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18  $\mathcal{E} = \{\text{letters of the alphabet}\}$

$B = \{\text{b, r, a, z, i, l}\}$

$I = \{\text{i, r, e, l, a, n, d}\}$

(a) List the members of the set

(i)  $B \cup I$

.....

(ii)  $B \cap I'$

.....

(2)

$K = \{\text{k, e, n, y, a}\}$

Cody writes down the statement  $B \cap K = \emptyset$

Cody's statement is wrong.

(b) Explain why.

.....

.....

(1)

**(Total for Question 18 is 3 marks)**



P 6 5 9 1 6 A 0 1 7 2 4

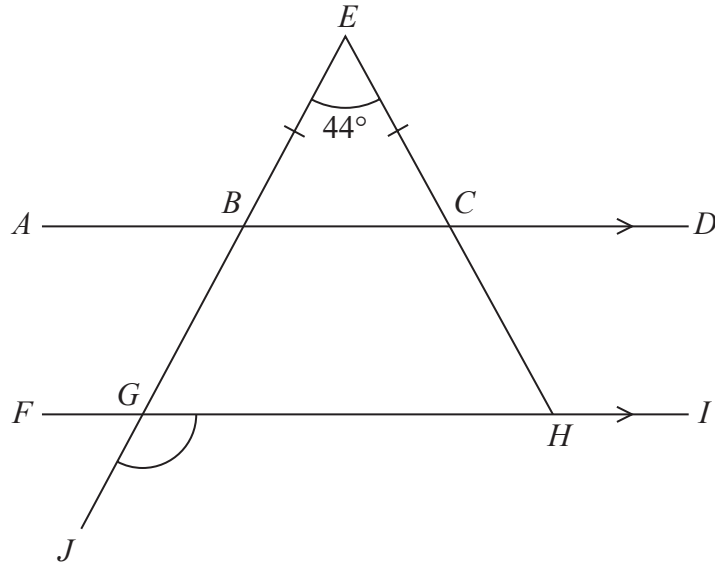


Diagram **NOT** accurately drawn

*ABCD* and *FGHI* are parallel straight lines.  
*EBGJ* and *ECH* are straight lines.

$BE = CE$   
 Angle  $BEC = 44^\circ$

Work out the size of angle *JGH*.  
 Give a reason for each stage of your working.

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(Total for Question 19 is 5 marks)



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20 Mariana sells bags of bird food.

The bags that Mariana sold last week each contained 12 kg of seeds.

The bags that she is going to sell next week will each contain a mixture of nuts and seeds where for each bag

$$\text{weight of nuts : weight of seeds} = 4 : 5$$

The total weight of the nuts and the seeds in each bag will be 19.35 kg

The weight of seeds in each bag that Mariana sells next week will be less than the weight of seeds in each bag that Mariana sold last week.

Work out this decrease as a percentage of the weight of seeds in each bag that Mariana sold last week.

Give your answer correct to one decimal place.

..... %

(Total for Question 20 is 4 marks)



21 Here is a right-angled triangle.

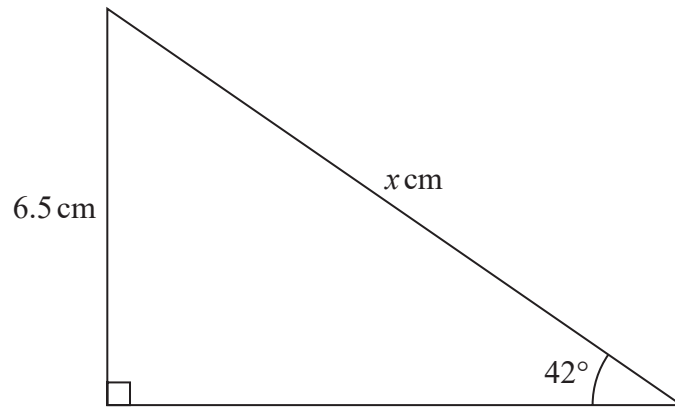


Diagram **NOT**  
accurately drawn

Work out the value of  $x$ .  
Give your answer correct to one decimal place.

$x = \dots\dots\dots$

(Total for Question 21 is 3 marks)

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22 Solve the simultaneous equations

$$5a + 2c = 10$$

$$2a - 4c = 7$$

Show clear algebraic working.

$$a = \dots\dots\dots$$

$$c = \dots\dots\dots$$

(Total for Question 22 is 3 marks)

23 (i) Factorise  $x^2 + 2x - 24$

.....  
(2)

(ii) Hence solve  $x^2 + 2x - 24 = 0$

.....  
(1)

(Total for Question 23 is 3 marks)



24 Here is a triangular prism.

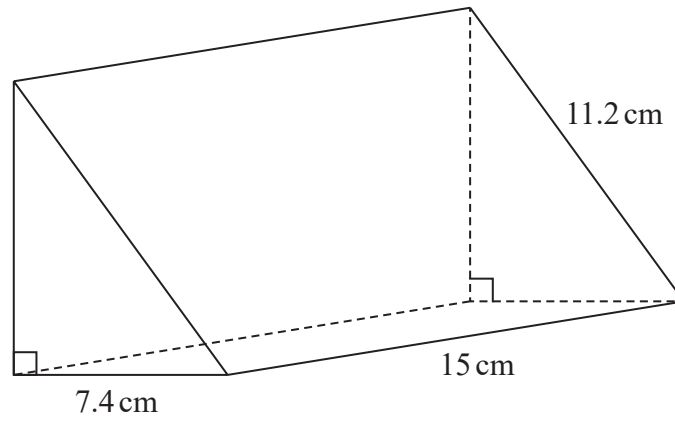


Diagram **NOT** accurately drawn

Work out the volume of the prism.  
Give your answer correct to 3 significant figures.

..... cm<sup>3</sup>

(Total for Question 24 is 5 marks)

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25 Chengbo sold a house for 180 000 yuan.

The amount for which he sold the house is 24% more than the amount he paid for the house.

- (a) Work out how much Chengbo paid for the house.  
Give your answer correct to 3 significant figures.

..... yuan  
(3)

Zhi bought a house on 1st January 2017  
When she bought the house, its value was 120 000 yuan.

The value of the house increased by 1.8% per year.

- (b) Work out the value of Zhi's house on 1st January 2020  
Give your answer correct to 3 significant figures.

..... yuan  
(3)

(Total for Question 25 is 6 marks)

TOTAL FOR PAPER IS 100 MARKS

