EXAM. NUMBER:

Total Marks

Coimisiún na Scrúduithe Stáit
State Examinations Commission

JUNIOR CERTIFICATE EXAMINATION, 2010

MATHEMATICS – FOUNDATION LEVEL – (300 marks)

FRIDAY, 11 JUNE – AFTERNOON, 2.00 TO 4.00

Time: 2 hours

Attempt **ALL** questions. Each question carries 50 marks.

Answers and supporting work should be written into the boxes provided.

Extra pages and graph paper can be obtained from the Superintendent, if needed.

The symbol ✍ indicates that supporting work <u>must</u> be shown to obtain full marks.

Make and model of calculator used:

For the Superintendent/Examiner use only:

Centre Stamp

Question	Mark
1	
2	
3	
4	
5	
6	
Total	
Grade	

1. **(a)** Find the value of:

(i)	$35 - 7 =$
(ii)	$35 \div 7 =$

(b) **(i)** List all the factors of 8.

(ii) List all the factors of 12.

(iii) List all the factors that are common to both 8 and 12.

(iv) Write down the Highest Common Factor (HCF) of 8 and 12.

(c) **(i)** You buy a number of items in a shop. They are listed below.
Find the total cost of these items.

3 Apples	@	€0·35 each.
2 Fruit Drinks	@	€1·29 each.
4 Packets of Crisps	@	€0·45 each.
3 Bread Rolls	@	€0·55 each.

✍

3 Apples @ €0·35 each	= €
2 Fruit Drinks @ €1·29 each	= €
4 Packets of Crisps @ €0·45 each	= €
3 Bread Rolls @ €0·55 each	= €
Total	= €

(ii) You pay for these items with a €10 note.
How much change do you get?

✍

2. **(a)** Write down the mode of the following numbers:

$$4, \quad 6, \quad 2, \quad 6, \quad 5, \quad 6$$

Mode =

(b) The following table shows the number of trees of different types in a small park.

Type of Tree	Oak	Birch	Chestnut	Willow	Beech
Number	9	12	6	9	4

(i) Calculate the total number of trees in the park.

(ii) Draw a bar chart to represent the number of each type of tree.
Use the grid below to draw your bar chart.
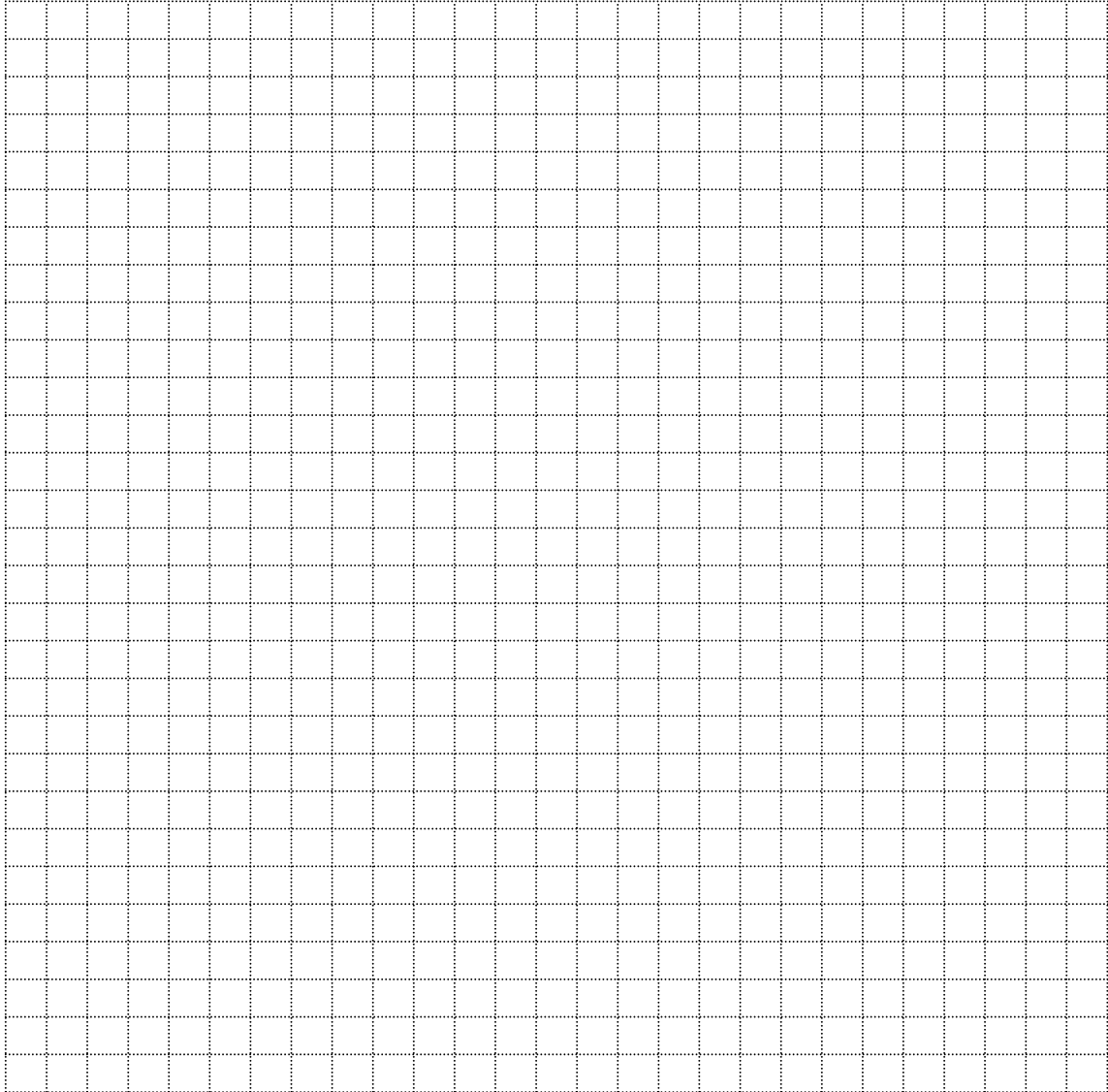
Part (c) on next page

(c) 120 people were asked how many hours, on average, they spent using the internet in a week.
internet in a week.
The table shows the results.

Number of hours	2 hours	3 hours	4 hours	5 hours
Number of people	10	20	60	30

We wish to show this information on a pie chart.

✍

Complete the table:

Number of hours	2 hours	3 hours	4 hours	5 hours
Number of people	10	20	60	30
Number of Degrees		60°		

Draw the pie chart.

3. **(a)** Find the value of x in the following diagram.

$x°$ $45°$

$x =$
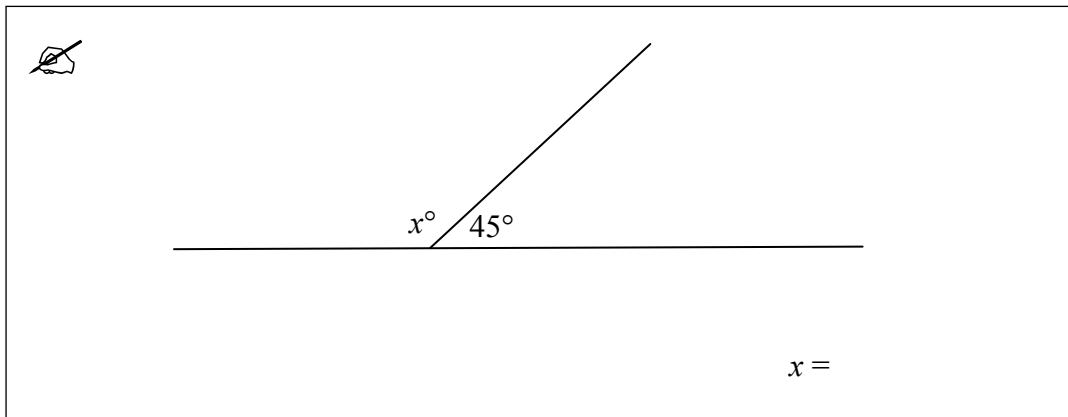
(b) **(i)** Construct the triangle ABC with $|AB| = 8$ cm, $|\angle BAC| = 70°$ and $|AC| = 5$ cm. Show all your construction lines.
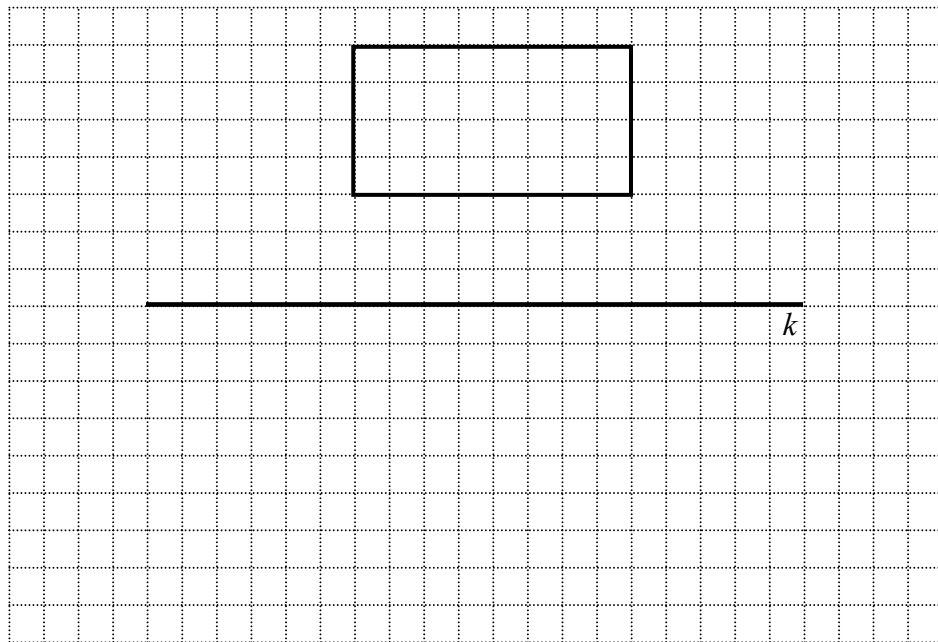
A
8 cm
B
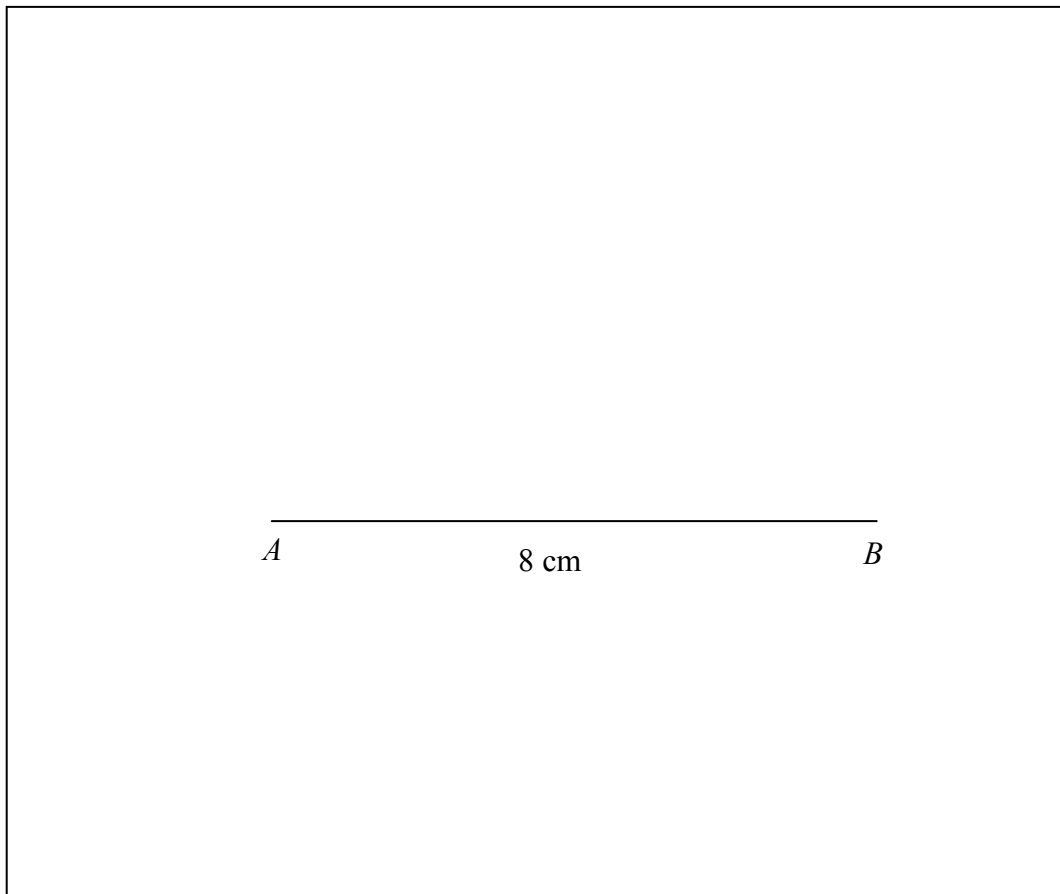
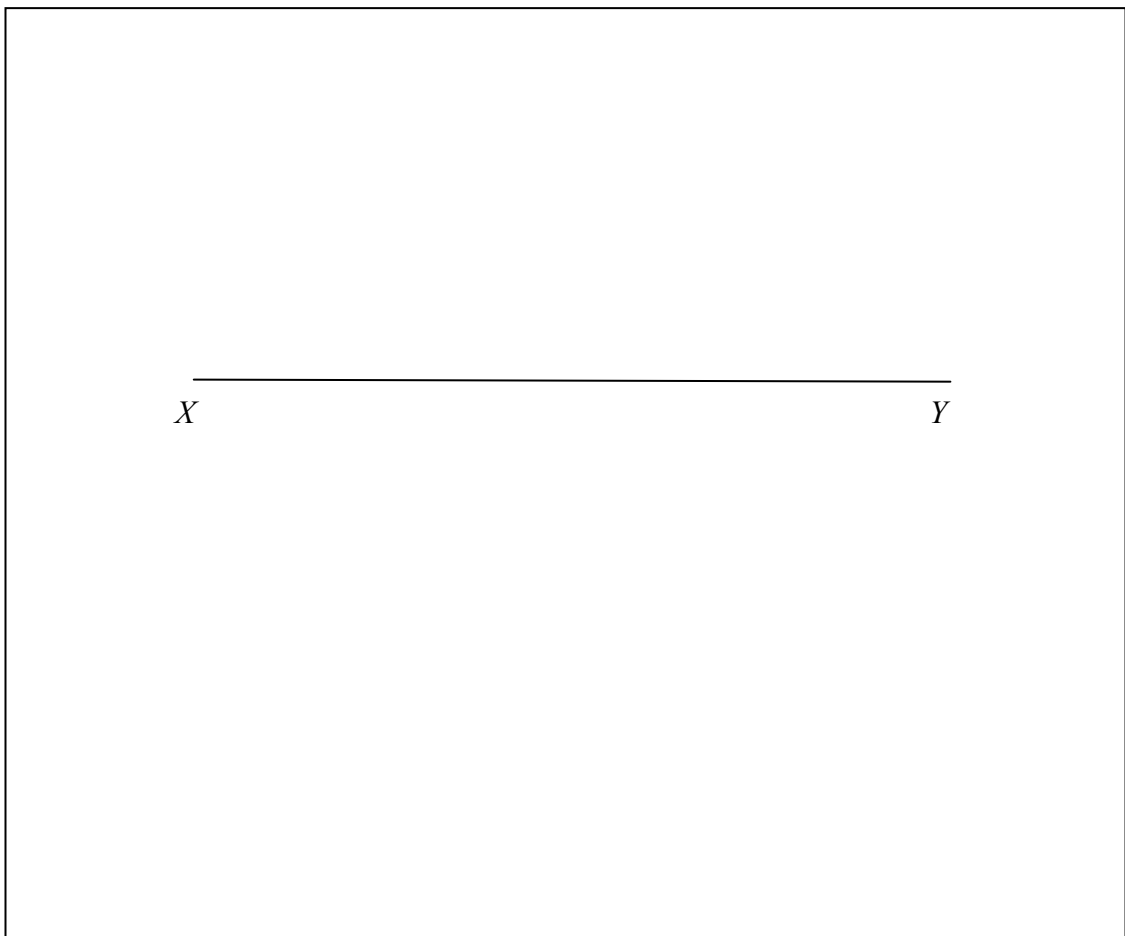**(ii)** Use your ruler to measure the length of the side $[BC]$.

Length of side $[BC] =$

Part (c) on next page

(c) **(i)** Draw the image of the rectangle shown in the diagram under the axial symmetry in the line *k*.

(ii) Divide the line segment [*XY*] into three equal parts.
Show all construction lines.

X   Y

4. **(a)** Find the value of $3a + 2b$, where $a = 4$ and $b = 5$.

(b) **(i)** Simplify $2(x + 4) + 5(x - 2)$.
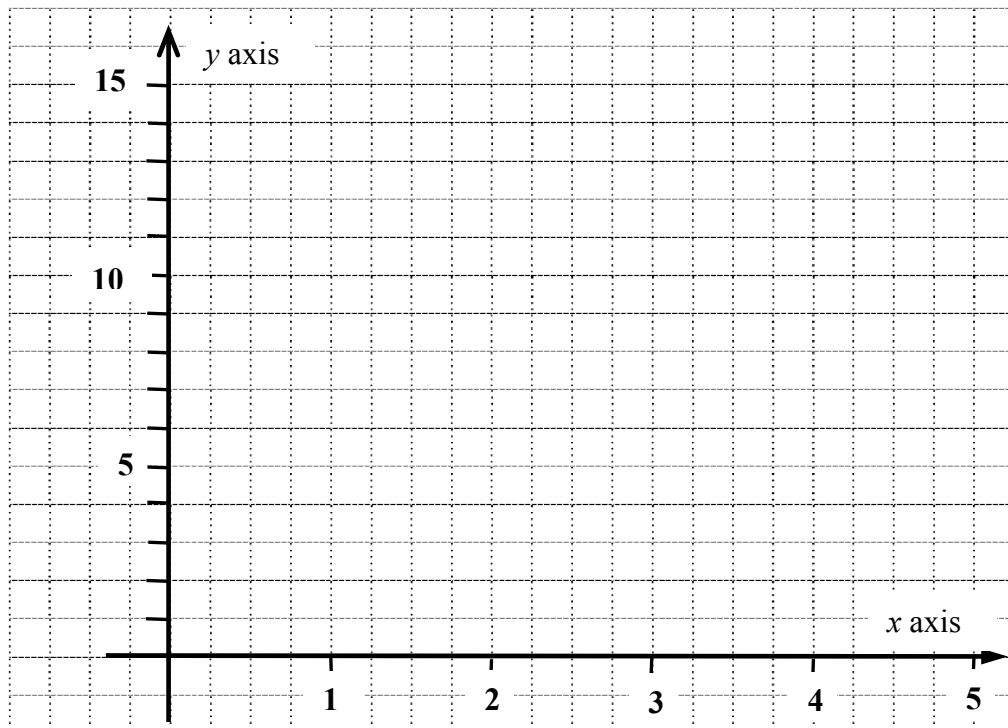
(ii) Solve for x:

$$4x - 2 = 10$$

Part (c) on next page

(c) **(i)** Given that $y = 2x + 1$, complete the table below.
Show all your work.

✎

x	1	2	3	4	5
y			7		

(ii) Using your answers from **(i)**, draw the graph of $y = 2x + 1$ from $x = 1$ to $x = 5$.

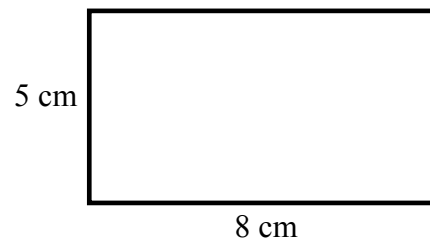**(iii)** Use your graph to find the value of y when $x = 1 \cdot 5$.

$y =$

5. **(a)** **(i)** Change $3 \cdot 75$ km to metres.

(ii) Change $5 \cdot 2$ cm to millimetres.
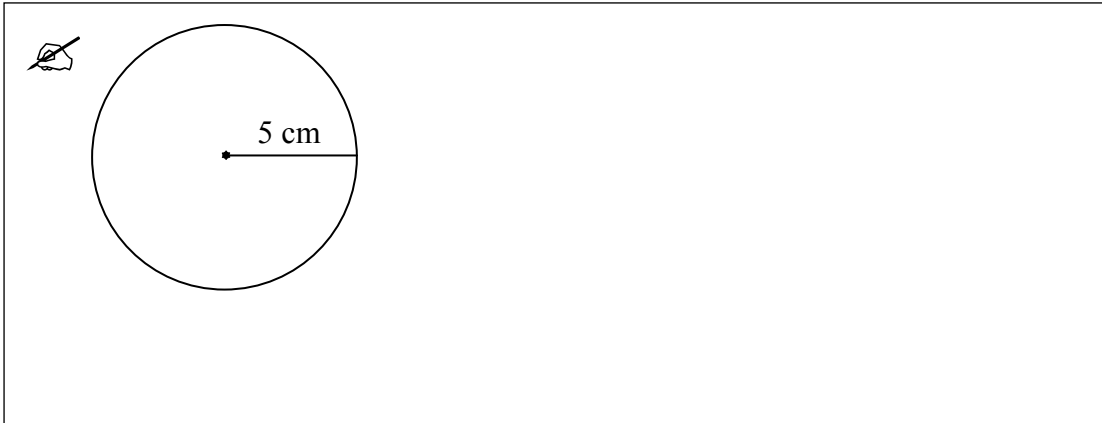
(b) **(i)** A rectangle measures 8 cm by 5 cm.

Find the perimeter of the rectangle.
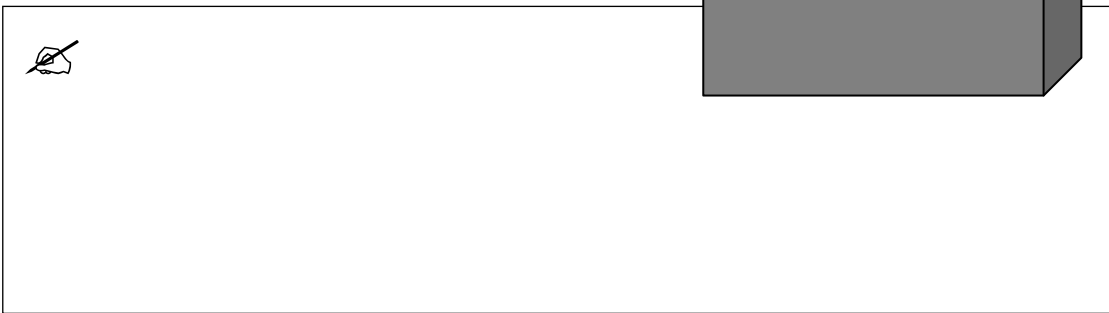
5 cm

8 cm

Part (b) continues on next page

(ii) The radius of a circle is 5 cm.
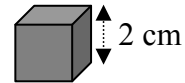Calculate the perimeter of the circle. Use $\pi = 3 \cdot 142$.

5 cm

(c) **(i)** A rectangular block of wood is 10 cm long, 4 cm wide and 4 cm high.

Find the volume of the block in cm^3.

(ii) The length of a side of a solid wooden cube is 2 cm.
Find the volume of the cube in cm^3.

2 cm

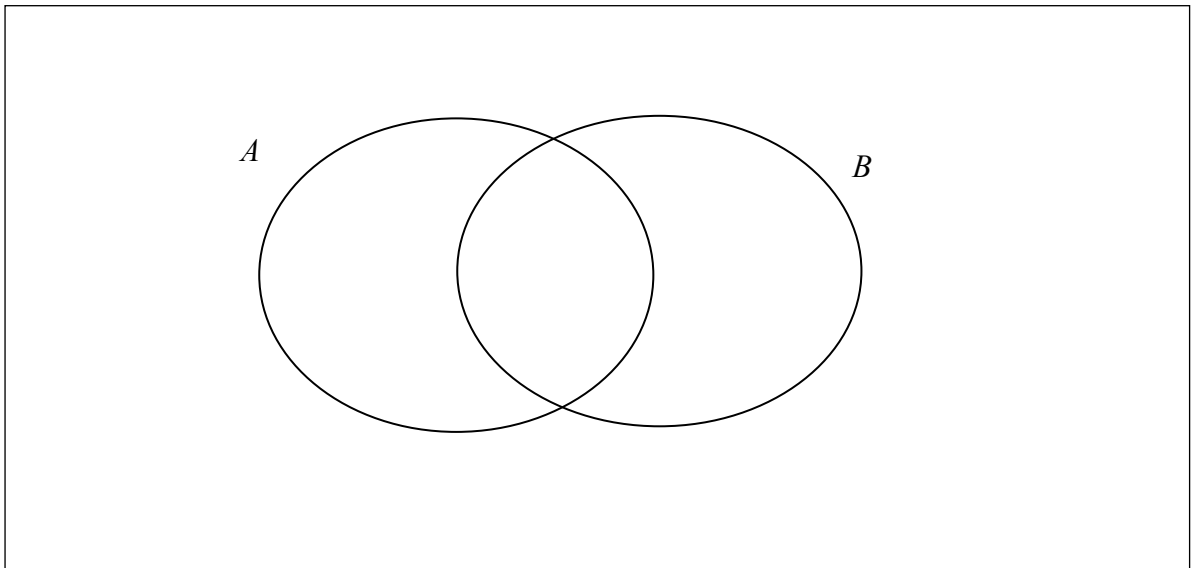**(iii)** How many of these wooden cubes can be made from the block of wood in part **(i)**?

6. **(a)** Complete the following, putting the correct number in each box below:

$$\frac{1}{2} = \frac{\boxed{}}{6} \qquad\qquad \frac{1}{3} = \frac{\boxed{}}{6}$$

$$\frac{1}{2} + \frac{1}{3} = \frac{\boxed{}}{6}$$

(b) $A = \{1, 5, 7, 9\}$ and $B = \{7, 9, 11\}$

(i) Show the elements of the sets A and B on the Venn diagram below.

(ii) List the elements of $A \cap B$.

$$A \cap B = \{ \quad , \quad \}$$

Part (c) on next page

(c)   Sarah works as a tour guide in Paris.

Her gross pay is €400 per week.

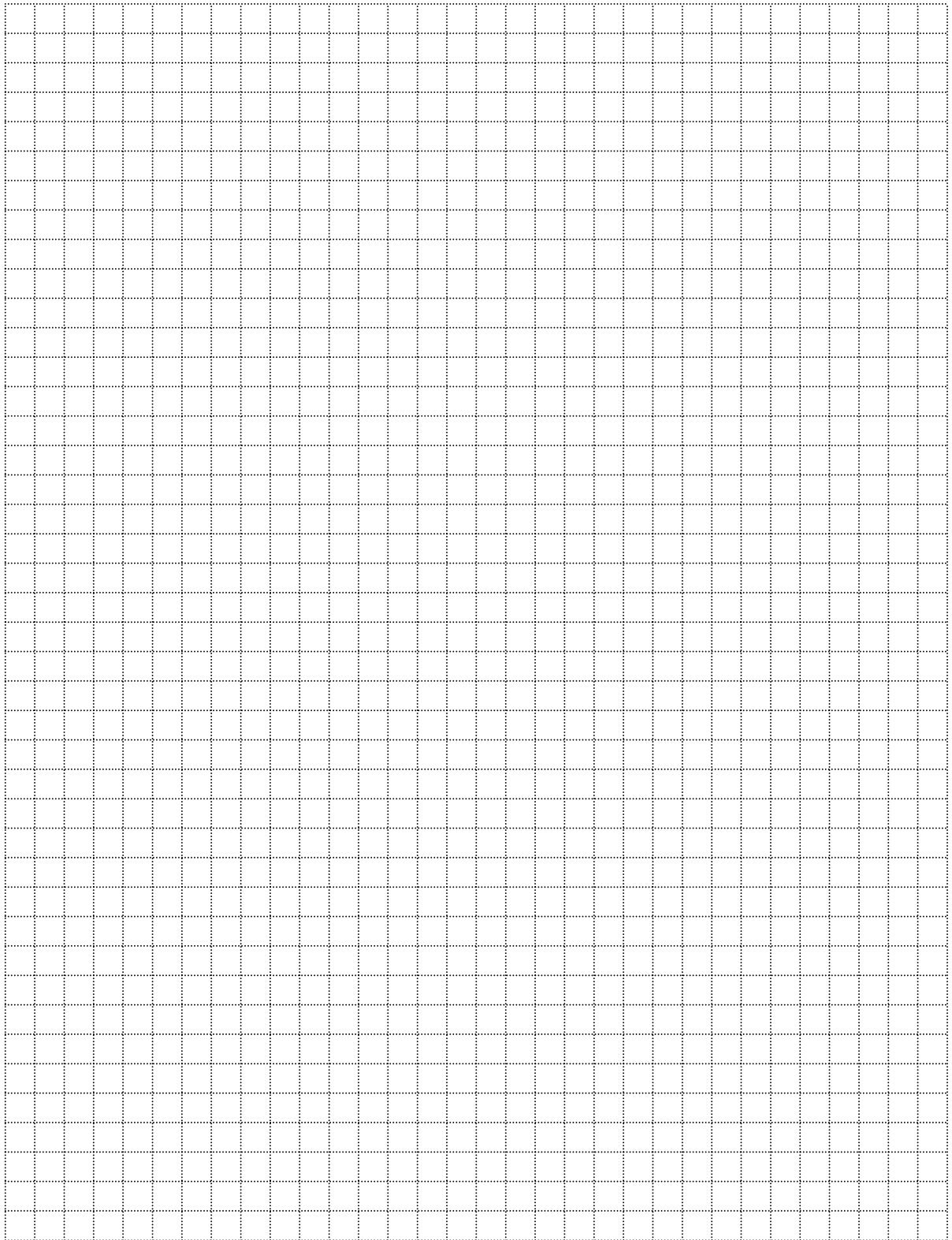**(i)**   Tax is paid at 20%. What is the total tax due each week on Sarah's gross pay?

✍

(ii)   Sarah has tax credits of €50 per week.
Find how much tax she pays each week.

✍

(iii) Use your answer from part **(ii)** to calculate Sarah's take home pay.

✍

Space for extra work

Space for extra work