Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied 2025

Mathematical Applications

(200 marks)

Friday 6 June
Morning 9:30 to 11:30

General Directions

1. Write your EXAMINATION NUMBER in this space:
2. Write all answers in the spaces in this answerbook.
3. Show all supporting work in the space provided.
4. Include the appropriate units of measurement in your answer, where relevant.
5. Calculators may be used.
6. A copy of the *Formulae and Tables* booklet is available from the superintendent.
7. There are 6 questions on this examination paper. Answer **all** questions. Questions do not necessarily carry equal marks.

For Superintendent
Centre Stamp

For Examiner	
Running Total	
Credit	

For Examiner		
Q	Ex.	Adv. Ex.
1		
2		
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4		
5		
6		
Total		

Question 1

Martin wants to buy the Lego set shown in the image below.

(a) The Lego set costs €120.

(i) Martin saves €5 per week. How many weeks does it take him to save €120?

(ii) There is a flash sale in the shop on the day that Martin buys the Lego set.

The discount offers are given in the image below.
Only **one** discount can be applied.

Work out the sale price of the Lego set.

(b) The Lego box is rectangular in shape with length $47{\cdot}8$ cm, width 7 cm, and height 28 cm.
Work out the **volume** of the box, in cm^3.

(c) The Lego set contains five numbered packets.
Martin records the time it takes him to build each packet.
The times are shown in the table below.

Packet	Time
1	50 minutes
2	65 minutes
3	45 minutes
4	55 minutes
5	55 minutes

Work out the **total time** it takes him to complete the Lego set.
Give your answer in hours and minutes.

(d) The completed Lego set is a scaled model of a real-life car. The scale is $\mathbf{1:12}$.
The length of the Lego model car is 39 cm.

Work out the length of the real-life car. Give your answer correct to the nearest **metre**.

Question 2

Freya is recording weather data.

(a) Freya measures the temperature outside her house at 11 a.m. every day for 7 days. Her values are given in the table below.
Use the data in the table to answer parts **(a)(i)** to **(a)(iv)**.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Freya's Values $(°C)$	7	6	7	50	9	6	6

(i) Work out the **median** temperature for the 7 days.

(ii) Work out the **mean** temperature for the 7 days.

Freya made a **mistake** recording the temperature on one of the days in the table above.

(iii) Which day do you think did Freya make the mistake?
Give a reason for your answer.

Day:

Reason:

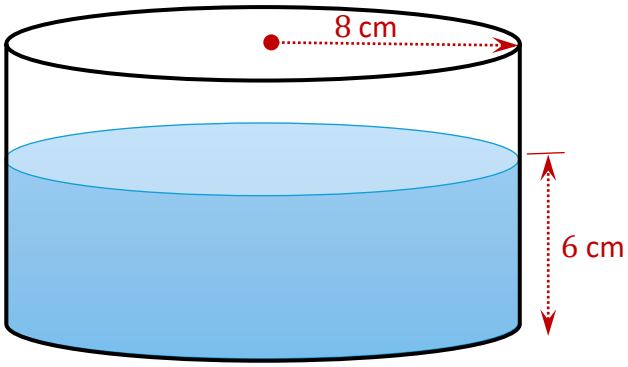
(iv) Freya realises her mistake was measuring the temperature in **degrees Fahrenheit**, instead of **degrees Celsius** on that day.

Use the appropriate formula below to convert the value recorded on the day you picked in part **(iii)** from degrees Fahrenheit (F) into degrees Celsius (C).

Celsius to Fahrenheit	**Fahrenheit to Celsius**
$F = \frac{9}{5}C + 32$	$C = \frac{5}{9}(F - 32)$

(b) Freya uses a cylindrical container to measure rainfall.
The container has a radius of 8 cm. The height of the rain water in the container is 6 cm.

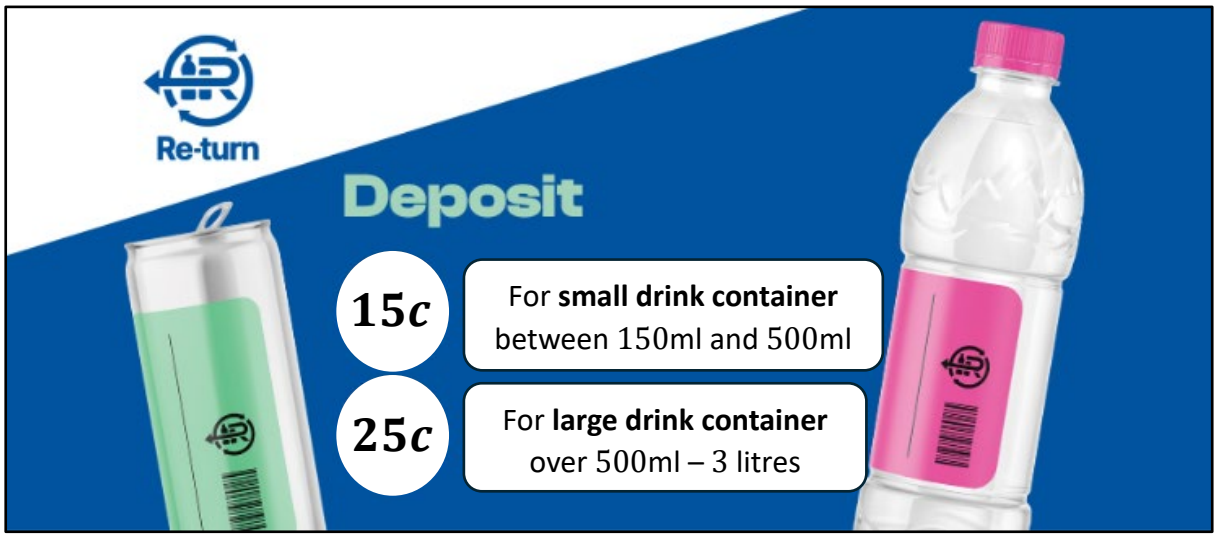
Work out the **volume** of the rain water in the container.
Give your answer in **litres**, correct to 1 decimal place.
(*Note*: 1 litre $= 1000$ cm^3)



Question 3

When you buy a drink with the Re-turn logo, you are charged a small deposit. You can claim this deposit back by returning the empty drink container to a reverse vending machine.

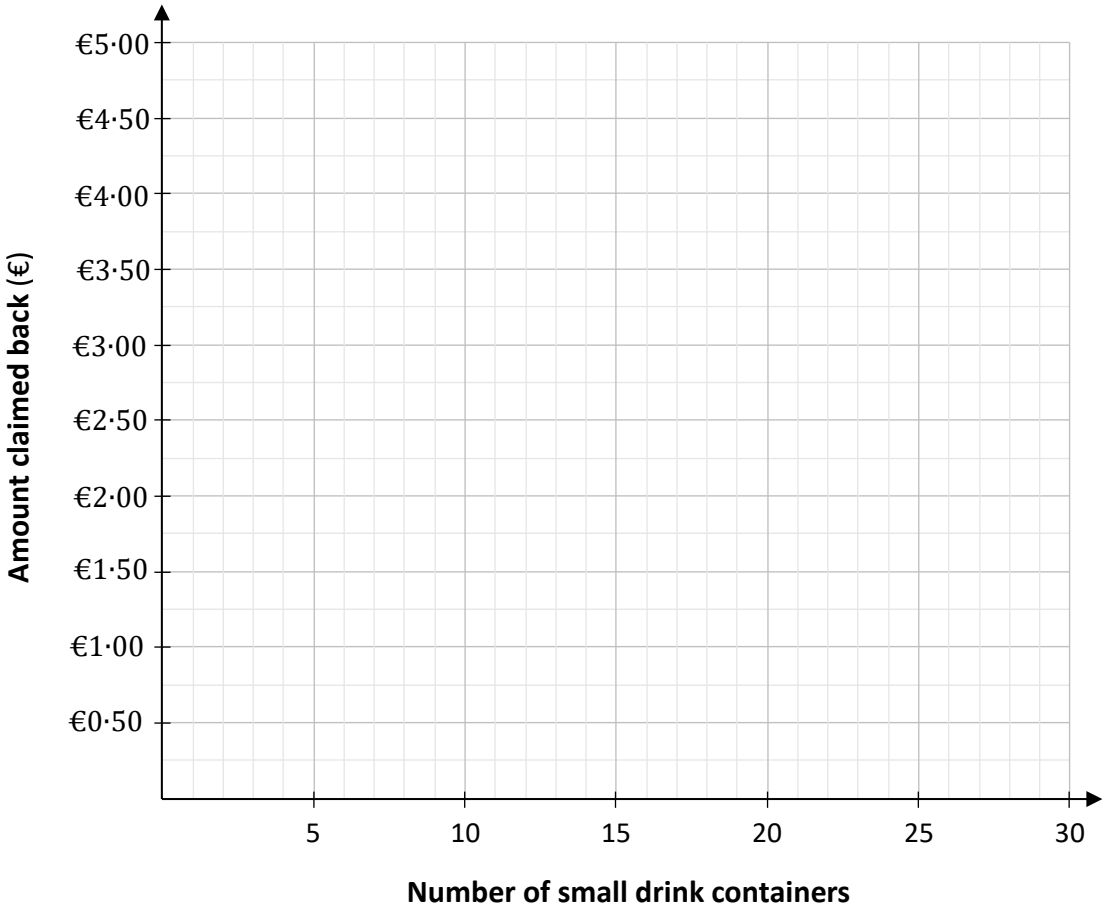
The deposit depends on the size of the drink container as shown in the graphic below.



(a) **(i)** Complete the table below to show the amount you can claim back for returning each of the given number of **small drink containers.**

Number of small drink containers	Amount claimed back (€)
0	0
5	0·75
10	1·50
15	
20	3·00
25	
30	

(ii) Draw a **straight-line graph** on the axes below to show the information from the table in part **(a)(i)**.



(iii) Use your graph to estimate the amount you can claim back when returning **18 small drink containers**. Show your work on the diagram.

(b) Freya returned **12 small drink containers** and some **large drink containers**.
She claimed back €5·55.

Work out how many **large drink containers** she returned.
Remember that Freya gets 25 cent for each large container she returns.

Question 4

In 2024, the music band Coldplay had stationary bikes at their concerts that could generate electricity for the stage lighting.

(a) It is estimated that **1 person** cycling for **1 minute** generates **15 watts** of power.

(i) Work out how many watts of power are generated by **1 person** if they cycle for **10 minutes**.

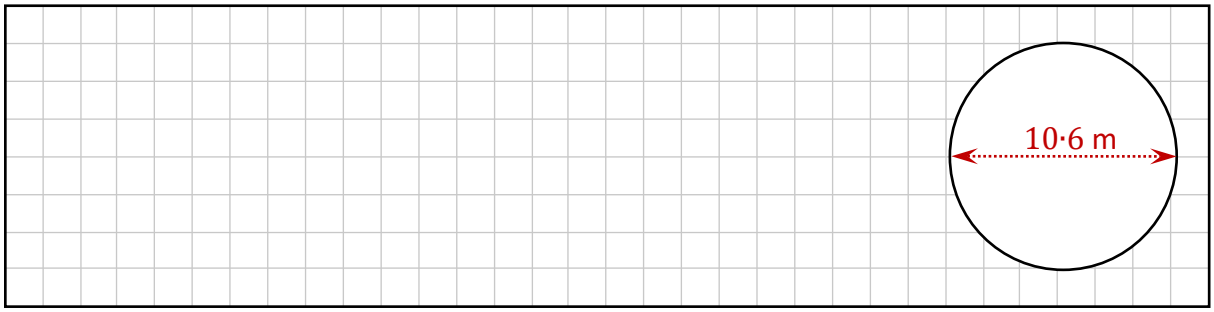
(ii) Hence, work out how many watts of power are generated in total by **50 people** if they each cycle for **10 minutes**.

(iii) The concert lighting requires **15 000 watts** of power every **10 minutes**.

How many people would need to be cycling for the 10 minutes to meet this energy requirement?

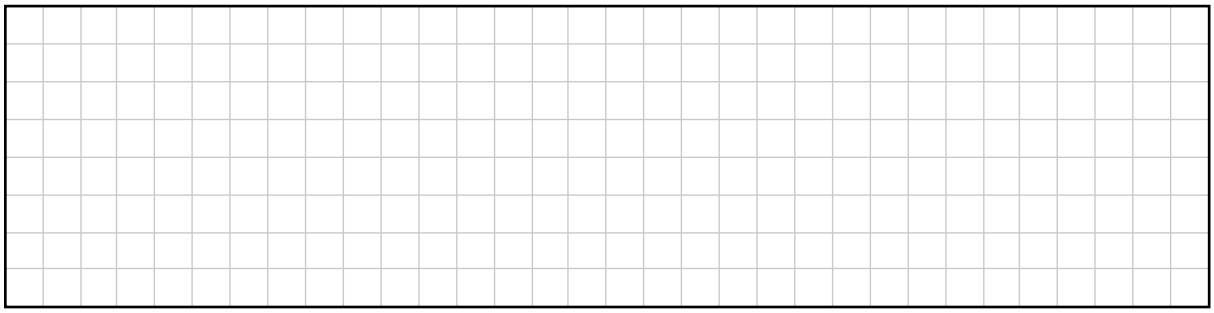
(b) There were two screens on the stage at the concerts.
Each screen was in the shape of a circle with a **diameter** of $10{\cdot}6$ m.

Work out the **area** of one screen.
Give your answer in m^2, correct to 2 decimal places.

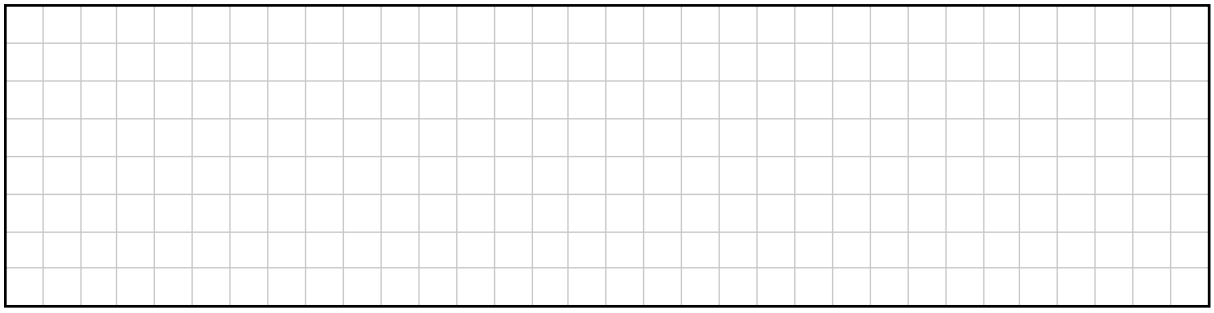


(c) Jack travelled from New York to Ireland to attend a concert.

(i) Jack's concert ticket cost €120, which included a booking fee of €15.
Write the booking fee as a **percentage** of the total ticket cost.



(ii) Jack's flight cost €570. The exchange rate was €1 = \$1·06 US dollars.
Work out the cost of the flight in US dollars (\$).



Question 5

(a) Zsolt wants to put a new wooden floor in his bedroom.
The floor is rectangular in shape with a length of 6 m and a width of 4 m.

(i) Work out the **area** of the bedroom floor, give your answer in m^2.

(ii) When laying wooden floors, it is advised to purchase an extra 12% for wastage.
Work out the total area of flooring needed, including wastage.

(iii) The wooden floor is sold in packs. Each pack covers an area of $2{\cdot}5$ m^2.
Work out the least number of packs needed for the bedroom, including the extra $12{\cdot}5\%$ for wastage.

(b) Zsolt hires a carpenter to fit the wooden floor.
Some information about the cost is given in the box below.

- Wooden floor: €385
- Underlay: 2 rolls at €75 each
- Labour: €50 per hour for 5 hours

Use this information to complete the following invoice.

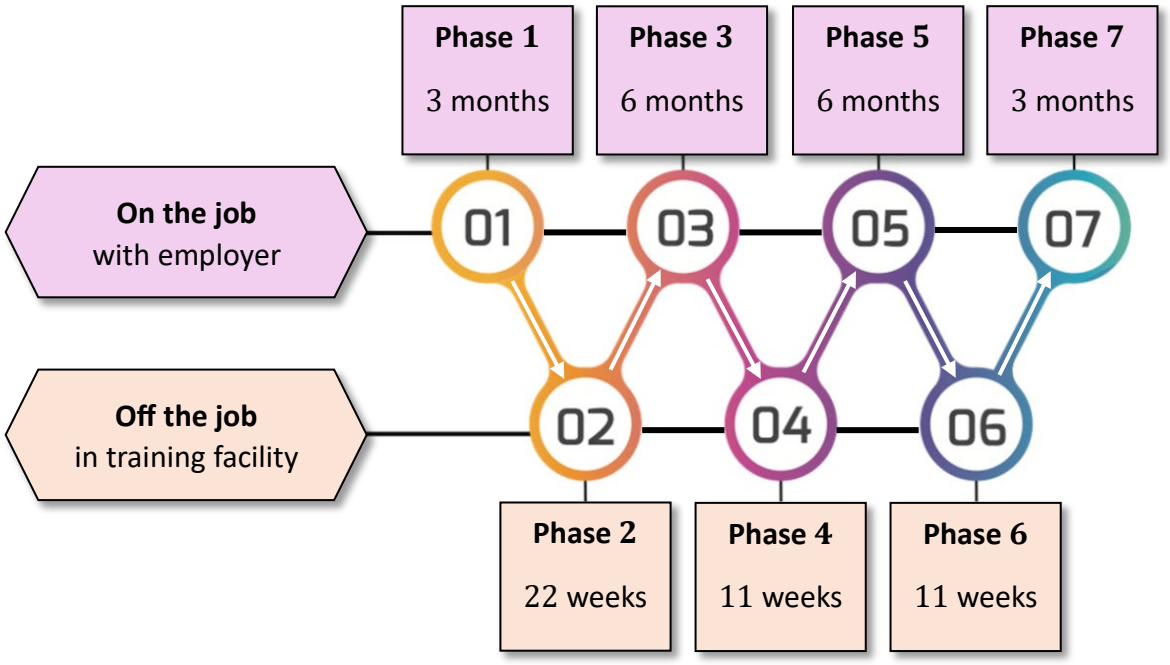
Flooring Installation Invoice

Date	3rd June 2025
Invoice Number	#1056
Wooden Floor	€
Underlay	€
Labour	€
Total	€

Question 6

The graphic below shows the breakdown of an apprenticeship programme.
It is made up of 7 phases:

- 4 phases of **on the job** training with the employer, and
- 3 phases of **off the job** training in a training facility.



(a) Use the diagram above to answer the following questions.

(i) Work out how much time is spent in **on the job** training with the employer.
Give your answer in **months**.

(ii) Work out how much time is spent in **off the job** training in the training facility.
Give your answer in **weeks**.

(iii) There is approximately $4{\cdot}3$ weeks in a month.
Use this to convert your answer from part **(ii)** above into months.
Give your answer correct to the nearest whole number.

(iv) Work out the **total time** it takes to complete the apprenticeship.
Give your answer in **years and months.**

This question continues on the next page

(b) Mary's gross pay per week is €423·65 during phase 4 of her apprenticeship.

(i) Mary pays income tax at a rate of 20% on her gross pay.
Work out her **gross tax** per week.

(ii) Mary has a tax credit of €71·43 per week.
Use the formula below to work out her **net tax** per week.

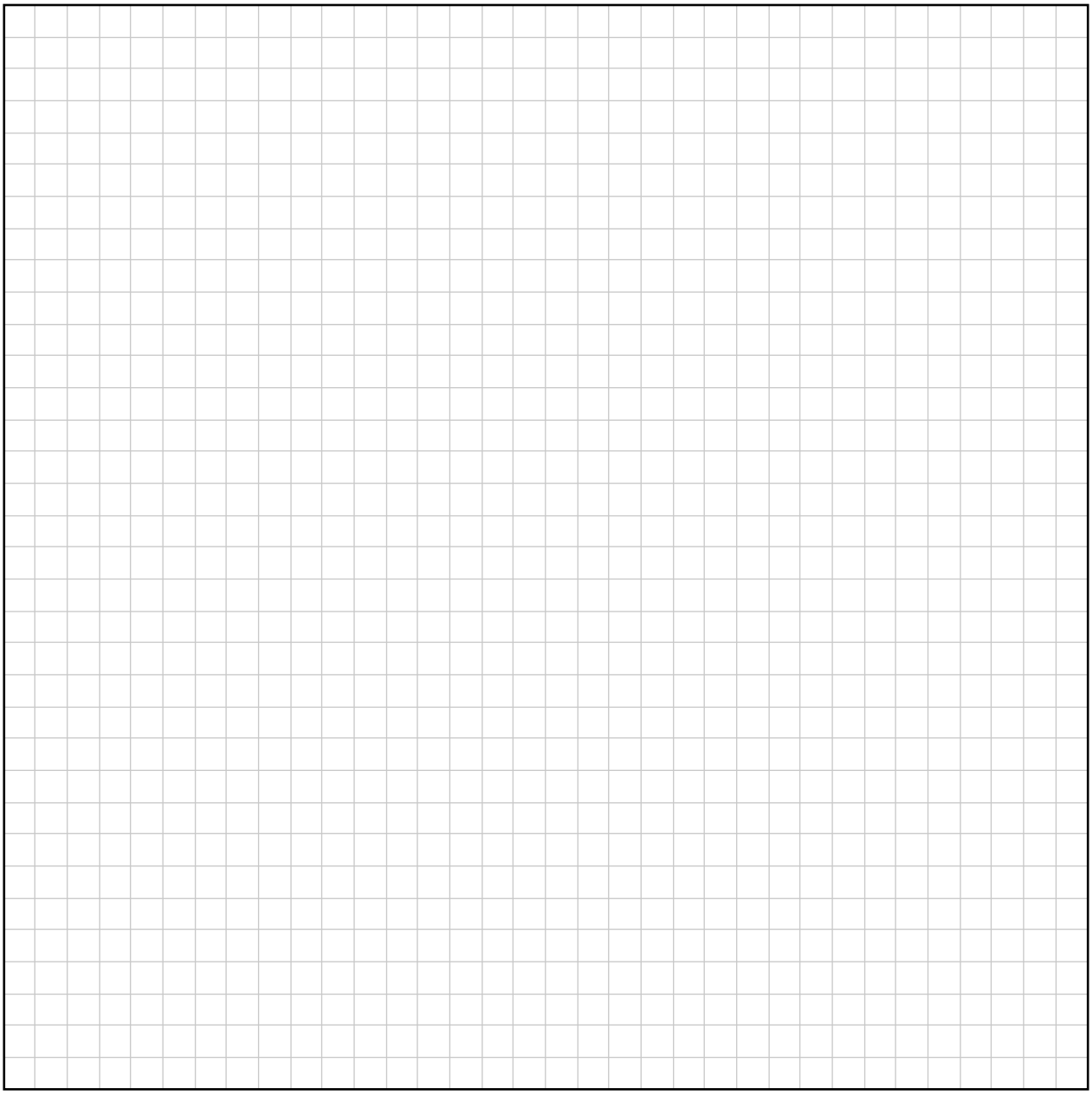
$$\text{Net Tax} = \text{Gross Tax} - \text{Tax Credits}$$

(iii) Mary's deductions for PRSI and USC are shown on the payslip below.

Fill in Mary's **net tax** using your answer from part **(b)(ii)**.
Hence, complete the payslip by working out her **total deductions** and **net pay**.

Payslip			
Employee Name:	Mary Byrne	**Date:**	28th May 2025
Earnings		**Deductions**	
Basic Pay:	€423·65	Net Tax:	€
		PRSI:	€12·52
		USC:	€4·58
Gross Pay:	€423·65	**Total Deductions:**	€
Net Pay (Gross Pay − Total Deductions):			€

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



Acknowledgments

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Image on page 2: www.canva.com. Altered.
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Image on page 6: www.tesco.ie. Altered.
Image on page 8: www.weforum.org.com.
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Image on page 12: www.cmetb.ie. Altered.

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