OCR

F

Monday 10 November 2014 – Morning

GCSE METHODS IN MATHEMATICS

B391/01 Methods in Mathematics 1 (Foundation Tier)

Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
- Geometrical instruments
- Tracing paper (optional)

Duration: 1 hour

B391/01

Candidate forename		Candidate surname	

Centre number						Candidate number				

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

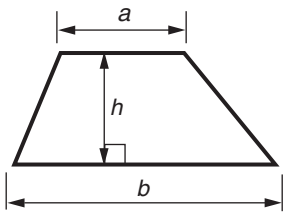
- The number of marks is given in brackets **[ ]** at the end of each question or part question.
- Your quality of written communication is assessed in questions marked with an asterisk (*****).
- The total number of marks for this paper is **60**.
- This document consists of **16** pages. Any blank pages are indicated.

WARNING

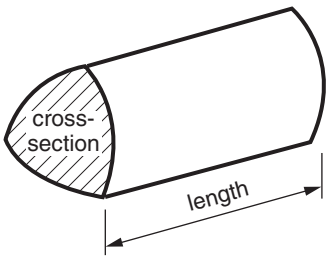
No calculator can be used for this paper

Formulae Sheet: Foundation Tier

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



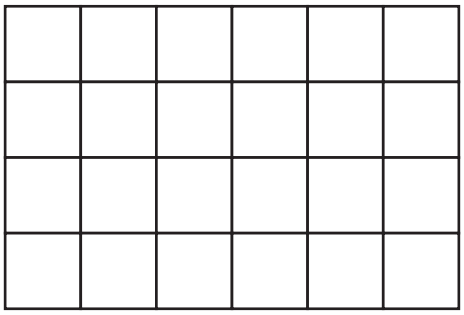
Volume of prism = (area of cross-section) × length



PLEASE DO NOT WRITE ON THIS PAGE

Answer **all** the questions.

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



[1]

(ii) What is $\frac{1}{4}$ of 24?

(a)(ii) ..... **[1]**

(b) Write $\frac{1}{4}$ as a decimal.

(b) ..... **[1]**

2 Work out.

(a) $452 + 96$

(a) ..... **[1]**

(b) 16×7

(b) ..... **[1]**

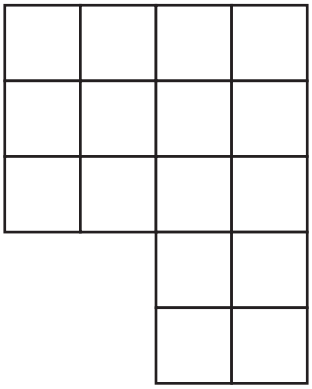
(c) $18 - 5.7$

(c) ..... **[1]**

(d) $3 \div 0.6$

(d) ..... **[1]**

3 Mukesh makes this shape with some 1 cm square tiles.



(a) (i) What is the area of his shape?

(a)(i) ..... cm^2 **[1]**

(ii) What is the perimeter of his shape?

(ii) ..... cm **[1]**

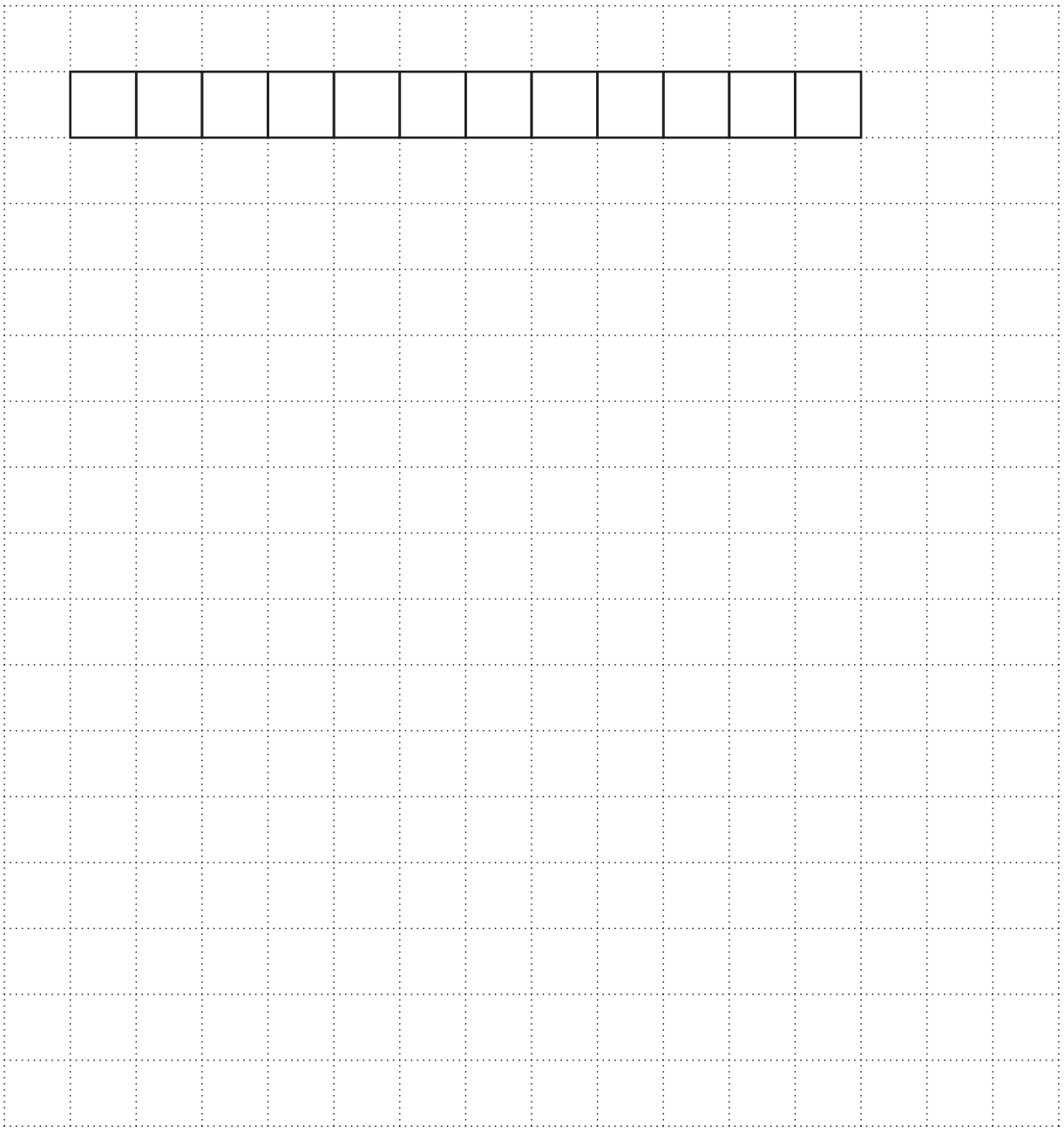
(b) Mukesh now rearranges his tiles to make a square.

What is the length of each side of the square?

(b) ..... cm **[1]**

(c) Sallie has 12 tiles.
She places them in a line to make a rectangle, shown on the grid below.

On the same grid, draw the other two rectangles she could make using all 12 tiles.



[2]

4 Tim has seven pairs of socks.
They have a different day of the week printed on each pair, otherwise they are identical.

The 14 socks are mixed up in a drawer.

(a) Tim picks a sock out of the drawer at random.

What is the probability that he picks

(i) a sock with 'Tuesday' on it

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

(ii) a sock with a 'd' in the word on it

(ii) ..... **[1]**

(iii) a sock with a day beginning with 'S' on it?

(iii) ..... **[1]**

(b) The drawer contains all 14 socks again.
On Monday Tim picks a 'Monday' sock from his drawer. He keeps it out.
He then picks another sock from his drawer at random.

What is the probability that it is the other 'Monday' sock?

(b) ..... **[2]**

(c) The drawer contains all 14 socks again.
Tim takes socks out of his drawer at random.

What is the minimum number of socks he has to take out to be certain that he gets a matching pair?

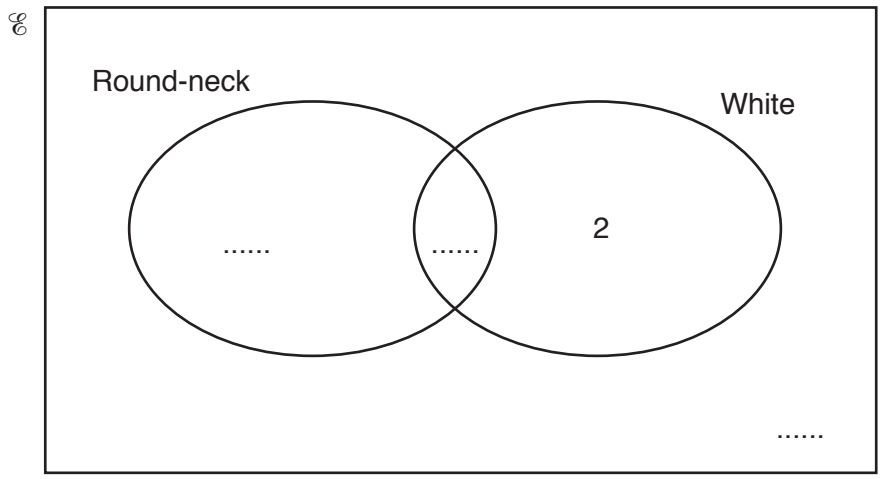
(c) ..... **[1]**

(d) Tim has 20 T-shirts.
His T-shirts are:

- either round-neck or V-neck
- either white or coloured.

(i) Use the following information about the 20 T-shirts to fill in the missing numbers for each section of the Venn diagram below.

Description	Number of T-shirts
Round-neck	13
White	6
White V-neck	2



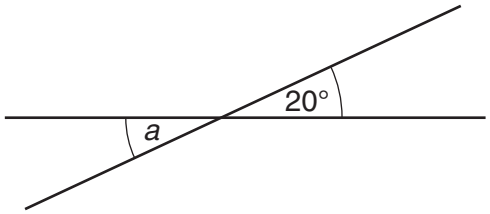
[3]

(ii) How many white round-neck T-shirts does Tim have?

(d)(ii) ..... **[1]**

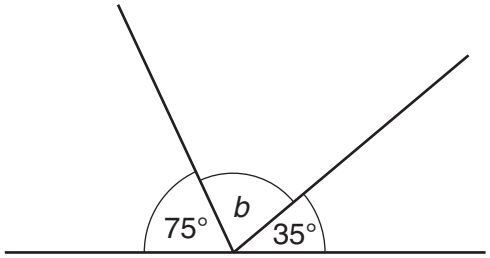
5 Find the following angles.

(a)



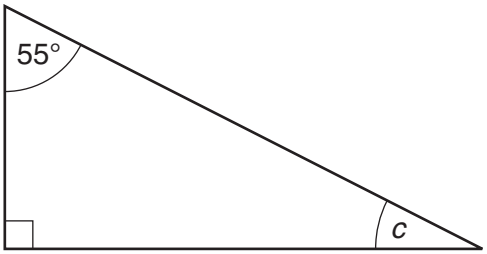
(a) a = ... ° **[1]**

(b)



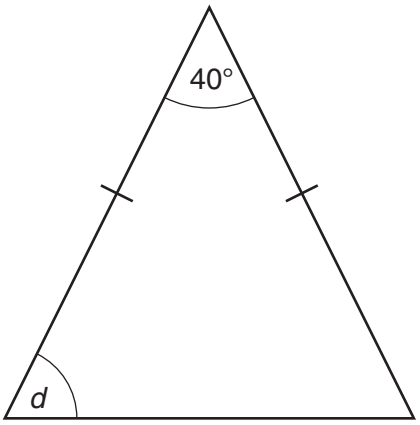
(b) b = ... ° **[2]**

(c)



(c) c = ... ° **[1]**

(d)



(d) d = ... ° **[2]**

6 The table shows the midday temperature in a town, recorded over five days in January.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Temperature (°C)	−1	−7	−5	2	3

(a) (i) Which day was the coldest at midday?

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

(ii) Between which two consecutive days was there the biggest change in midday temperature?

(ii) ..... and ..... **[1]**

(iii) How much warmer was it at midday on Friday than at midday on Monday?

(iii) ..... °C **[1]**

(iv) The weather reporter said that the wind chill on Thursday made it feel 5°C colder than the recorded temperature. What did the temperature feel like at midday on Thursday?

(iv) ..... °C **[1]**

(b) This is the formula to change from Celsius to Fahrenheit, where F is the temperature in °F and C is the temperature in °C.

$$F = 1.8C + 32$$

(i) What was the temperature in °F at midday on Friday?

(b)(i) .....°F **[2]**

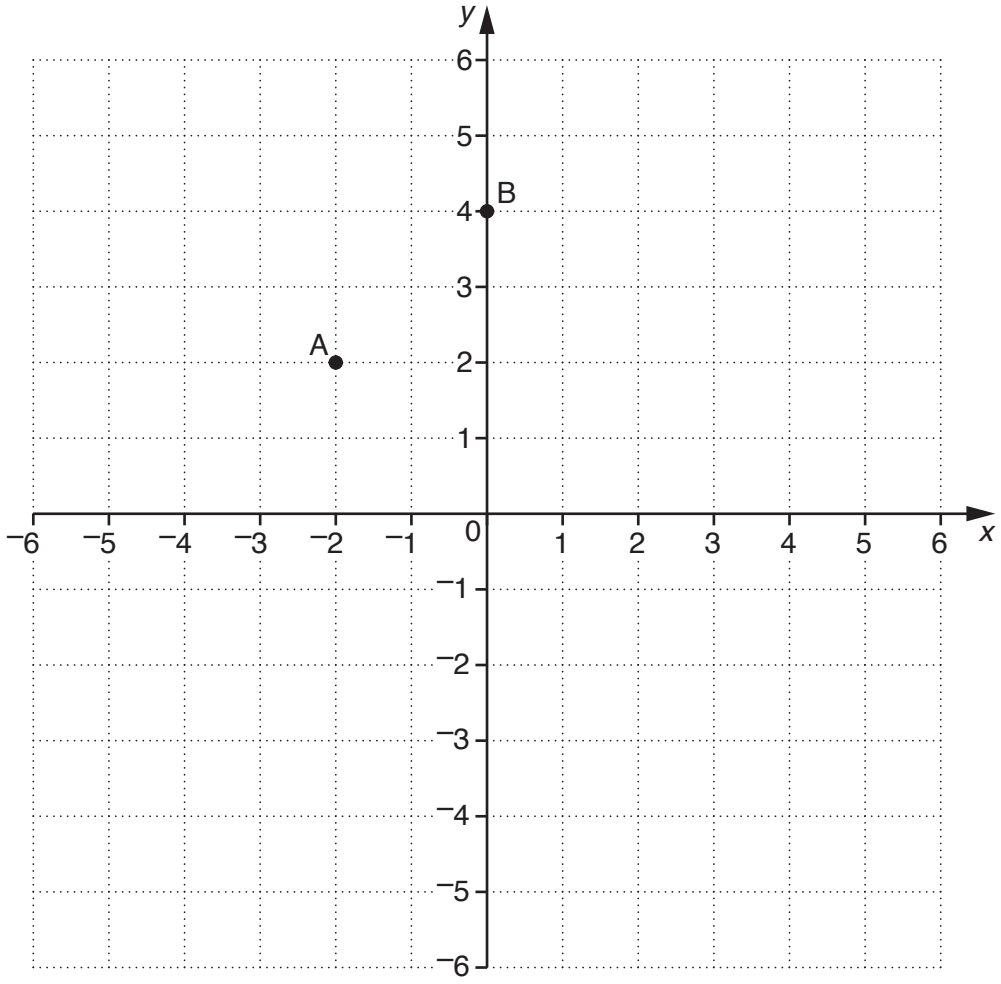
(ii) Round the numbers in your calculation for part **(b)(i)** and check that your answer is about right.

.....

.....

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

7



(a) **(i)** What are the coordinates of point A?

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

(ii) What are the coordinates of point B?

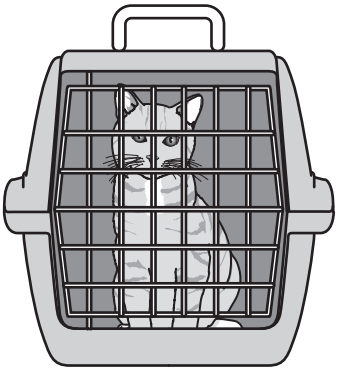
(ii) (....., ...) **[1]**

(b) Triangle ABC has a right angle at B.

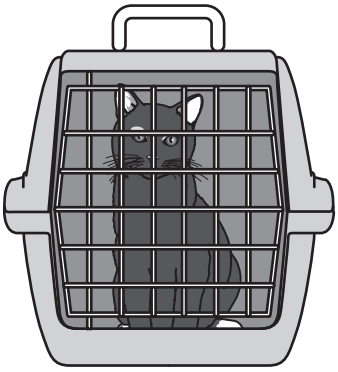
Mark a possible position for the point C. **[1]**

8 Alice and Bungle are cats. They are taken to the vet in **identical** carriers.

(a) The total weight of each cat and its carrier is shown below.



Alice and carrier = 5.7 kg



Bungle and carrier = 6.25 kg

Alice weighs 4.3 kg.

How much does Bungle weigh?

(a) ..... kg **[3]**

(b) Alice needs some medicine.
The weight of the medicine in kg should be the cat's weight in kg divided by 1000.
Alice weighs 4.3 kg.

What weight of medicine should Alice be given?

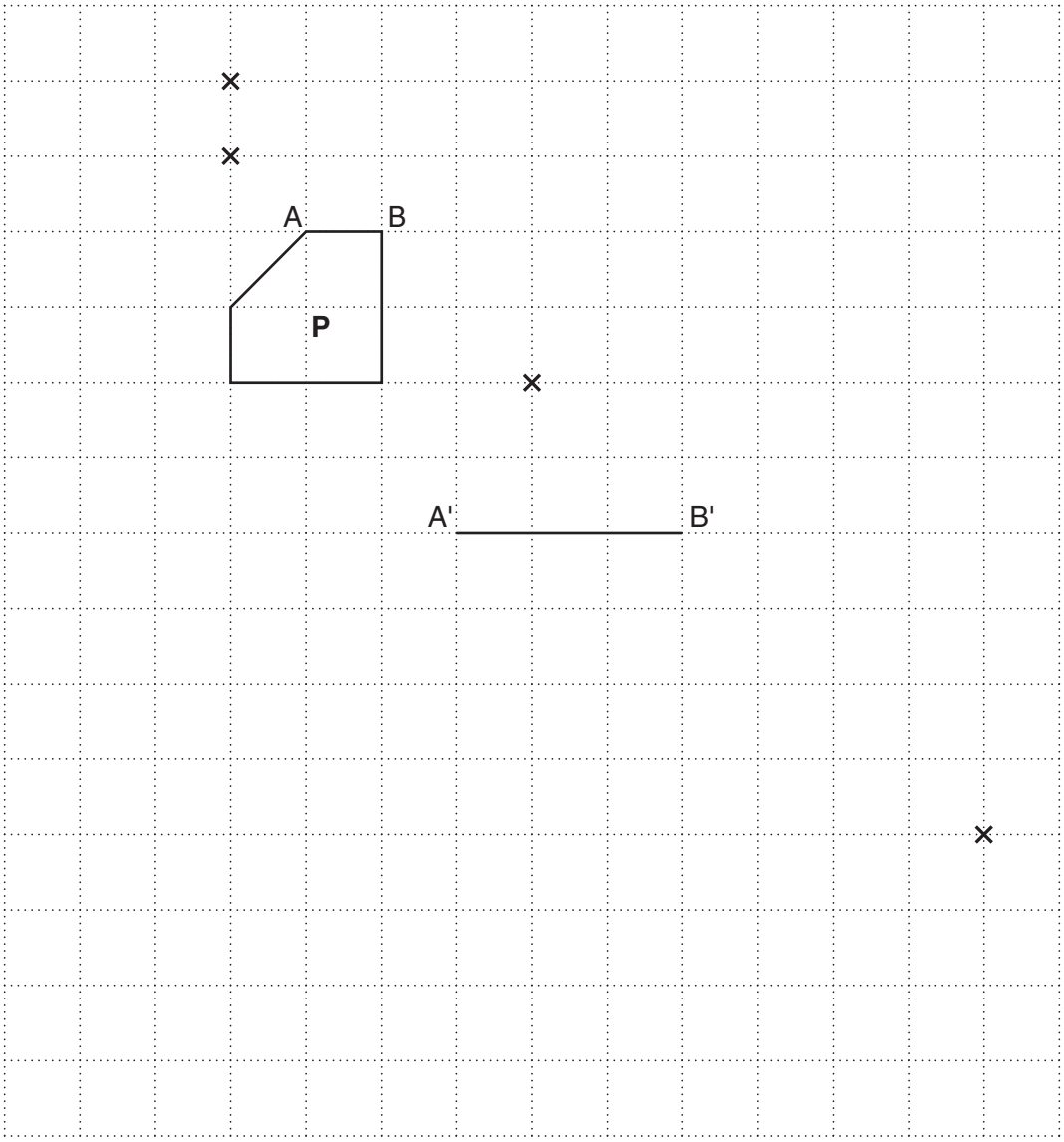
(b) ..... kg **[1]**

(c) A brand of flea treatment is given once every 6 weeks.
A brand of worming tablet is given once every 14 weeks.
The vet gives the cats both the flea treatment and the worming tablet.

After how many weeks will the treatments next be given at the same time again?

(c) ..... **[2]**

9 Shape **P** is being enlarged. Line AB has been transformed to line A'B'.

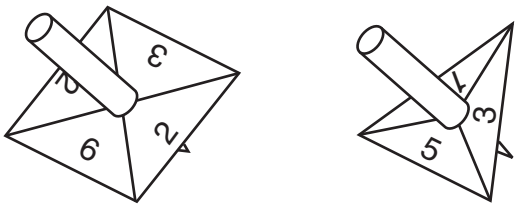


(a) Complete the enlargement of shape **P**. **[2]**

(b) Four crosses are marked on the grid.

Put a circle around the cross which is the centre of enlargement. **[1]**

10 Dipak spins each of these fair spinners once.



Dipak makes a table to show all the different pairs of numbers he could get.
His score is the sum of the two numbers.

Number on 1st spinner	Number on 2nd spinner	Score
2	1	3
2	3	5

(a) Complete the table. **[2]**

(b) Dipak says, "The probability of getting a score of 5 is $\frac{1}{9}$".

Explain why Dipak is wrong.

.....

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

11 Fill in the boxes with the correct index numbers.

(a) $4 \times 4 \times 4 = 4^{\square}$ **[1]**

(b) $6^3 \times 6^4 = 6^{\square}$ **[1]**

12* Solve.

$$7(x+2) - 3x = 2(x-5)$$

..... **[4]**

13 Each day Jennie drinks $\frac{2}{5}$ of a carton of cranberry juice and her brother William drinks $\frac{1}{3}$ of a carton of cranberry juice.

How many days will 22 cartons of cranberry juice last them?

.....days **[4]**

END OF QUESTION PAPER

PLEASE DO NOT WRITE ON THIS PAGE