Mock Grade 6

Maths Booklet 4

Paper 3H
Calculator

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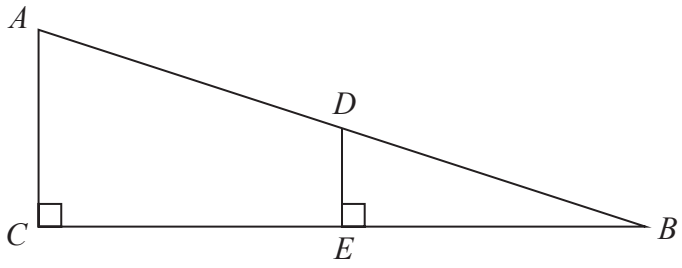
1 The diagram shows two right-angled triangles *ACB* and *DEB*.



AD = 10 cm
DE = 3 cm
DB = 8 cm

Calculate the length of *CB*.
Give your answer correct to 2 decimal places.

..... cm

(Total for Question 1 is 4 marks)

2 Freya writes down the value of x, correct to 1 decimal place.

She writes $x = 17.0$

Complete the error interval for x.

..... $\leqslant x <$ .....

(Total for Question 2 is 2 marks)

3 $(ax^9)^{\frac{1}{n}} = 7x^3$

Work out the value of a and the value of n.

$a =$ .....

$n =$ .....

(Total for Question 3 is 2 marks)

4 (a) Factorise $y^2 + 16y + 48$

.....

(2)

(b) Solve $8x + 1 > 3x + 15$

.....

(2)

(c) n is an integer with $-5 < 2n + 3 \leqslant 11$

Write down all the values of n

.....

(2)

(Total for Question 4 is 6 marks)

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5 The function f is such that

$$f(x) = 5x - 11$$

(a) Find $f^{-1}(x)$

$f^{-1}(x) =$ .....

(2)

The function g is such that

$$g(x) = kx^3 \text{ where } k \text{ is a constant.}$$

Given that $gf(3) = -16$

(b) work out the value of k

$k =$ .....

(2)

(Total for Question 5 is 4 marks)

6 Solve $x^2 - 9x + 7 = 0$

Give your solutions correct to 3 significant figures.

.....

(Total for Question 6 is 3 marks)

7 Sami asked 60 people which drinks they liked from tea, coffee and milk.

All 60 people like at least one of the drinks
23 people like all three drinks.
13 people like tea and coffee but do **not** like milk.
28 people like coffee and milk.
24 people like tea and milk.
49 people like coffee.
All people who like milk like at least one other drink.

Sami selects at random one of the 60 people.

(a) Work out the probability that this person only likes tea.

.....

(4)

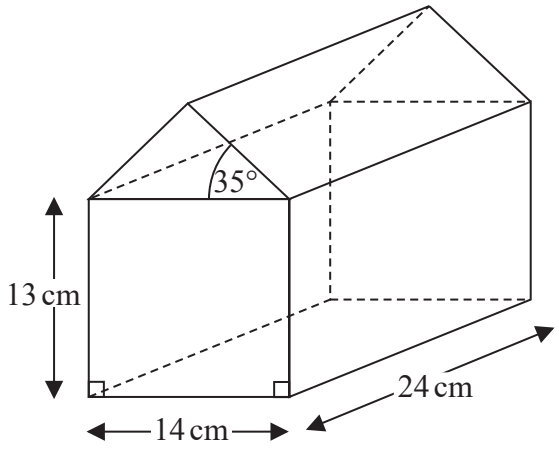
(b) Given that the person selected at random from the 50 people likes tea, find the probability that this person also likes exactly one other drink.

.....

(2)

(Total for Question 7 is 6 marks)

8 The diagram shows a prism.



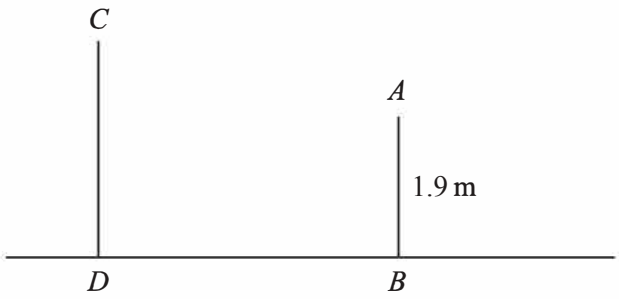
The cross section of the prism has exactly one line of symmetry.

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

..... cm^3

(Total for Question 8 is 5 marks)

9 The diagram shows two vertical posts, AB and CD, on horizontal ground.



$AB = 1.9$ m

$CD : AB = 1.8 : 1$

The angle of elevation of C from A is 56°

Calculate the length of BD.
Give your answer correct to 3 significant figures.

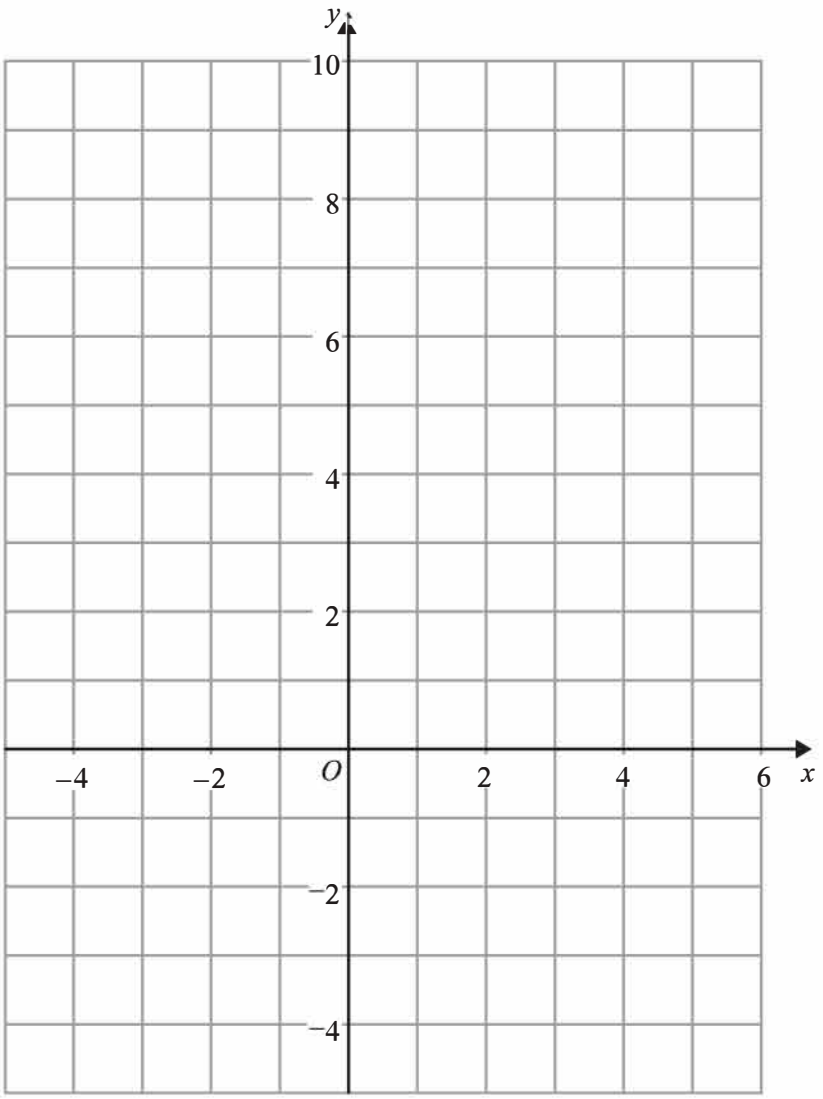
.....m

(Total of Question 9 is 4 marks)

10 On the grid, shade the region that satisfies all these inequalities.

$$x + y < 3 \qquad y > 2x - 1 \qquad y < 3x - 2$$

Label the region **R**.



(Total for Question 10 is 4 marks)

11 Write $x^2 + 6x - 14$ in the form $(x + m)^2 + n$ where m and n are integers.

.....

(Total for Question 11 is 2 marks)