



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2024
Mathematics
Foundation Level

Friday 7 June Afternoon 2:00 - 4:30

300 marks

Examination Number

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

Date of Birth

<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>	/	<input type="text"/>	<input type="text"/>
----------------------	----------------------	---	----------------------	----------------------	---	----------------------	----------------------

For example, 3rd February
2005 is entered as 03 02 05

Centre Stamp

Do not write on this page

Instructions

There are **two** sections in this examination paper.

Section A 210 marks 8 questions

Section B 90 marks 3 questions

Answer questions as follows:

- any **seven** questions from Section A
- any **two** questions from Section B

Write your Examination Number into the box on the front cover.

Write your answers in blue or black pen. You may use pencil in graphs and diagrams only.

This examination booklet will be scanned and your work will be presented to an examiner on screen. Anything that you write outside of the answer areas may not be seen by the examiner.

Write all answers into this booklet. There is space for extra work at the back of the booklet. If you need to use it, label any extra work clearly with the question number and part.

The superintendent will give you a copy of the *Formulae and Tables* booklet. You must return it at the end of the examination. You are not allowed to bring your own copy into the examination.

In general, diagrams are not to scale.

You will lose marks if your solutions do not include relevant supporting work.

You may lose marks if the appropriate units of measurement are not included, where relevant.

You may lose marks if your answers are not given in simplest form, where relevant.

Write the make and model of your calculator(s) here:

Section A**210 marks**

Answer **any seven** questions from this section.

Question 1**(30 marks)**

- (a)** Darek wants to hang wallpaper in some rooms in his house.
He has estimated that he will need 10 rolls of wallpaper.

A single roll of wallpaper costs €14.50.

- (i)** Find the cost of 10 rolls of wallpaper.

- (ii)** Darek can also buy wallpaper in packs of 5 rolls.
One pack of five rolls costs €65.

Find how much Darek will save if he buys the 10 rolls of wallpaper in packs of 5 instead of single rolls of wallpaper.

- (b) (i)** On Monday Gráinne drove 40 km at 80 km/hour.
Find how long it took Grainne to drive this distance.

- (ii)** On Tuesday Gráinne drove 190 km.
It took her 2 hours to drive this distance.
Calculate her average speed in km/hour.

Question 4

(30 marks)

Molly is holding auditions for the school musical.

In **total**, 6 boys and 5 girls auditioned.

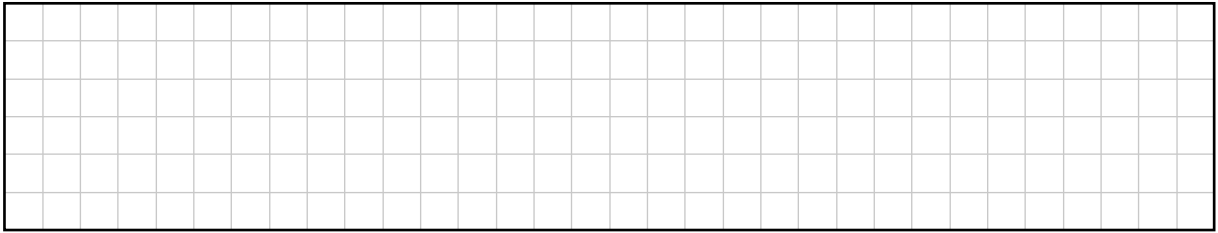
(a) All students have an equal chance of getting the lead role.

(i) What is the probability that a boy will get the lead role?

(ii) 2 of the boys were from junior cycle and 3 of the girls were from junior cycle.
All other students were from senior cycle.

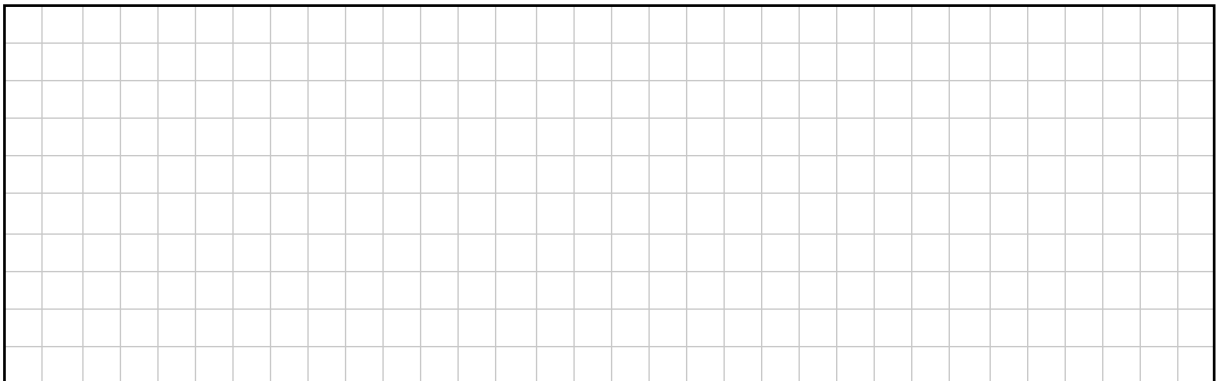
How many senior cycle students auditioned?

(iv) Work out the percentage of people from the survey that are 30 years old or older.



(b) Amira and Kevin started collecting their data at 7:30 p.m.
They spent 1 hour 45 minutes collecting the data.

At what time did they finish?



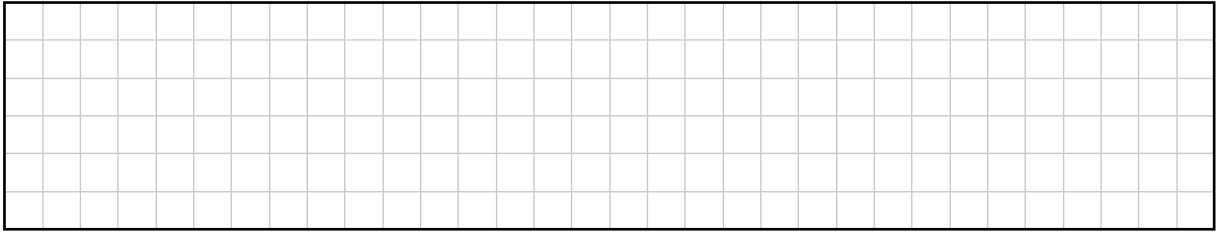
Question 6

(30 marks)

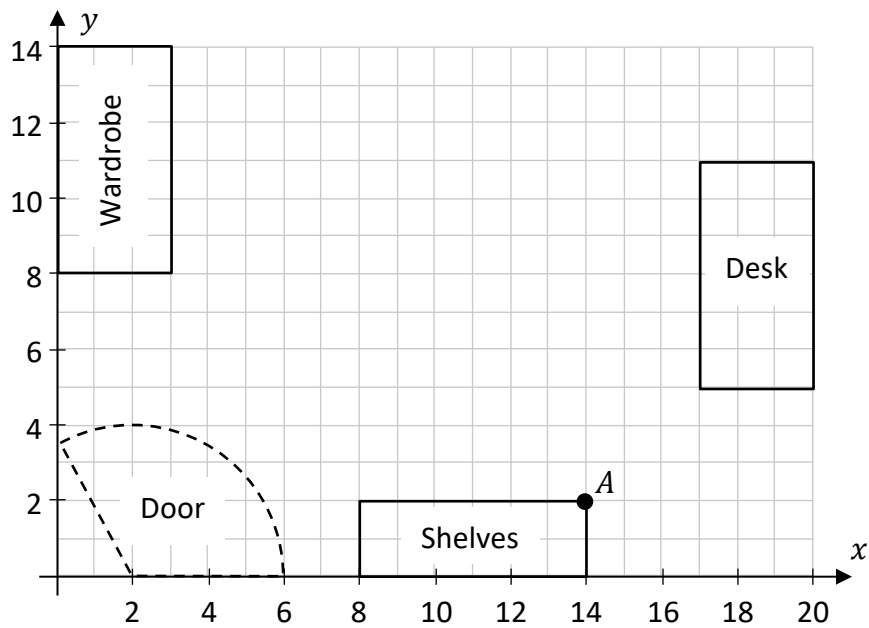
Ciara is redesigning her bedroom.

- (a)** Her bedroom floor is a rectangle with a length of 4 m and a width of 2.8 m.

Find the **area** of Ciara’s bedroom floor, in m^2 .



- (b)** Ciara draws the scaled co-ordinate diagram of her bedroom shown below. Some of her furniture is shown in the diagram. The door opening is also shown.



- (i)** Write down the co-ordinates of the point *A* from the diagram.

$A = (\quad , \quad)$

(ii) Ciara's bed is a rectangle which is 5 units wide and 10 units long.

Draw the bed in a position on the diagram on the previous page so that it does not overlap with any of the given furniture or with the door opening in the room.

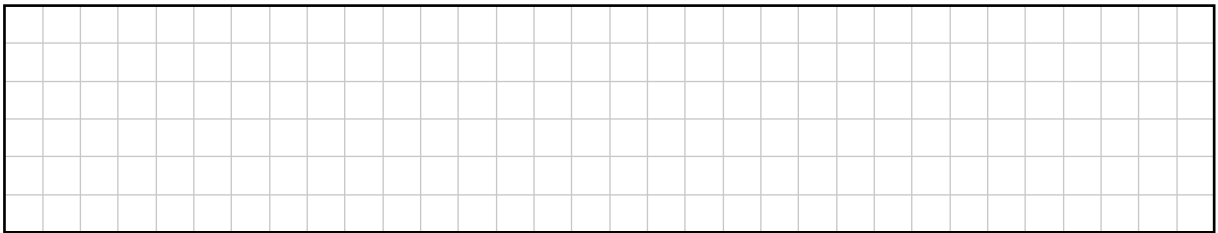
(iii) Ciara uses the following scale for her co-ordinate diagram:

1 unit in Ciara's co-ordinate diagram is equal to 20 cm in reality.

On the diagram, Ciara's desk is 6 units long.

How long is Ciara's desk in reality?

$$6 \text{ units} = \boxed{} \text{ cm}$$



Question 7

(30 marks)

(a) Rory is designing a sports kit. The colours available are shown in the table below.

Jersey	Shorts	Socks
Red	White	Black
Blue	Black	White
Green	Red	
Yellow		

Find how many different choices of kit are possible if he must choose a colour for the jersey, a colour for the shorts and a colour for the socks.

(b) A sliotar is a ball used for the game of hurling. It is in the shape of a sphere.

Work out the volume of a spherical sliotar with a radius of 3.5 cm.

Give your answer correct to the nearest cm^3 .

- (c) The co-ordinate diagram below shows a picture of a hurley, labelled **A**. It also shows three transformations of **A**, labelled **X**, **Y** and **Z**.

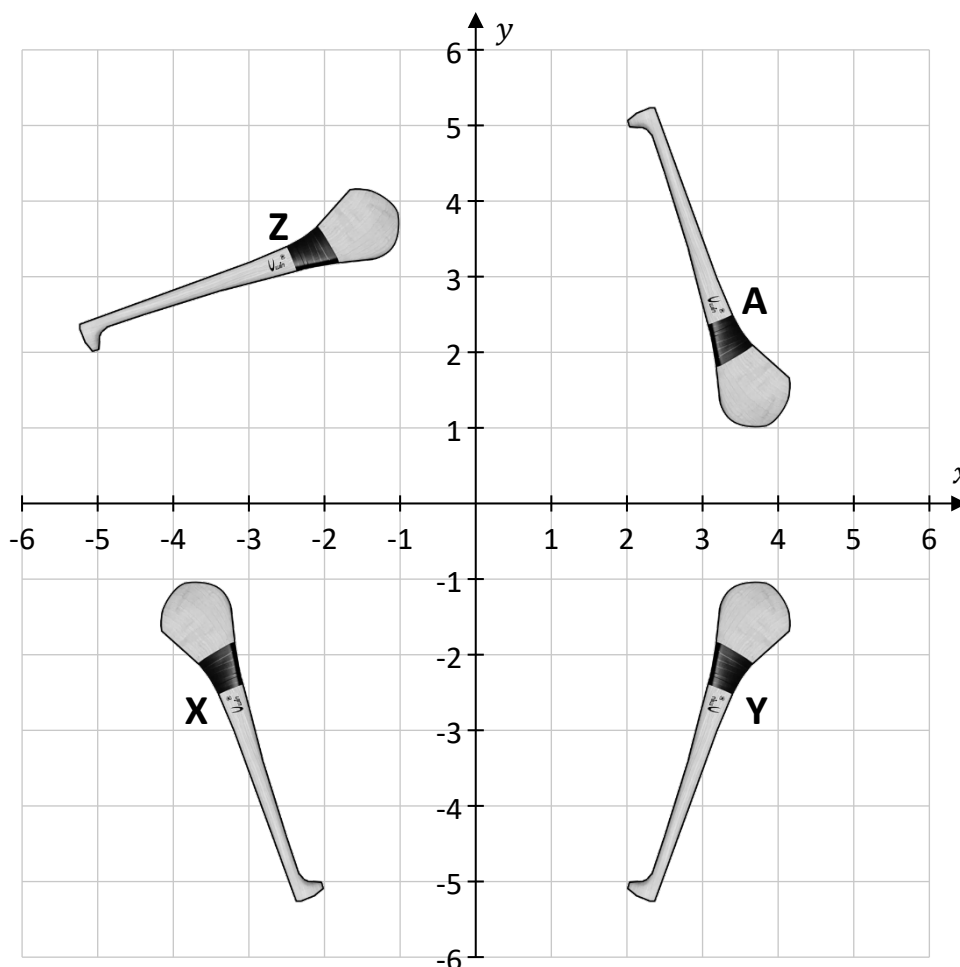
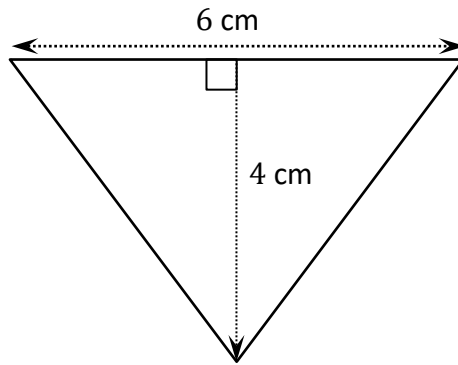


Image: www.elverys.ie. Altered.

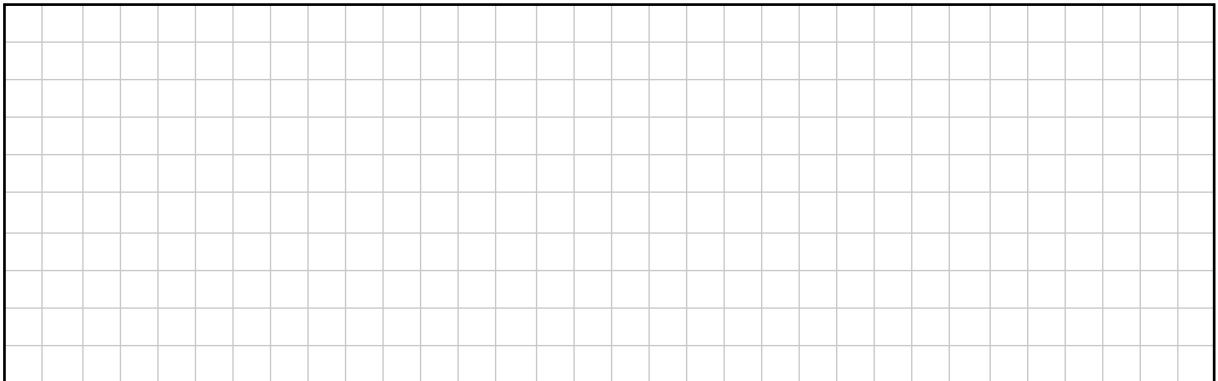
Complete the table below by writing the correct letter (**X**, **Y** or **Z**) to show the image of **A** under each transformation.

Transformations of A	X , Y or Z
Axial symmetry in the x -axis	
90° rotation anticlockwise about $(0, 0)$	
Central symmetry through the point $(0, 0)$	

- (b) A different company has a logo in the shape of a triangle, with a base of 6 cm and a height of 4 cm, as shown in the diagram below.

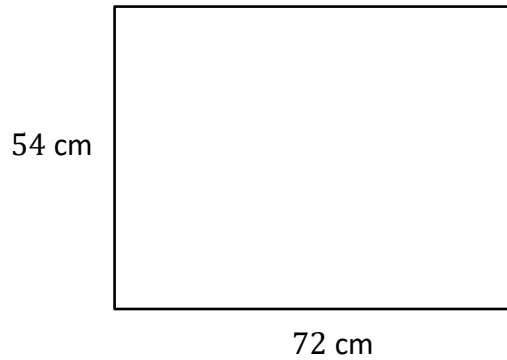


Find the area of the triangle.

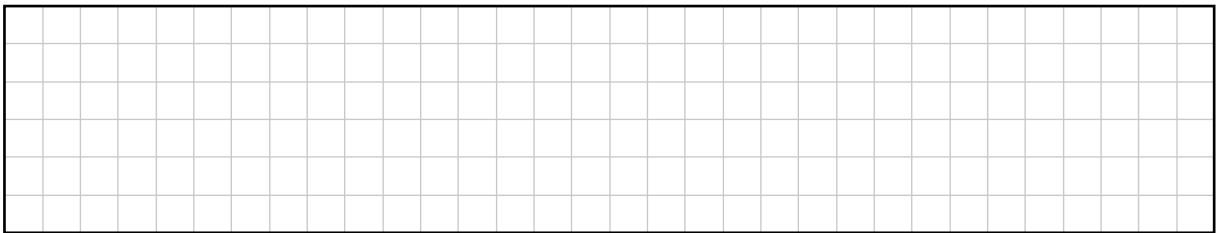


Section B**90 marks**Answer **any two** questions from this section.**Question 9****(45 marks)**

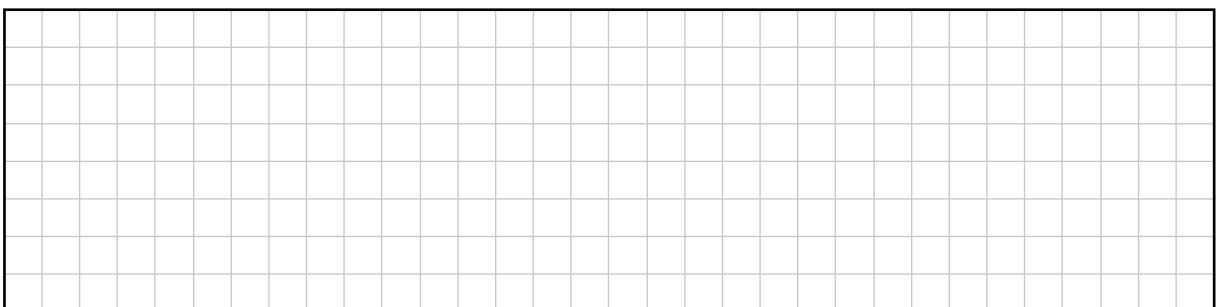
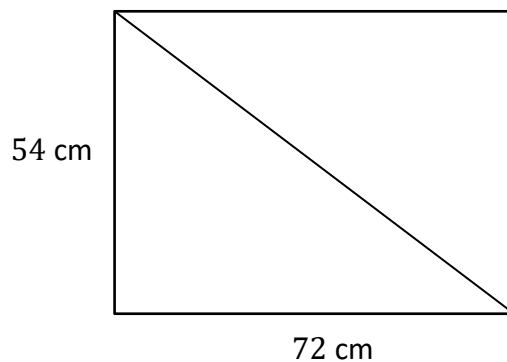
- (a) Sheila is making a rectangular jigsaw, with length 72 cm and width 54 cm, as shown in the diagram below.



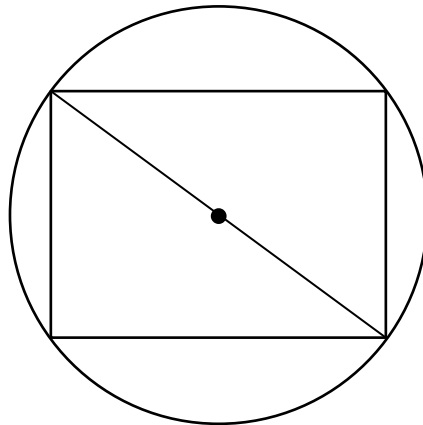
- (i) Find, in cm, the perimeter of the jigsaw.



- (ii) Use Pythagoras' Theorem to show that the length of the diagonal of the jigsaw is 90 cm.



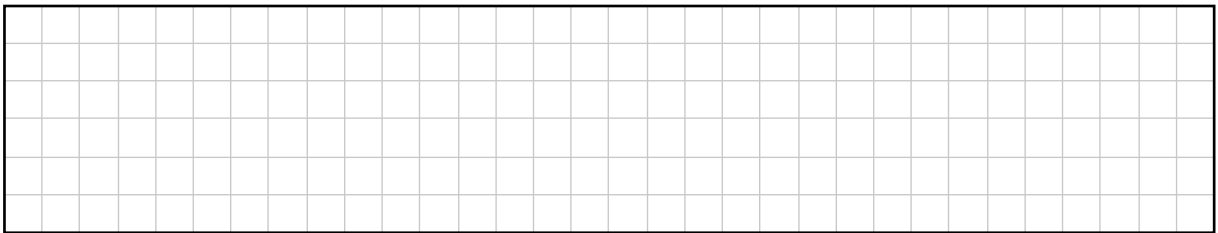
- (b) The jigsaw is being made on a circular table where all four corners of the jigsaw are on the edge of the table, as shown in the diagram below.



- (i) Write down the radius of the circular table. Remember the diameter is 90 cm.

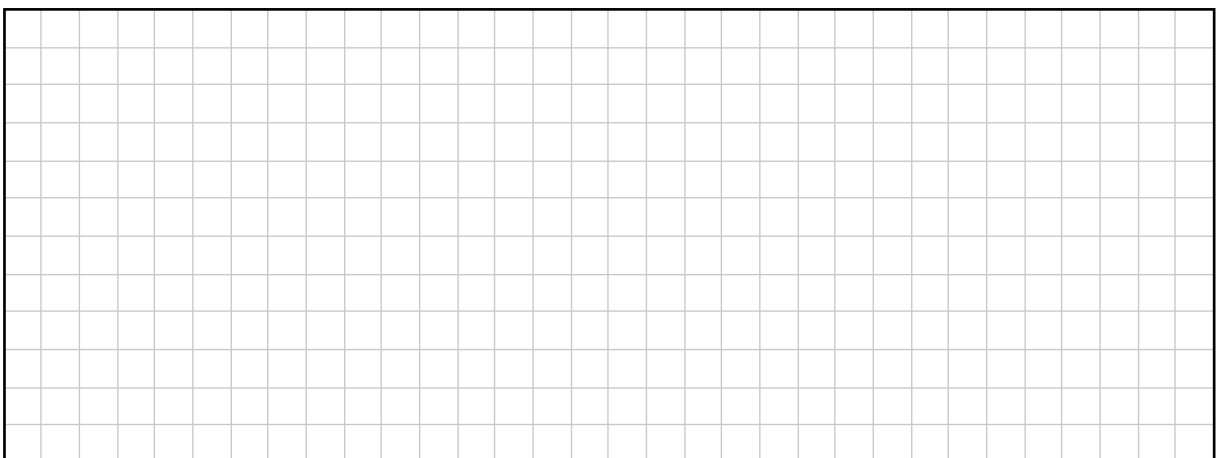
Radius = cm

- (ii) Hence, work out the **area** of the circular table.
Give your answer correct to the nearest cm^2 .



- (c) Natalie was in America and she bought a jigsaw for \$20.
The exchange rate was $\text{€}1 = \$1.07$.

Find how much the jigsaw cost in euro.
Give your answer correct to 2 decimal places.



This question continues on the next page.

(d) Paul is making a jigsaw.

- In the first hour he makes $\frac{1}{8}$ of the jigsaw.
- In the second hour he makes 15.3% of the jigsaw.
- In the third hour he makes 0.162 of the jigsaw.

Find what **percentage** of the jigsaw he has made after three hours.

(e) Rían is making a different jigsaw. It has 500 pieces.
He knows that, on average, he can put together 24 pieces in 10 minutes.

Work out how long it will take him to complete the jigsaw.

Give your answer in **hours**, correct to 1 decimal place.

Question 10

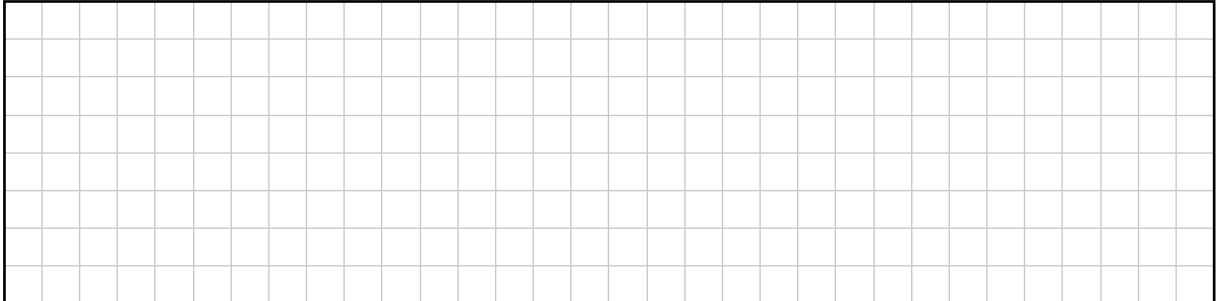
(45 marks)

Marko works in a restaurant.

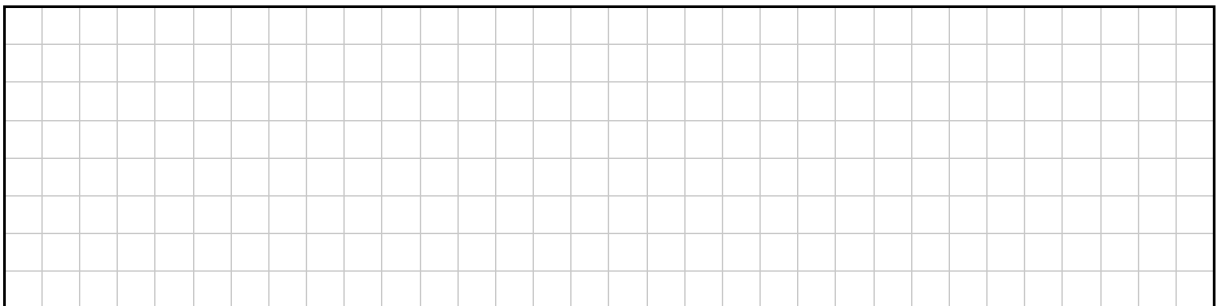
He gets paid at a rate of €14 per hour from Monday to Saturday.

In general, Marko works an 8-hour shift.

- (a) (i) Work out how much Marko gets paid in total for an 8-hour shift.



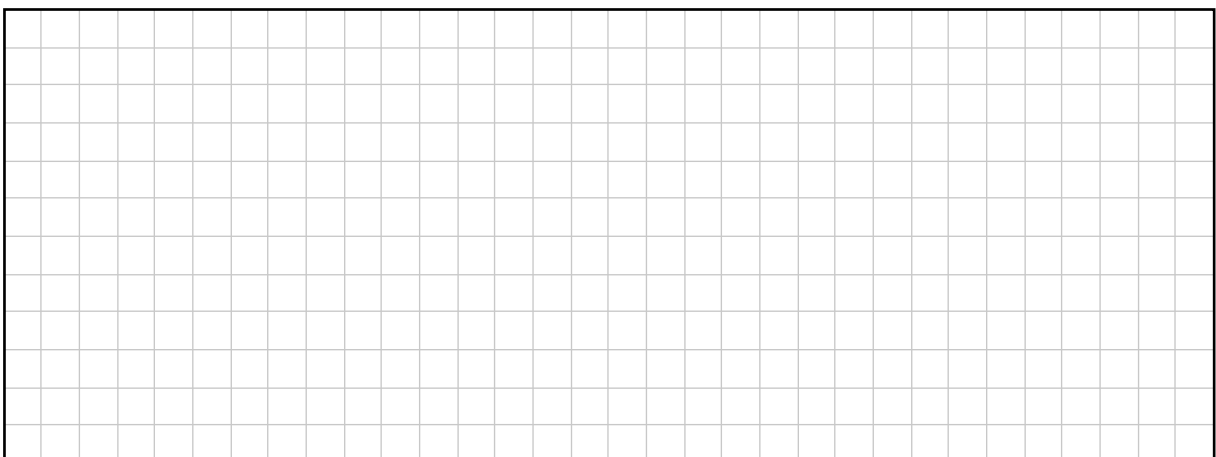
- (ii) Marko gets paid 50% extra on a Sunday.
Find how much he gets paid **per hour** when he works on a Sunday.



- (iii) One week, Marko works:

- **four** 8-hour shifts from Monday to Thursday, and
- **one** 6-hour shift on a Sunday.

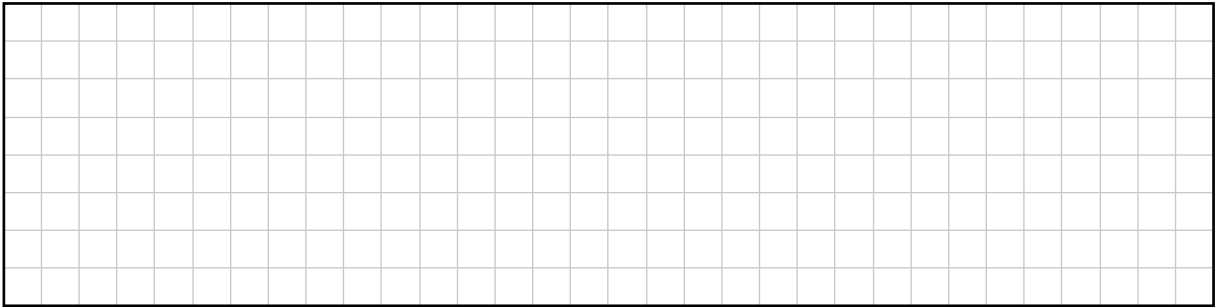
Work out how much he earns for this week.



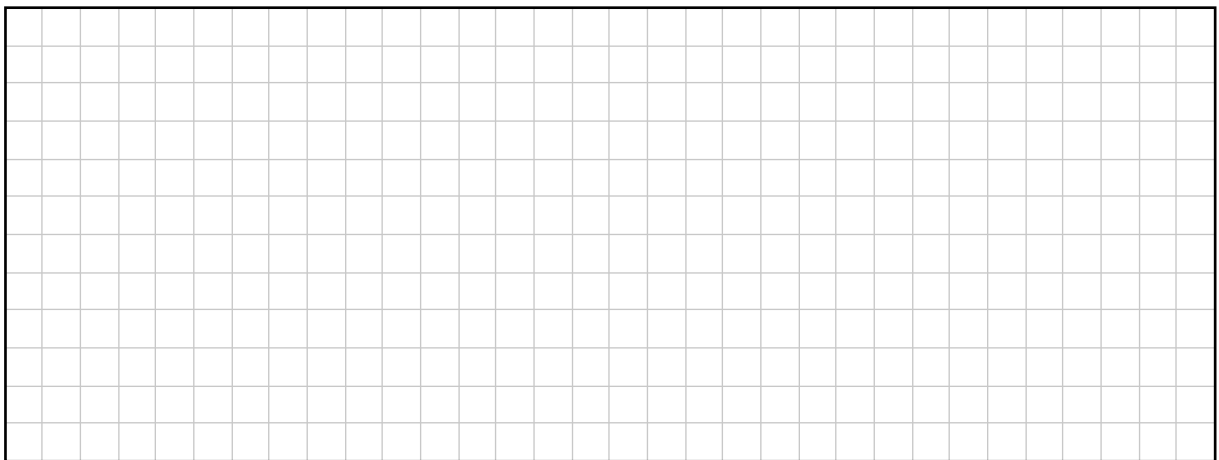
This question continues on the next page.

(b) On a different week, Marko earns a gross income of €609.
He pays income tax at the standard rate of 20%.

(i) Find Marko's gross tax for this week.



(ii) He has a tax credit of €68.27 per week.
Find his net pay for the week.



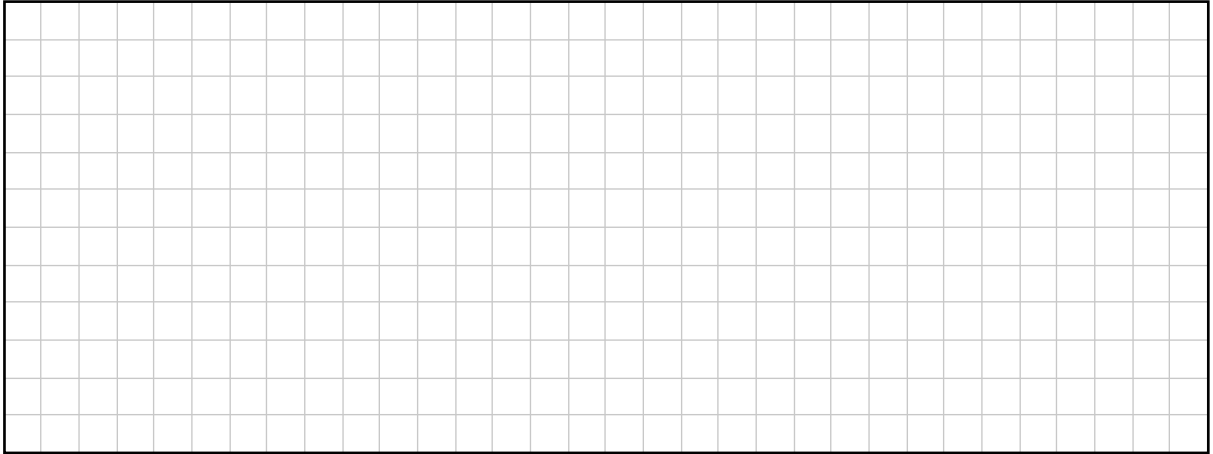
(b) Nadia puts an ice pack in a freezer.

The temperature of the freezer is -19°C .

The temperature of the ice pack now is 17°C .

The temperature in the ice pack will decrease by 9°C per hour.

Work out how many hours it will take for the temperature of the ice pack to reach -19°C .



This question continues on the next page.

- (c) Aaron is playing in a game where a new scoring system is being trialled. In the new scoring system you can either score a goal for **G** points or a behind for **B** points. Aaron scored 3 goals and 2 behinds in the game. He wrote his score as:

$$3 \mathbf{G} + 2 \mathbf{B}$$

- (i) Tom scored 2 goals and 5 behinds in the game. Write Tom's score in terms of **G** and **B**.

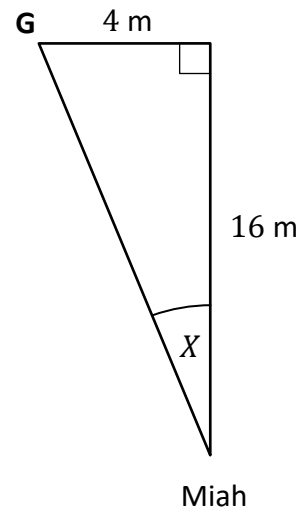
- (ii) A goal (**G**) is worth 7 points and a behind (**B**) is worth 2 points. Work out who scored more points in the game, Aaron or Tom. Use calculations to support your answer.

Scored more points:	Aaron	Tom
(Tick (✓) one box only)	<input type="checkbox"/>	<input type="checkbox"/>

Calculations:

(d) Miah is kicking a ball where she is aiming at the point G.

Some lengths are shown in the diagram.
The angle X is also shown.

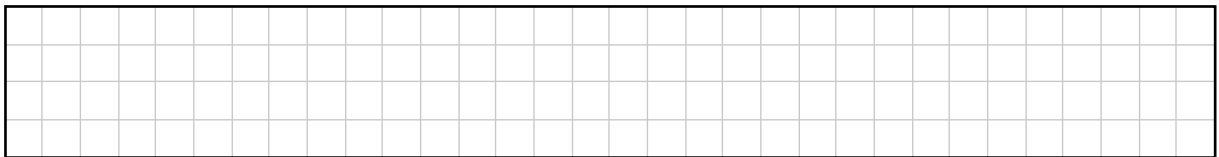


(i) Miah wants to find the size of the angle X .
Fill in the table to show which length is opposite to the angle X and which length is adjacent to the angle X .

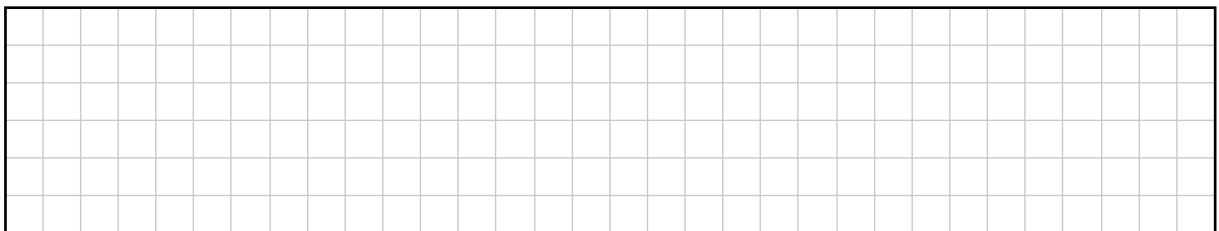
	Lengths (16 m or 4 m)
Opposite to X	
Adjacent to X	

(ii) Use the lengths from **part (d)(i)** to find the value of $\tan X$.

$$\tan X = \frac{\boxed{}}{\boxed{}}$$

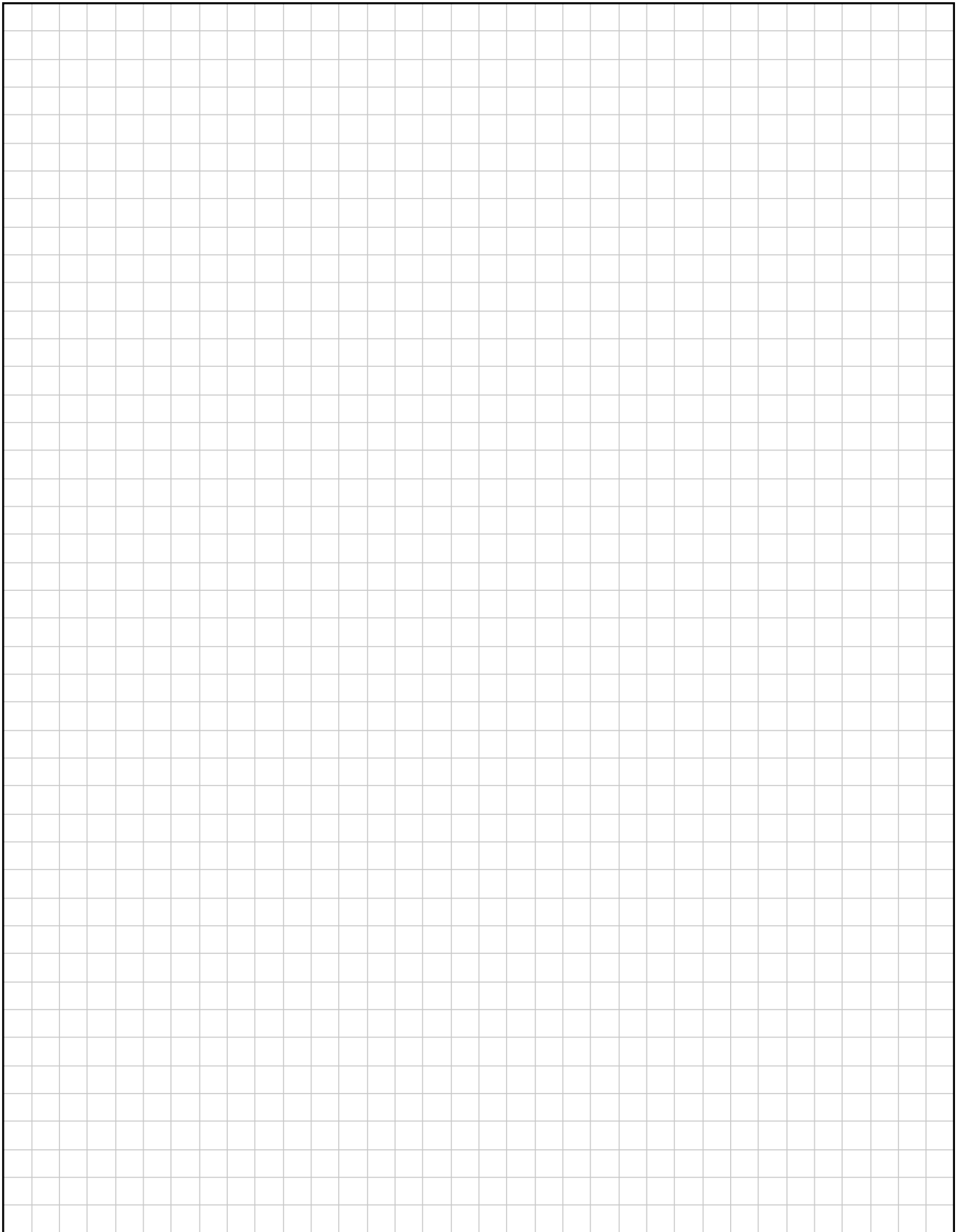


(iii) Hence, find the size of the angle X .
Give your answer correct to the nearest degree.



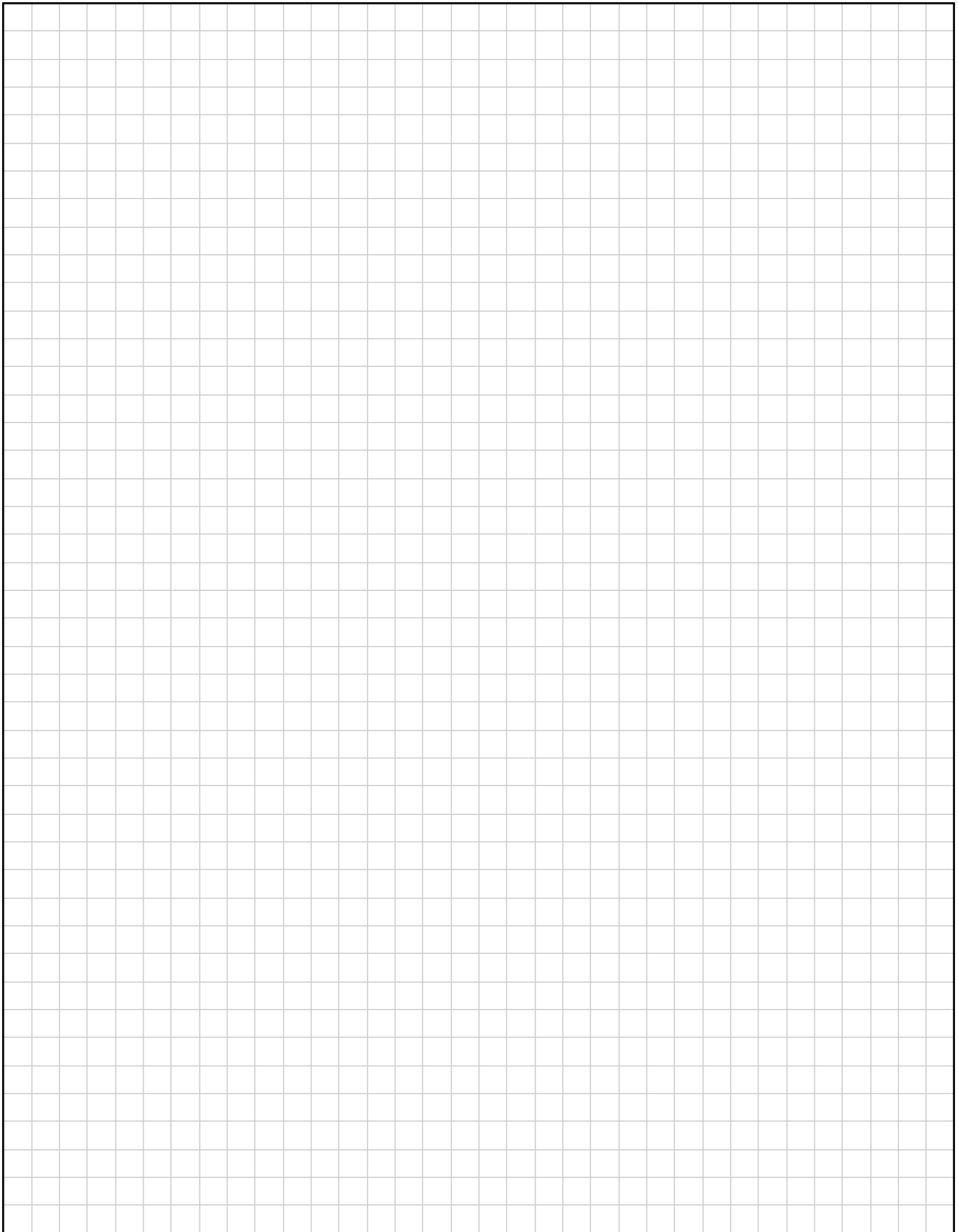
Page for extra work.

Label any extra work clearly with the question number and part.



Page for extra work.

Label any extra work clearly with the question number and part.



Do not write on this page

Copyright notice

This examination paper may contain text or images for which the State Examinations Commission is not the copyright owner, and which may have been adapted, for the purpose of assessment, without the authors' prior consent. This examination paper has been prepared in accordance with Section 53(5) of the *Copyright and Related Rights Act, 2000*. Any subsequent use for a purpose other than the intended purpose is not authorised. The Commission does not accept liability for any infringement of third-party rights arising from unauthorised distribution or use of this examination paper.

Leaving Certificate – Foundation Level

Mathematics

Friday 7 June

Afternoon 2:00 - 4:30