

GENERAL CERTIFICATE OF SECONDARY EDUCATION
MATHEMATICS A
Unit B (Foundation Tier)

A502/01

Candidates answer on the question paper.

OCR supplied materials:
None

Other materials required:

- Geometrical instruments
- Tracing paper (optional)

Tuesday 9 November 2010
Morning
Duration: 1 hour



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. 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.
- 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 **60**.
- This document consists of **16** pages. Any blank pages are indicated.



Formulae Sheet: Foundation Tier

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



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



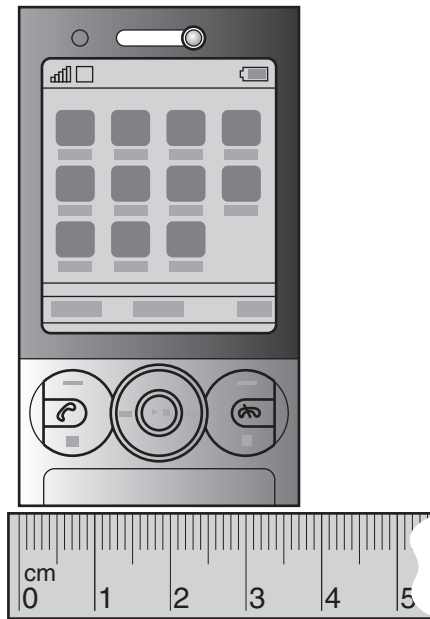
PLEASE DO NOT WRITE ON THIS PAGE

1 (a) What time is shown on the clock?



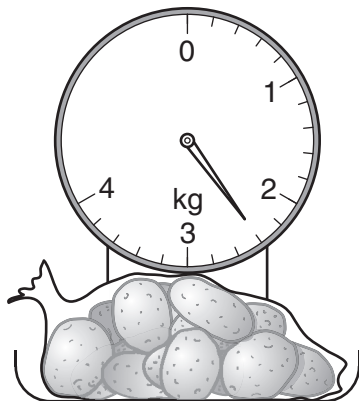
(a) _____ [1]

(b) How wide is the phone?



(b) _____ cm [1]

(c) (i) What is the weight of the bag of potatoes, in kg?



(c)(i) _____ kg [1]

(ii) Write your answer to part (c)(i) in grams.

(ii) _____ g [1]

2 (a) Work out.

(i) $14 + 7.2 + 50$

(a)(i) _____ [1]

(ii) $32 - 2.1$

(ii) _____ [1]

(iii) 7.6×0.2

(iii) _____ [2]

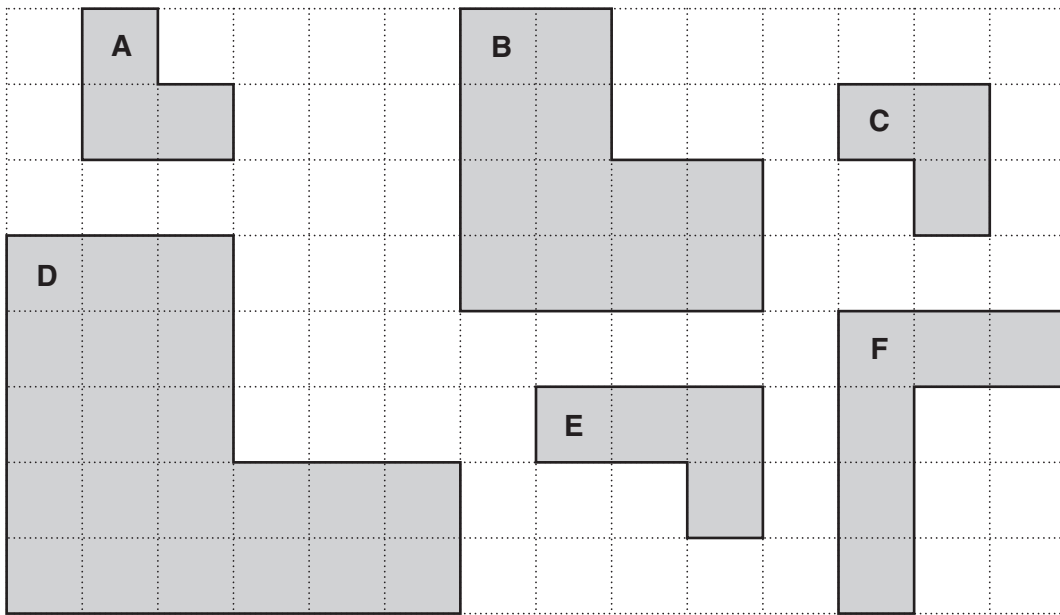
(b) Use the numbers **8**, **9** and **72** to complete each of these.

$$\square \times \square = \square$$

$$\square \div \square = \square$$

[2]

3 Here are six shapes on a one centimetre square grid.



(a) Write down the letter of the shape that is **congruent** to A.

(a) _____ [1]

(b) Write down the letter of **one** of the shapes that is **not congruent** to A and **not similar** to A.

(b) _____ [1]

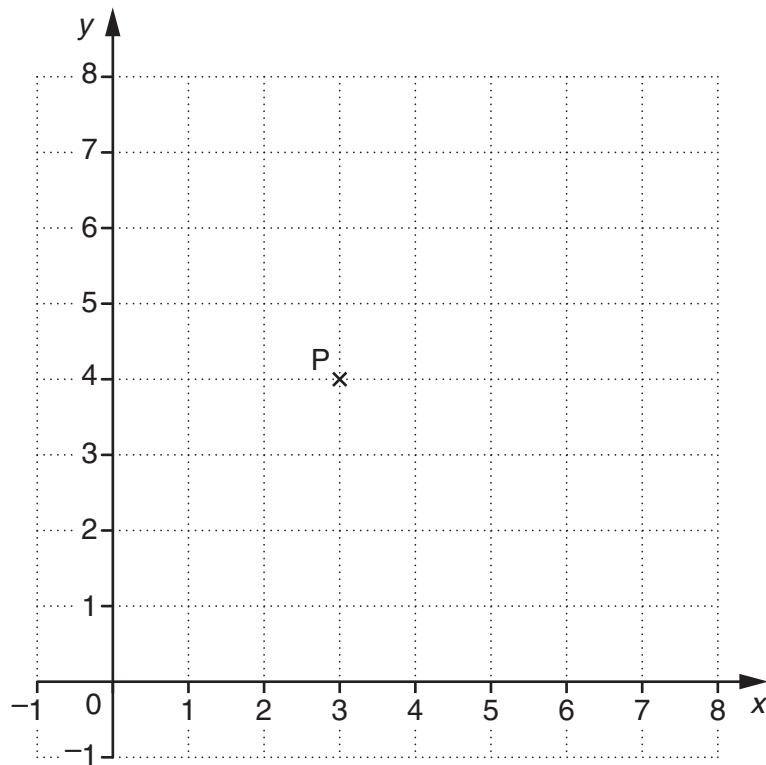
4 (a) Work out 10^3 .

(a) _____ [1]

(b) Change $\frac{2}{5}$ to a percentage.

(b) _____ % [1]

5 Here is a centimetre grid.



(a) Write down the coordinates of point P.

(a) (_____ , _____) [1]

P is one corner of a square PQRS.
 Each side of the square is 3 cm long.
 PR is a diagonal of the square.
 R is on the y-axis.

(b) Plot point R and write down the coordinates of R.

(b) (_____ , _____) [2]

(c) Draw the square PQRS.

Mark the centre of rotation symmetry of square PQRS.
 Label this point C.

[2]

- 6 Bill is making rice pudding.
Here are the ingredients.

Rice pudding	
120 g	pudding rice
900 ml	milk
55 g	sugar
25 g	butter

- (a) The **weight**, in grams, of the milk used is $\frac{8}{9} \times 900$.

Work out the total weight of the ingredients.

(a) _____ g [4]

- (b) After it has been cooked, the rice pudding weighs 750g.

What percentage of the total weight of the ingredients has been lost?

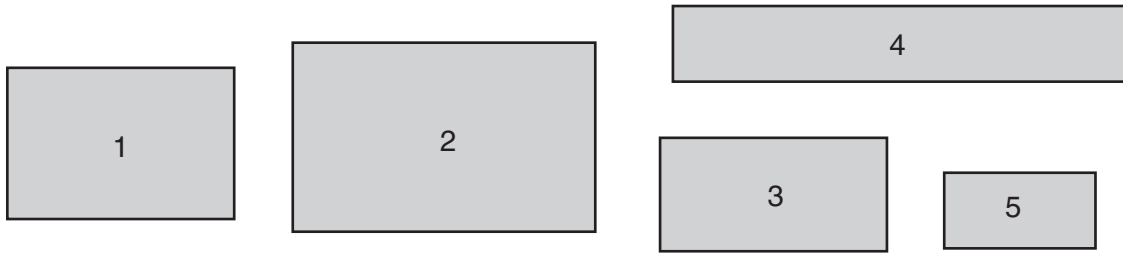
(b) _____ % [2]

- (c) Bill shared the 750g rice pudding equally between himself and four friends.

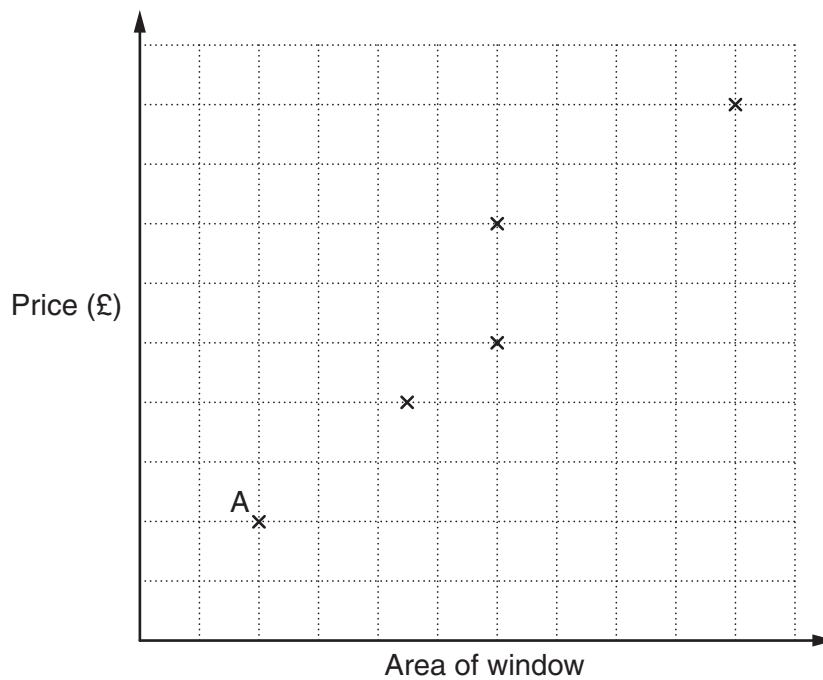
What weight of pudding did they each have?

(c) _____ g [2]

- 7 Sara finds the prices for these five windows.
The windows are drawn to scale.



Sara plots this scatter graph using the area and the price for the five windows.



- (a) Which window is represented by point A?

(a) _____ [1]

- (b) Windows 1 and 4 have the same area.

Do windows 1 and 4 cost the same to buy?
Explain your answer, using the scatter graph.

_____ [2]

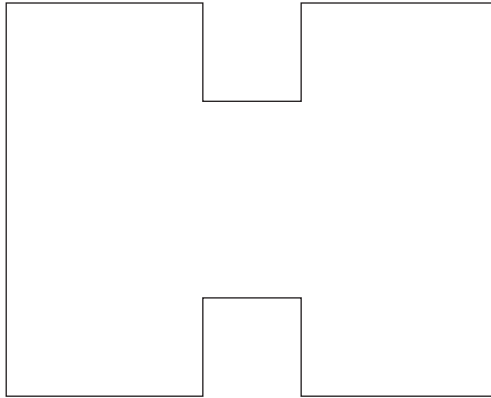
(c) Describe the correlation shown by the scatter graph.

(c) _____ [1]

(d) Explain why you could not use the scatter graph to estimate the cost of another window.

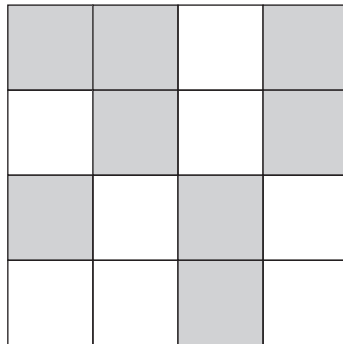
_____ [1]

8 (a) Draw all the lines of symmetry on this shape.



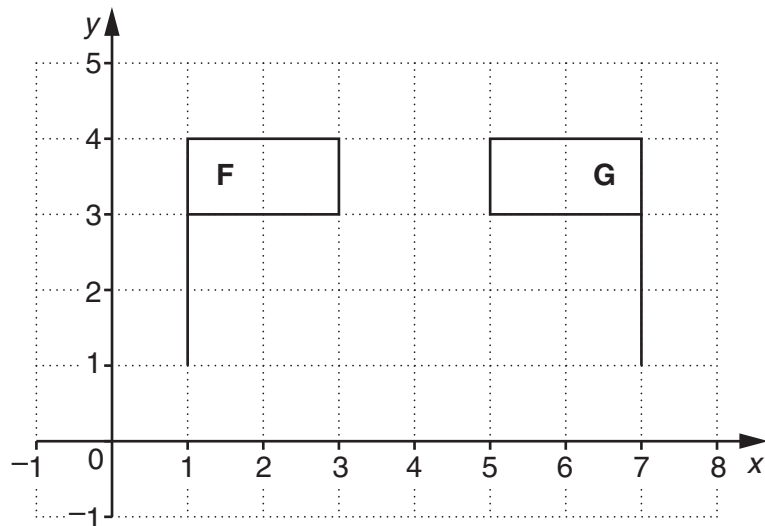
[2]

(b) Shade two squares so that this shape has rotation symmetry, order 2.



[2]

(c)



Shape **F** can be mapped onto shape **G** by a **single** transformation.

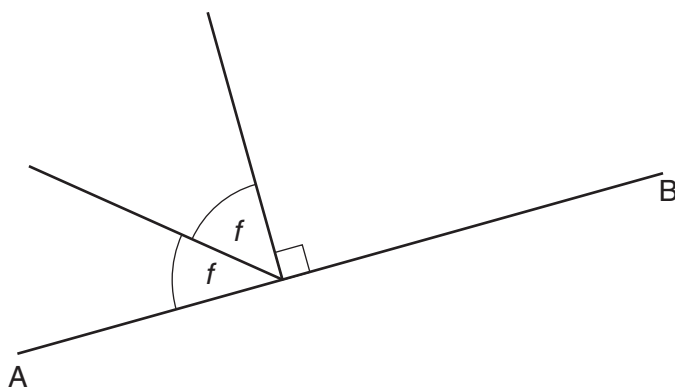
Describe fully this transformation.

[2]

9 AB is a straight line.

Work out the size of angle f .

Not to scale



_____ ° [2]

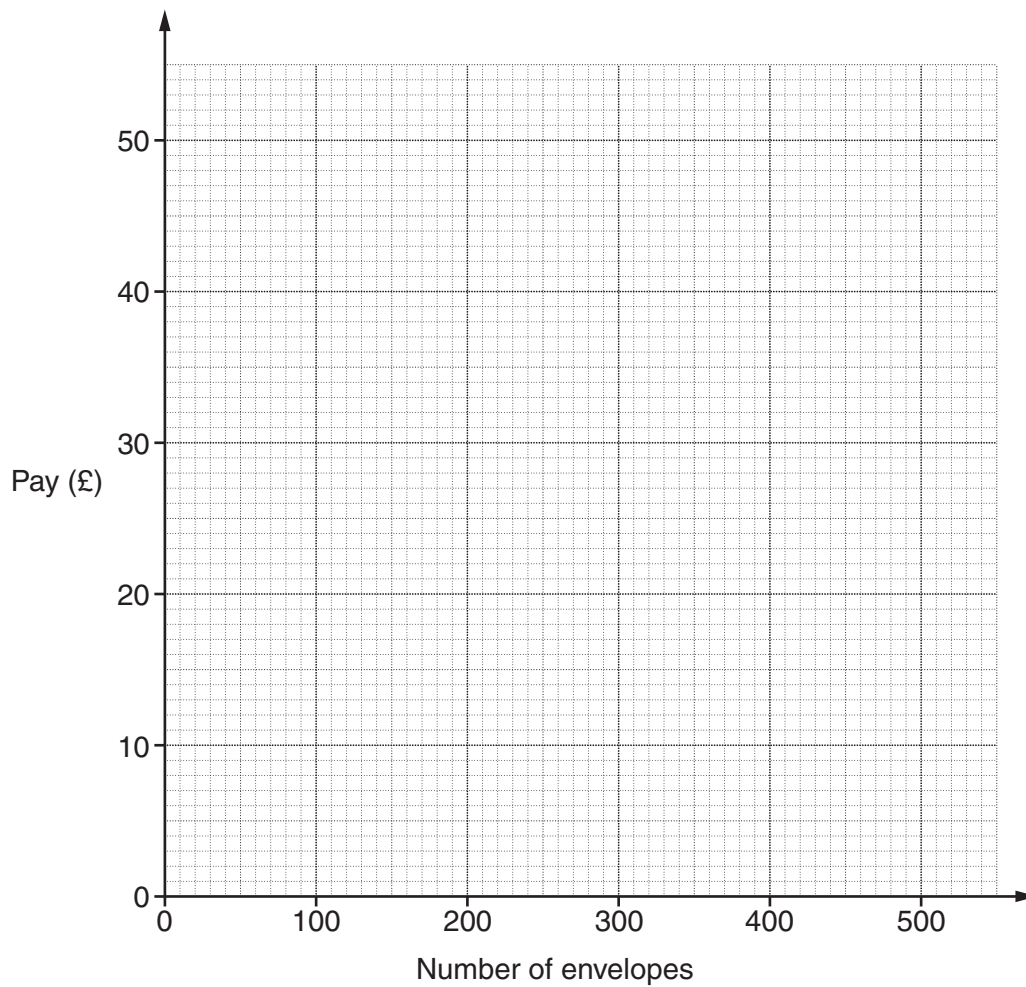
10 Geraldine works at home addressing envelopes. She is paid £2 a day and then 10p for each envelope she addresses.

(a) Complete this table.

Number of envelopes	0	100	200	500
Pay (£)	2			52

[2]

(b) Use the values in the table to draw a graph.



[2]

(c)* Barry does the same job for another company.



One day Barry and Geraldine are each paid the same amount for addressing the same number of envelopes.

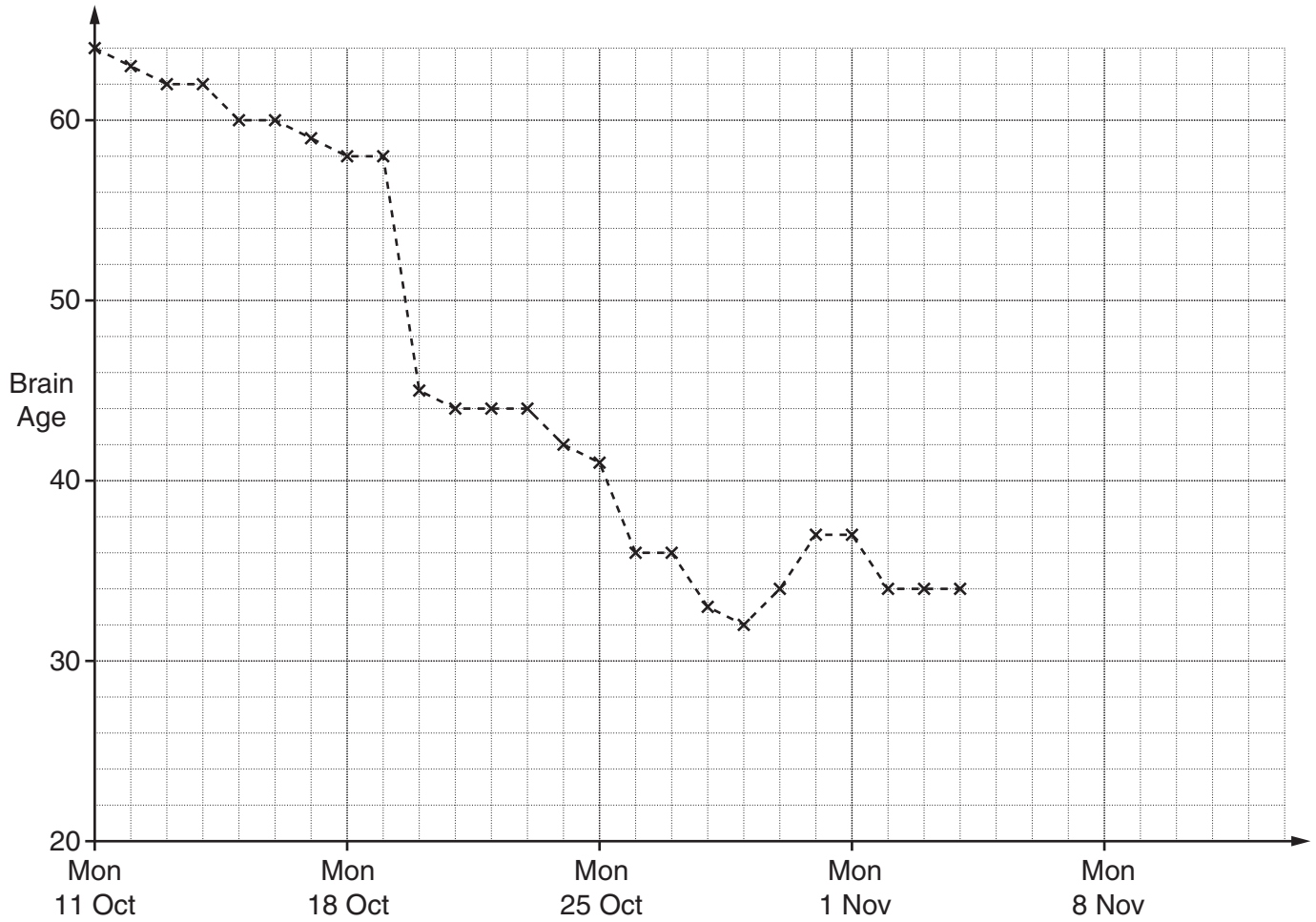
How many envelopes did they each address?
Show clearly how you decide.

(c) _____ [5]

- 11 Sam bought an electronic game on Monday 11th October. The game gives him word and number puzzles to test how well his brain works. He can practise the puzzles to try to improve. The game gives him a 'Brain Age' to show how well he is doing.

The Brain Age can range from 65, which is very poor, to 20, which is best.

The game uses a time series graph to show Sam's Brain Age.



(a) Complete the time series graph with this information.

Date	Sam's Brain Age
Fri 5 Nov	34
Sat 6 Nov	34
Sun 7 Nov	33
Mon 8 Nov	31
Tues 9 Nov	30
Wed 10 Nov	30
Thur 11 Nov	28

[2]

(b) One day Sam discovers a method to get much better scores.

On what date did Sam discover this method?

(b) _____ [1]

(c) Sam realises he does not do as well when he is ill.
Sam was ill for two days in October.

On which dates was he ill?

(c) _____ [1]

(d) Sam's father, John, also likes to play the game occasionally.

Date	John's Brain Age
Tues 12 Oct	38
Wed 20 Oct	30
Sat 23 Oct	35
Mon 1 Nov	28
Thur 11 Nov	29

(i) On the grid, draw the time series graph for John's Brain Age. [1]

(ii) Sam says, "I am better at this game than my father".

Use the graphs to explain whether Sam is correct.

[2]

TURN OVER FOR QUESTION 12

12 (a) Work out.

(i) the cube of 5

(a)(i) _____ [1]

(ii) $\sqrt{169}$

(ii) _____ [1]

(b) (i) Write as a single power of 5.

$$5^6 \times 5^4$$

(b)(i) _____ [1]

(ii) Write as a single power of r .

$$\frac{r^{12}}{r^3}$$

(ii) _____ [1]

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