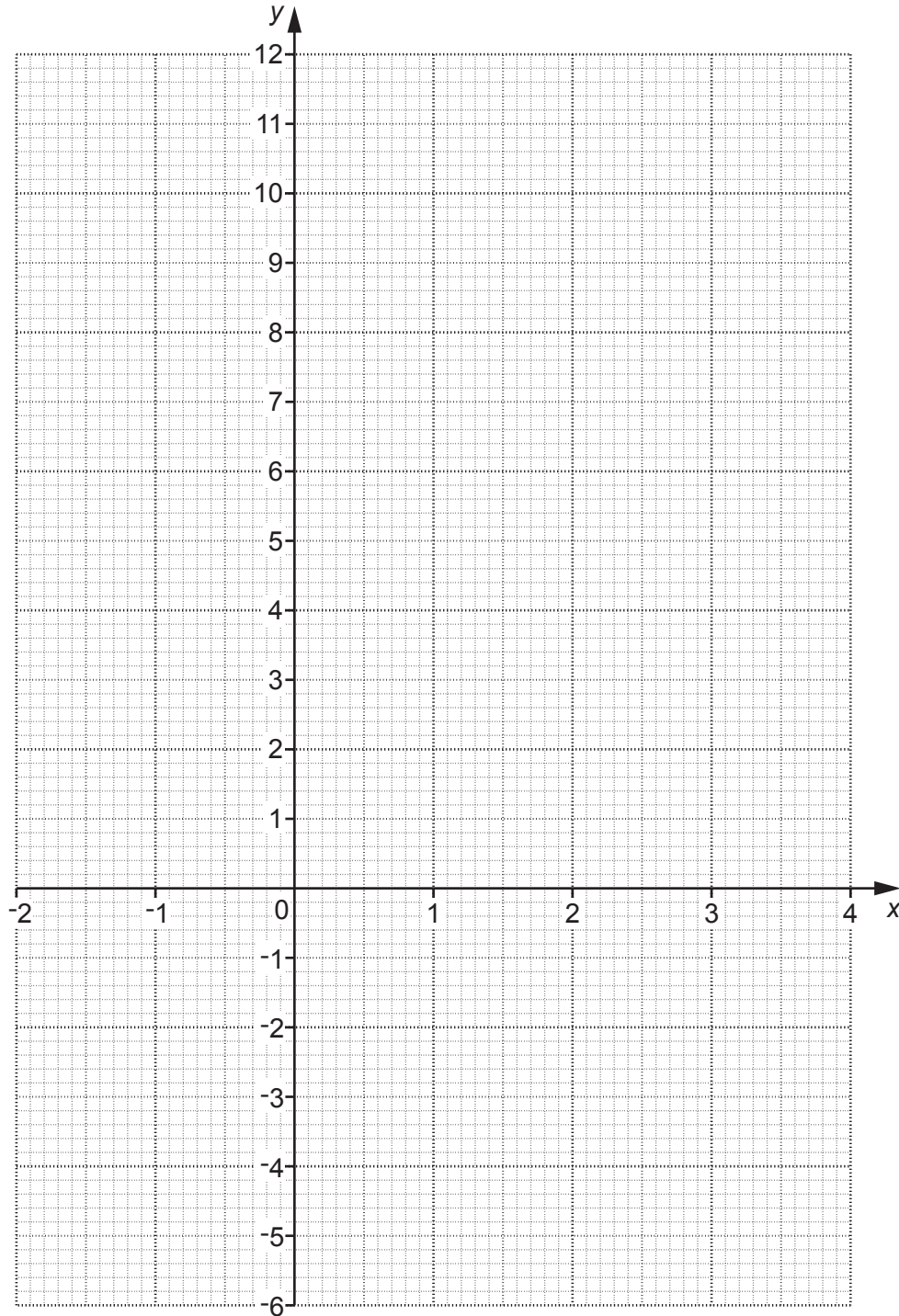
Deanna: ..... cakes [6]

15 (a) Complete this table for  $y = x^2 - 5$ .

$x$	-2	-1	0	1	2	3	4
$y$		-4	-5	-4			11

[2]

(b) On the grid below, draw the graph of  $y = x^2 - 5$  for the values of  $x$  from -2 to 4.



[2]

(c) On the same grid, draw the line  $y = -2$ . [1]

(d) Write down the  $x$  coordinates of the points where  $y = x^2 - 5$  and  $y = -2$  cross.

(d)  $x = \dots\dots\dots$  and  $x = \dots\dots\dots$  [2]

16 Donald swims 3 lengths of a swimming pool in 93 seconds.

(a) Use this information to show that he could swim 100 lengths in under 55 minutes. [4]

(b) What assumption did you make in part (a)?

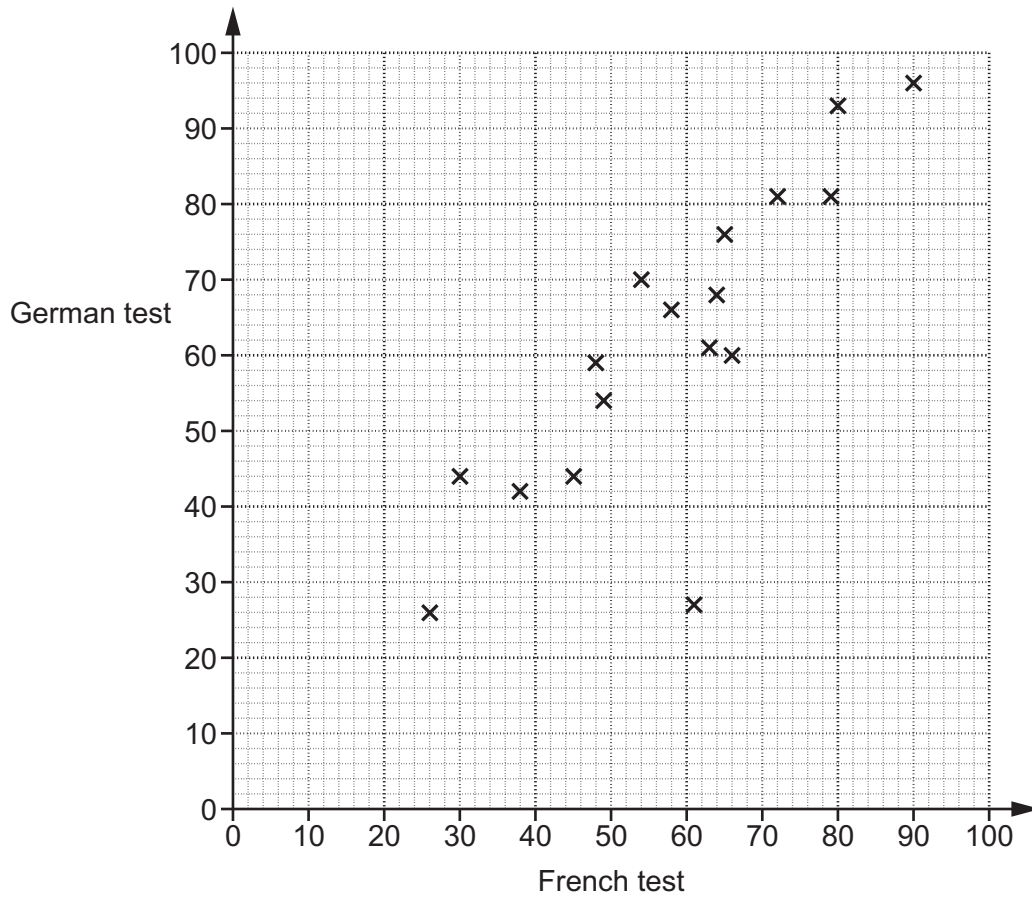
.....  
 ..... [1]

(c) Donald tries to swim the 100 lengths in under 55 minutes.

Suggest one reason why he might not achieve this.

.....  
 ..... [1]

17 The scatter diagram shows the results of 17 students in their French test and their German test. Both tests are out of 100.



(a) Here are the results of another 4 students.

French	21	75	48	53
German	30	78	46	61

Plot these results on the scatter diagram.

[2]

(b) Describe the type and strength of the correlation shown in this diagram.

(b) ..... [2]

- (c) Work out the percentage of the students whose German result was **higher** than their French result.

(c) ..... % [4]

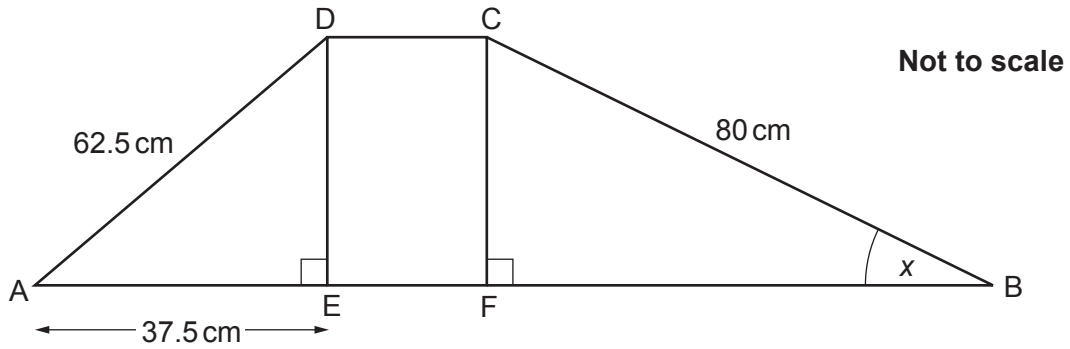
- 18 Maria mixes white paint and red paint in the ratio 2 : 3.  
She makes a total of 15 litres of paint.

How much more red paint does she need to add to the mixture so that the ratio of white paint to red paint becomes 1 : 5?

..... litres [4]

- 19 In the diagram below, ABCD is a trapezium.  
 Length AE is 37.5 cm.  
 $DE = CF$

Find the value of angle  $x$ .



$x = \dots\dots\dots^\circ$  [6]

20 Four points A, B, C and D are shown on the scale diagram below.



Scale: 1 cm represents 5 m

(a) On the diagram, construct and mark the two points that are

- the same distance from A and B and
- 15m from C.

Show all your construction lines.

[5]

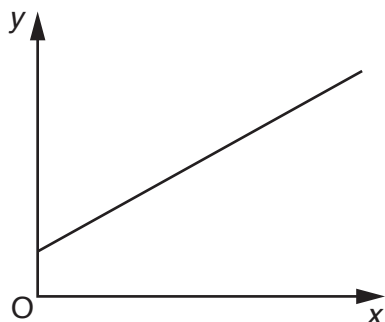
(b) The points A, B, C and D represent the four corners of Monty's garden. His garden is bounded by four straight fences A to B, B to C, C to D and D to A.

Monty wants to plant a tree in his garden at a place that satisfies the two conditions in part (a).

Explain why there is only one position where Monty can plant his tree.

.....  
..... [1]

21 (a) A graph is drawn below.



Explain how you know that  $y$  is not directly proportional to  $x$ .

.....

.....

..... [1]

(b)  $q$  is directly proportional to  $r$ .  
 $q$  is 68 when  $r$  is 20.

Work out  $q$  when  $r$  is 25.

(b) ..... [2]

**END OF QUESTION PAPER**

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