Candidate forename		Candidate surname	

Centre number						Candidate number				

OXFORD CAMBRIDGE AND RSA EXAMINATIONS
GENERAL CERTIFICATE OF SECONDARY EDUCATION

A502/01

MATHEMATICS A

Unit B (Foundation Tier)

WEDNESDAY 9 NOVEMBER 2011: Afternoon
DURATION: 1 hour

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the question paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Geometrical instruments
Tracing paper (optional)

WARNING
No calculator can be used for this paper

This paper has been pre modified for carrier language

READ INSTRUCTIONS OVERLEAF

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INSTRUCTIONS TO CANDIDATES

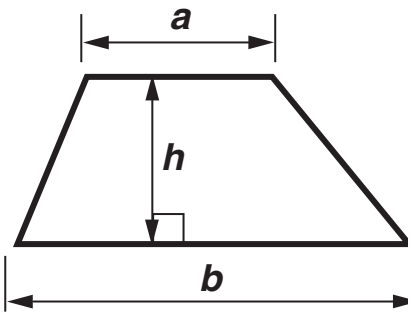
- **Write your name, centre number and candidate number in the boxes on the first page. Please write clearly and in capital letters.**
- **Use black ink. Pencil may be used for graphs and diagrams only.**
- **Read each question carefully. Make sure you know what you have to do before starting your answer.**
- **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).**
- **Answer ALL the questions.**

INFORMATION FOR CANDIDATES

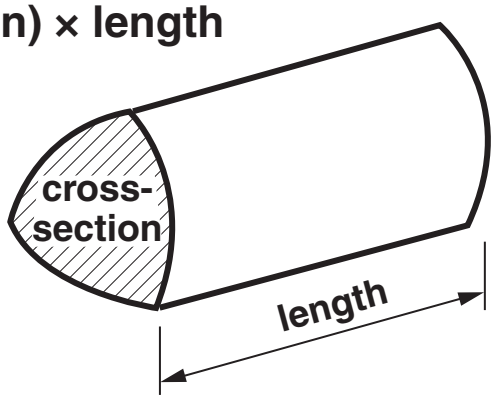
- **The number of marks is given in brackets [ ] at the end of each question or part question.**
- **Your Quality of Written Communication is assessed in questions marked with an asterisk (*).**
- **The total number of marks for this paper is 60.**

FORMULAE SHEET: FOUNDATION TIER

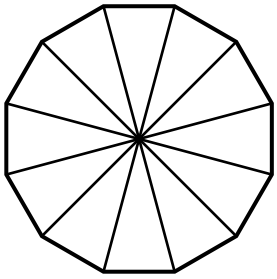
Area of trapezium $= \frac{1}{2}(a + b)h$



Volume of prism = (area of cross-section) × length

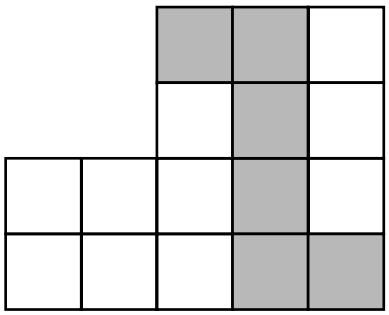


1 (a) Shade $\frac{3}{4}$ of this shape.



[1]

(b) What fraction of the shape below has been shaded?
Write your answer in its simplest form.



(b) _____ [2]

(c) Ruby worked for 4 hours and was paid £6 for each hour that she worked.

(i) Work out the total amount of money she was paid.

(c)(i) £ _____ [1]

(ii) Ruby saved $\frac{2}{3}$ of all the money she was paid.

Work out how much money she saved.

(ii) £ _____ [2]

2 Write the answers to these in order, starting with the smallest.

10% of 56 **$\frac{1}{2}$ of 10.6** **1.3 × 5** **$\frac{56.6}{10}$**

_____ _____ _____ _____ **[4]**

smallest

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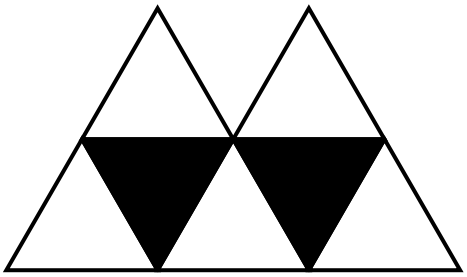
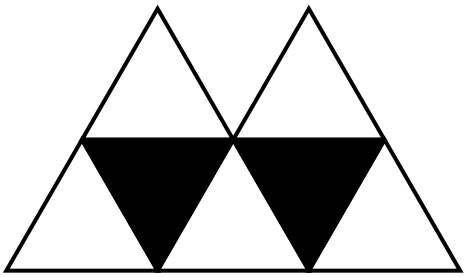
3 Clyde makes this design using black equilateral triangles and white equilateral triangles.



(a) Draw the line of symmetry on Clyde's design. [1]

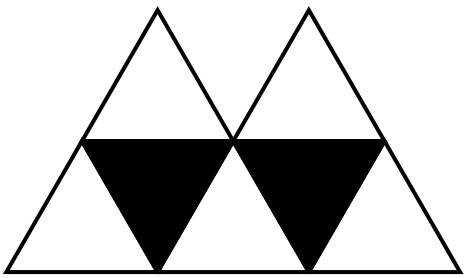
(b) In the design, one whole side of a triangle must touch one whole side of another triangle.

(i) Add one more of these triangles to this copy of Clyde's design so that it still has one line of symmetry.



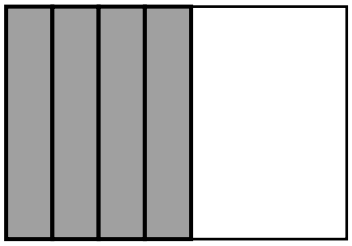
[1]

(ii) Add one more of these triangles to this copy of Clyde's design so that it DOES NOT have a line of symmetry.



[1]

4 Sean is going to decorate his bedroom.
He will paper all four walls.
Four strips can be cut from one roll of plain wallpaper.



(a) What is the largest number of complete strips Sean could cut from 8 rolls of wallpaper?

(a) _____ [1]

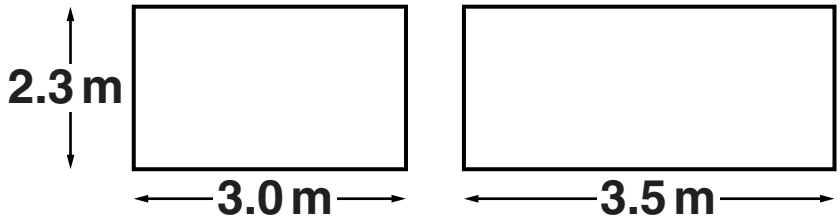
(b) The LENGTH of a roll of wallpaper is 10.1m.
Each wall in Sean's room is 2.3m high.

Sean cuts four strips from one roll and makes each strip 10cm longer than the height of the wall.

What length of wallpaper is left from the roll?

(b) _____ [3]

(c)* The WIDTH of a roll of wallpaper is 0.5m.
Complete strips are used to paper a wall.
Only two of the walls in Sean's room have no doors or windows in them.
He measures these walls.



NOT TO SCALE

Work out the number of ROLLS OF WALLPAPER that Sean needs to paper BOTH of these walls.
Show your working.

[4]

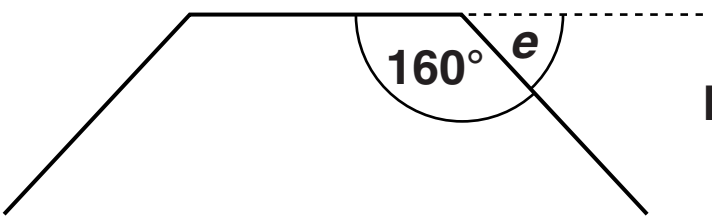
(d) Sean says,
"If I buy 8 rolls of wallpaper I will have enough to paper the whole room, with some left over."

Is Sean right?
Explain your answer.

_____

_____ **[2]**

5 The diagram shows part of a regular polygon.



NOT TO SCALE

(a) Calculate the size of one exterior angle, *e*.

(a) _____ **°** **[1]**

(b) Calculate the number of sides of the polygon.

(b) _____ **[2]**

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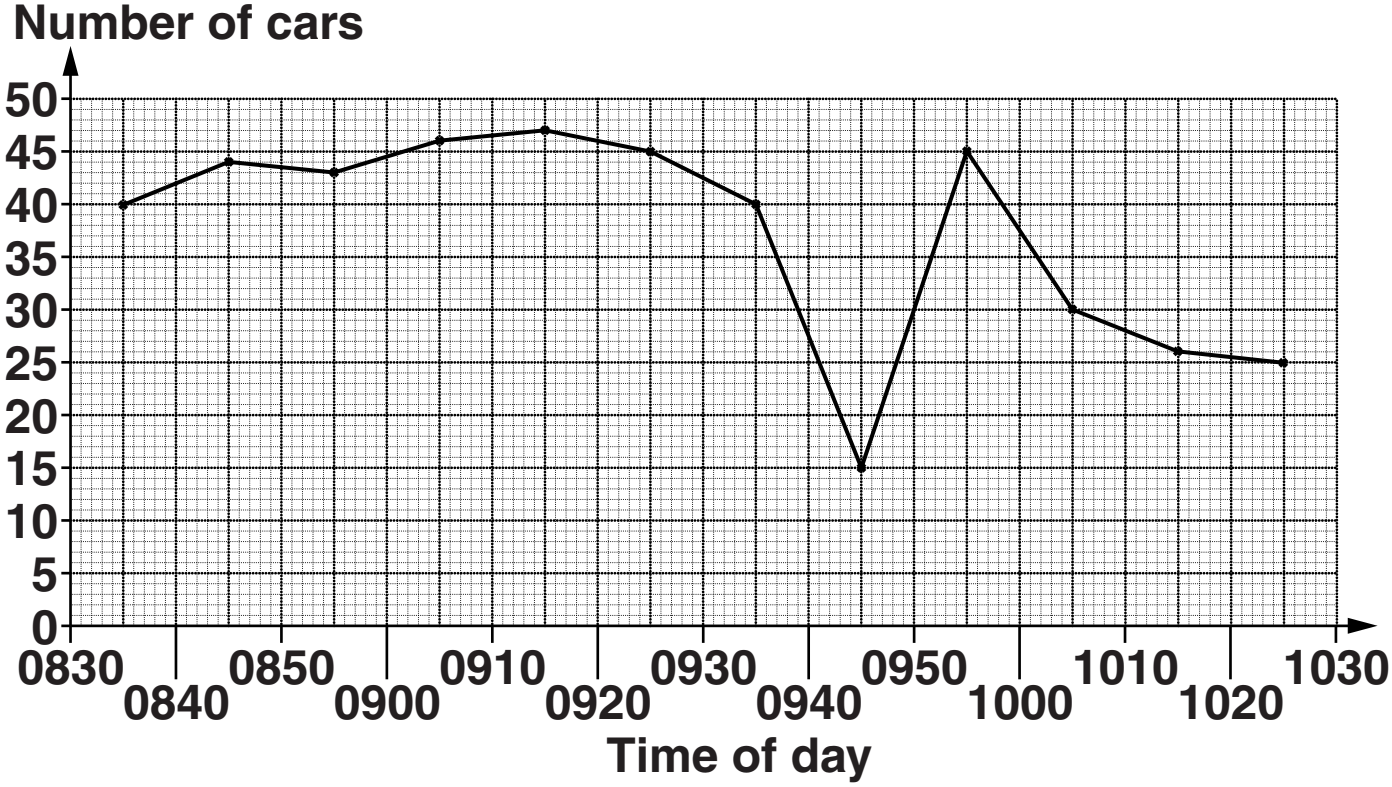
6 Zelda records the number of cars passing her school in each ten-minute period from 0830 to 1030. This time-series graph shows her results.



(a) What was the greatest number of cars passing her school in any of these ten-minute periods?

(a) _____ [1]

(b) The railway crossing at the top of a road leading to the school was stuck in the closed position for a time.

Between which times do you think it was stuck? Explain your answer.

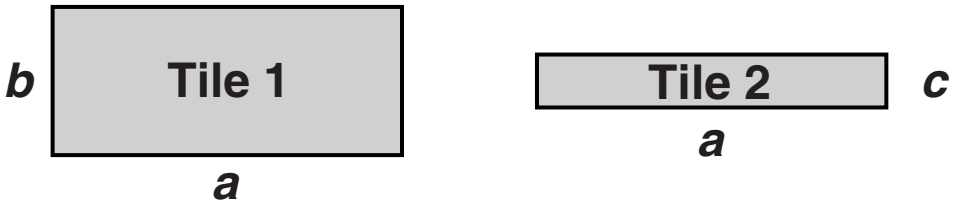
_____

_____

_____

_____ **[2]**

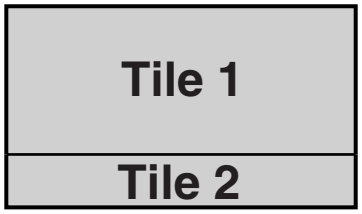
7 Lorna has some of these ALGEBRA TILES.



(a) Write an expression for the distance all around the edges of Tile 1.

(a) _____ [1]

(b) Lorna puts two tiles together so that two edges match, like this.



Write an expression for the distance all around the edges of the combined shape.
Give your answer in its simplest form.

(b) _____ [2]

(c) Lorna puts two of her tiles together so that two edges match.
The expression for the distance all around the edges of this combined shape is $2a + 4c$.

Draw this shape.
Write letters on the diagram to show the lengths of the sides of the tiles you use.

[2]

8 (a) Write down a square number that is bigger than 110 but smaller than 150.

(a) _____ [1]

(b) (i) Write $5 \times 5 \times 5 \times 5$ as a power of 5.

(b)(i) _____ [1]

(ii) Write $4 \times 7 \times 7 \times 4 \times 7 \times 7$ as simply as possible, using powers.

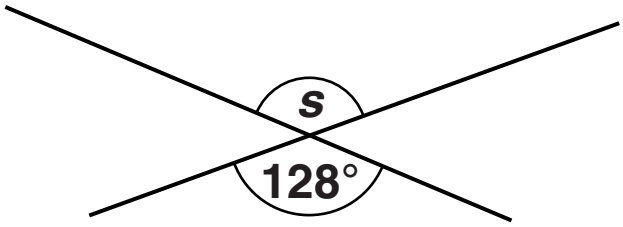
(ii) _____ [2]

(c) Evaluate, writing your answer as a whole number.

$4^{17} \div 4^{14}$

(c) _____ **[2]**

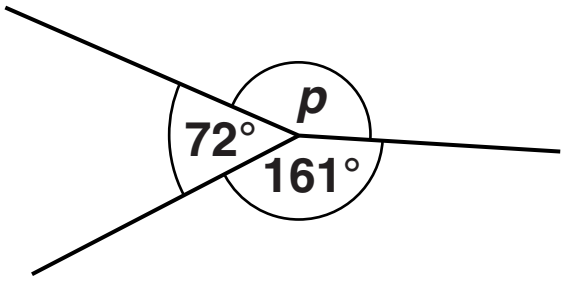
9 (a) What is the size of angle *s*?



NOT TO SCALE

(a) _____ ° [1]

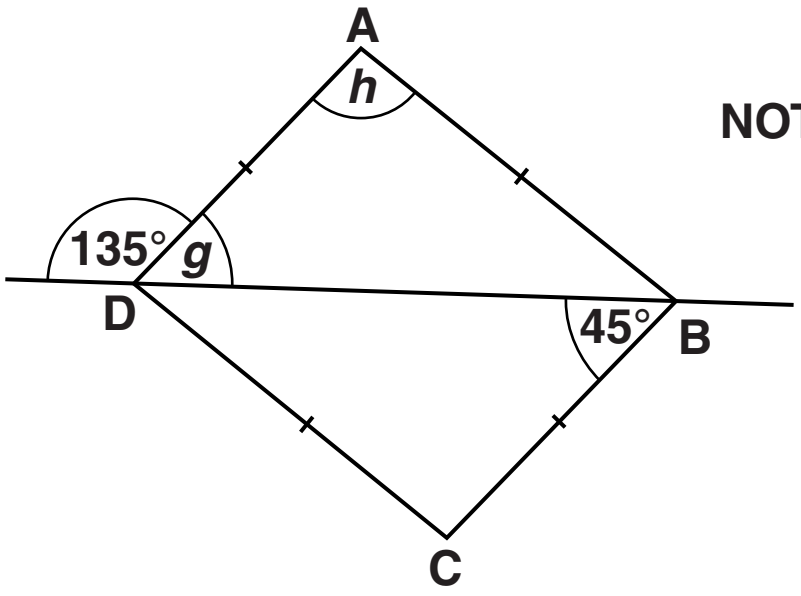
(b) Work out the size of angle *p*.



NOT TO SCALE

(b) _____ ° [2]

(c) The diagram shows a four-sided shape, ABCD, with a straight line through D and B.
AB = BC = CD = DA.



NOT TO SCALE

(i) Give a reason why angle *g* is 45°.

_____

_____ **[1]**

(ii) Find angle *h*.
Show your working.

(c)(ii) _____ **°** **[2]**

(iii)* What special type of quadrilateral is ABCD?
Justify your answer.

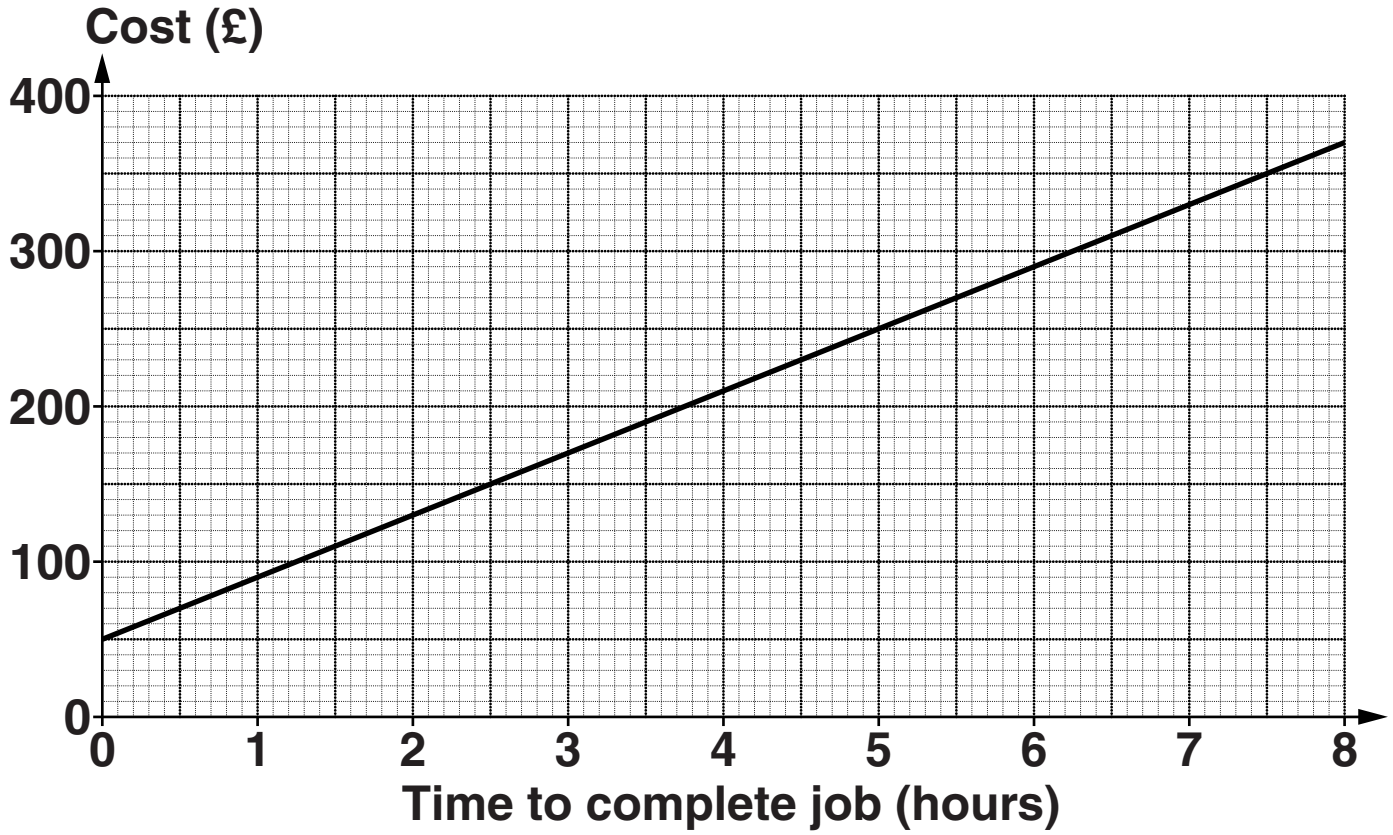
_____

_____

_____

_____ **[3]**

10 The graph shows the cost for a plumber from A1 PLUMBING SERVICES to complete a job.



(a) The cost (£) is made up of a fixed call-out charge and an hourly rate.

Complete these sentences.

(i) The fixed call-out charge is £ _____ . [1]

(ii) The hourly rate is £ _____ per hour. [1]

(b) A different plumbing company, GIBBO PLUMBERS, has an hourly rate of £55 but no call-out charge.

On the axes above, draw the graph to show the cost for a plumber from GIBBO PLUMBERS to complete a job. [2]

(c) For a job lasting 6 hours, find which company is cheaper and by how much.

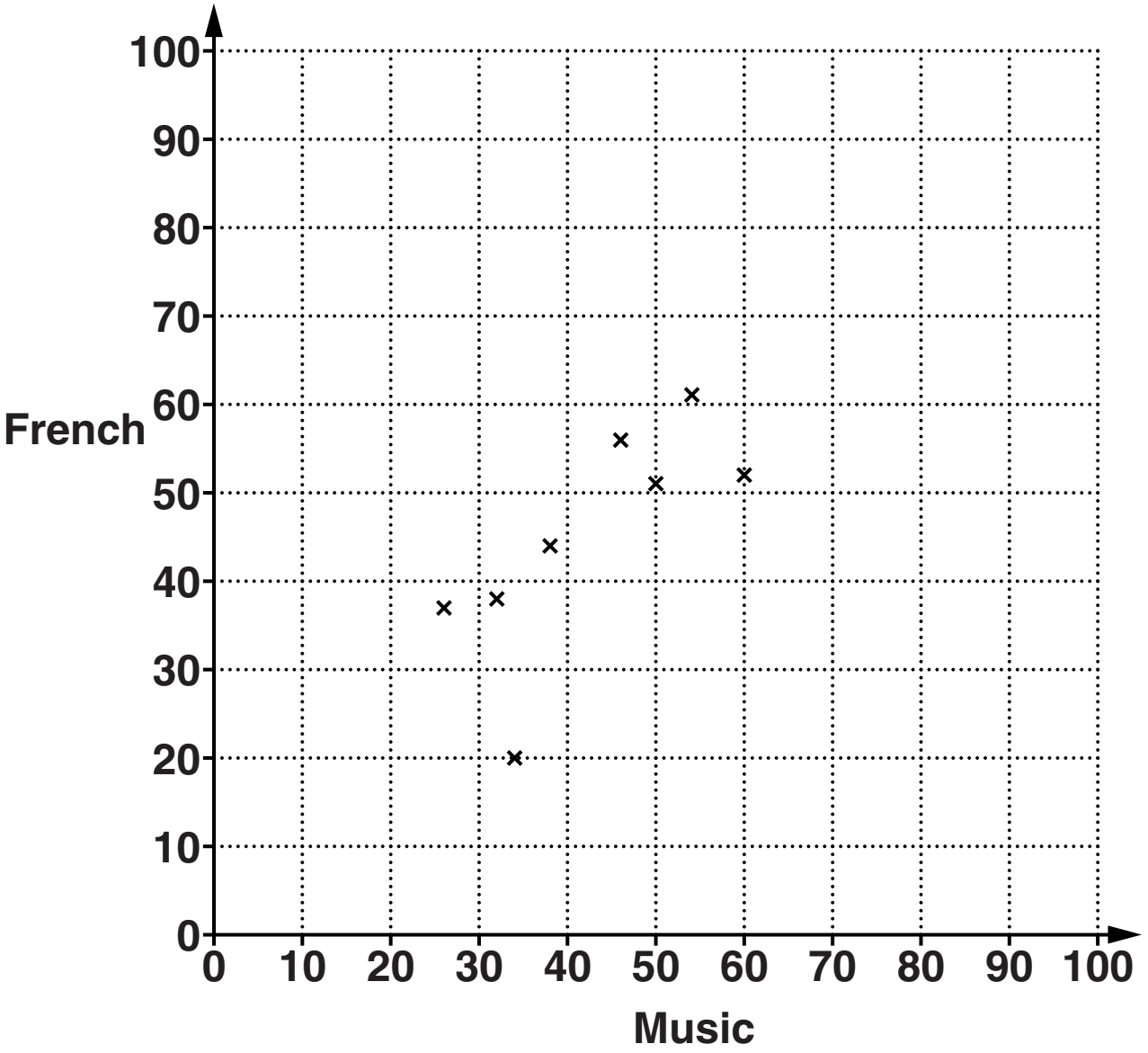
(c) _____ is cheaper by £ _____ [2]

(d) Use the graphs to find the job time for which A1 PLUMBING SERVICES and GIBBO PLUMBERS cost the same.

(d) _____ [1]

11 A group of students did tests in Music and French. Their results were as follows.

Music	34	54	32	46	50	60	26	38	68	77	45	70	62
French	20	61	38	56	51	52	37	44	74	83	89	72	71



[2]

(a) Complete the scatter graph to show these results. The first eight points have been plotted for you.

(b) Describe the correlation shown by the graph.

(b) _____ [1]

(c) One of the students in the group, Guillaume, is French and always does much better in French than Music.

Draw a ring round the cross that represents Guillaume's results. [1]

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