Full Name: …….. **Date: 10 February 2025**

Practice Test
(Calculator Allowed)

Time Allowed: 50 minutes **Total Marks: 42**

1.

(a) Solve,

$$x^2 + 4x - 21 < 0$$

(2 marks)

(b) Solve,

$$4(2x + 1) > 5(x - 1) + 3$$

(1 mark)

(c) Find the set of possible values of x for which,

$$x^2 + 4x - 21 < 0 \quad \textbf{and} \quad 4(2x + 1) > 5(x - 1) + 3$$

(1 mark)

2.

Here is triangle ABC.

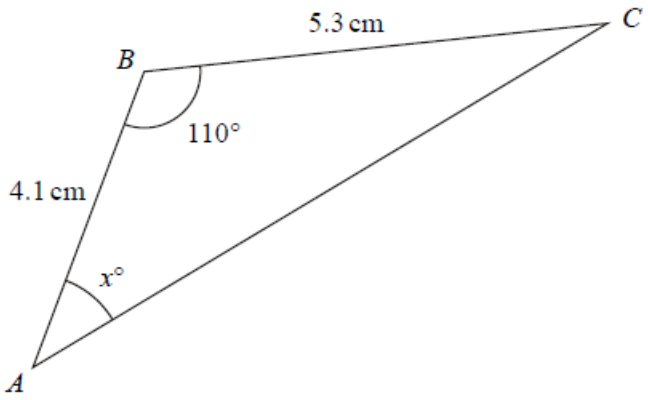


Diagram **NOT** accurately drawn

Calculate the value of x.
Give your answer correct to 3 significant figures.

(5 marks)

3.

It is given that x is an integer, and y is a prime number.

Rationalise the denominator of,

$$\frac{x-\sqrt{9y}}{x+\sqrt{9y}}$$

Simplify your answer.

(3)

4.

Express $\frac{5}{3}-\frac{x+2}{2x}$ as a single fraction in its simplest terms.

(3)

5.

Here is triangle ABD.

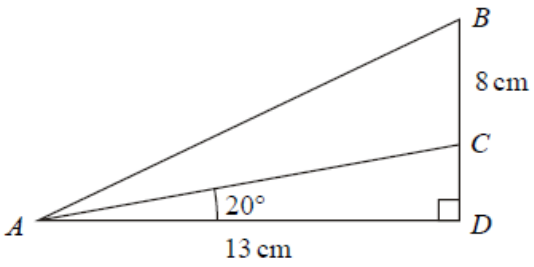


Diagram **NOT** accurately drawn

The point C lies on BD.

$AD = 13$ cm $BC = 8$ cm angle $ADB = 90°$ angle $CAD = 20°$

Calculate the size of angle BAC.
Give your answer correct to 1 decimal place.

(5 marks)

6.

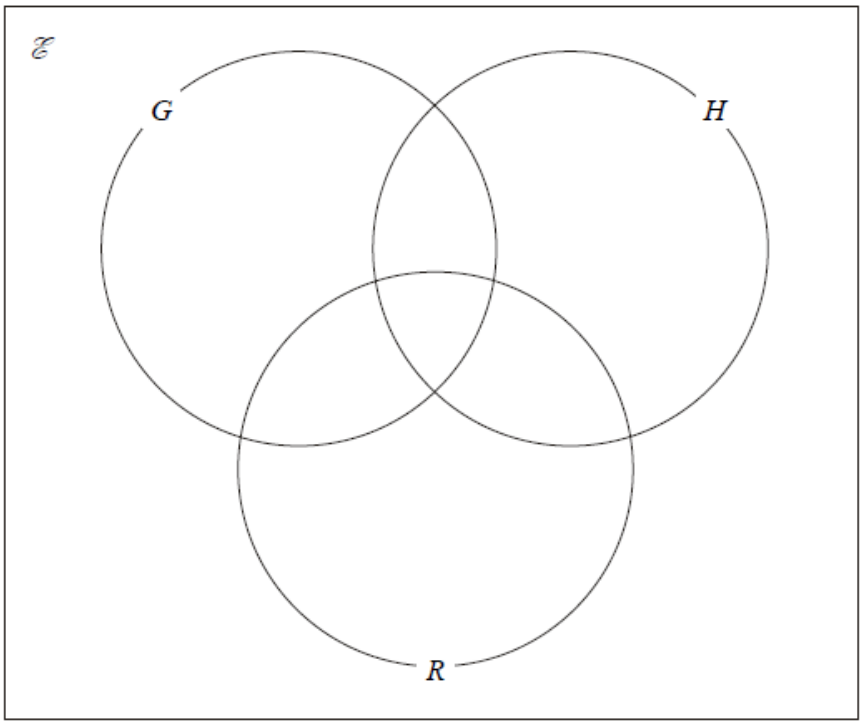
All the students in Year 11 at a school must study at least one of Geography (G), History (H) and Religious Studies (R).

In Year 11 there are 65 students.

Of these students

15 study Geography, History and Religious Studies
21 study Geography and History
16 study Geography and Religious Studies
30 study Geography
18 study only Religious Studies
37 study Religious Studies

(a) Using this information, complete the Venn diagram to show the number of students in each region of the Venn diagram.



(3)

A student in Year 11 who studies both History and Religious Studies is chosen at random.

(b) Work out the probability that this student does **not** study Geography.

(2)

7.

The diagram shows an isosceles triangle.

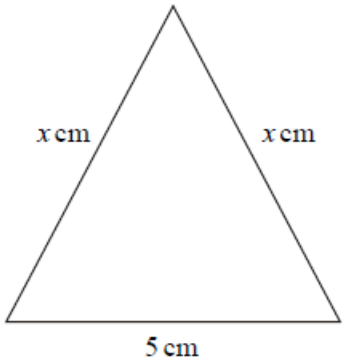


Diagram **NOT** accurately drawn

The area of the triangle is 12 cm^2

Work out the perimeter of the triangle.
Give your answer correct to 3 significant figures.

(4 marks)

8.

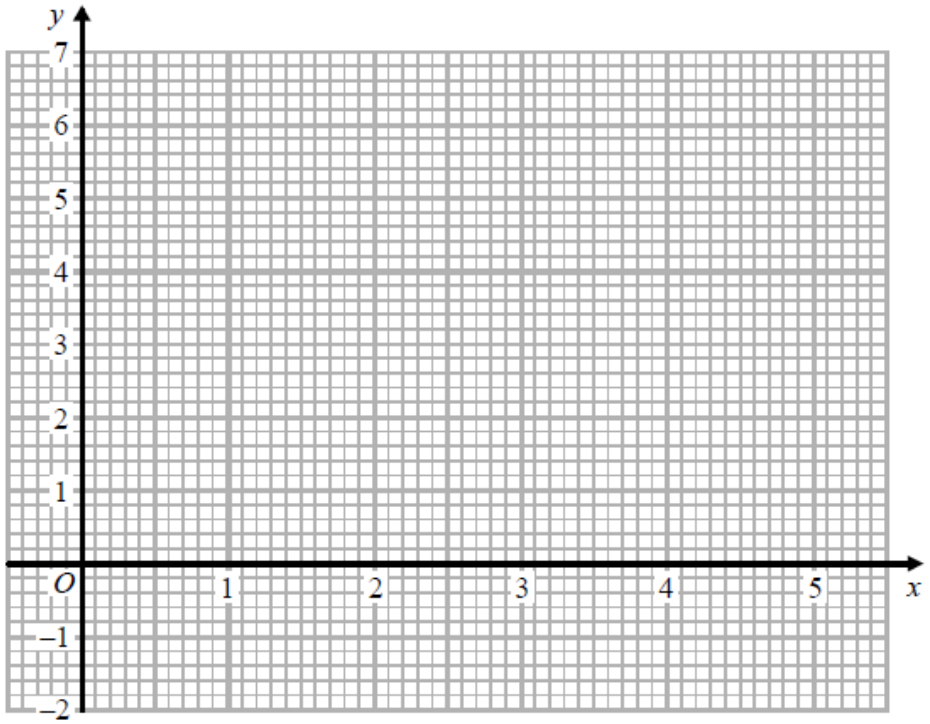
If online students do not have a printer or a graph paper, for part (b) they can draw the graph roughly on a normal sheet of paper and then estimate the solutions for part (c) based on their rough graph.

(a) Complete the table of values for $y = x^2 - 5x + 6$

x	0	1	2	3	4	5
y	6		0	0	2	

(1)

(b) On the grid, draw the graph of $y = x^2 - 5x + 6$ for $0 \leqslant x \leqslant 5$



(2)

(c) By drawing a suitable straight line on the grid, find estimates for the solutions of the equation

$$x^2 - 5x = x - 7$$

(3)

9.

Line **L** has equation $4y - 6x = 33$
Line **M** goes through the point A (5, 6) and the point B (−4, k)

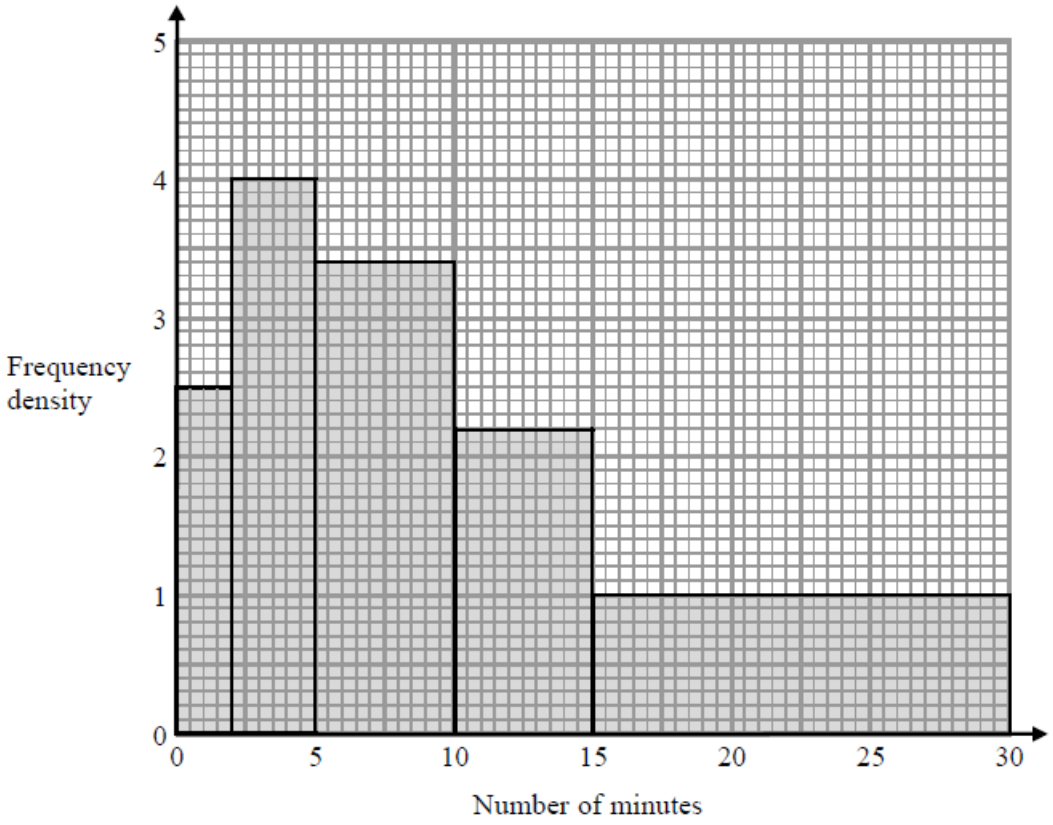
L is perpendicular to **M**.

Work out the value of k.

(4 marks)

10.

The histogram shows information about the numbers of minutes some people waited to be served at a Post Office.



Work out an estimate for the proportion of these people who waited longer than 20 minutes to be served.

(3 marks)

- End of Test -