



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied 2024

Mathematical Applications

(200 marks)

Friday 7 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		
3		
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5		
6		
Total		

Question 1



Sinéad and Bartos are organising the 6th year graduation dinner for students in their school. The year group is made up of **6 classes** which have **24 students** in each class.

- (a)** Work out how many students are in 6th year in their school.

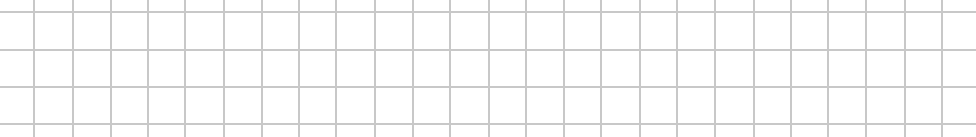
Sinéad is organising the transport to and from the graduation dinner.

156 people will be attending the meal, including some teachers.

She contacts a local bus hire company and finds the following information.

Vehicle	Seats	Price
	50	€550
	70	€750

- (b)** Work out the **minimum total cost** for the transport required to bring the group to their dinner.



Bartos contacts a restaurant who provide the following prices for the graduation dinner:

Ziad's Restaurant	
Date:	09/08/24
Quotation Reference:	0093
<ul style="list-style-type: none">• €80 for a private room• €24 per student• €18 per teacher	

- (c) **144 students** and **12 teachers** are going to the dinner.

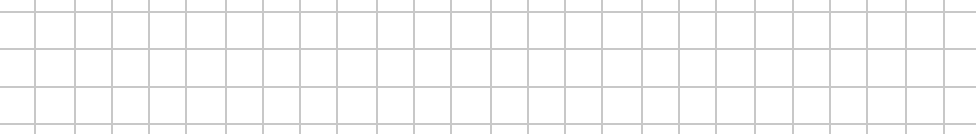
Work out the **total cost** of using this restaurant.

A full-page view of a blank sheet of graph paper. The grid consists of small, uniform squares formed by thin gray lines. The paper has a white background and a black border around the edges.

- (d) The total cost for the graduation dinner is €5878.
This cost is divided equally between the 144 **students**.

Work out the cost for each student.

Give your answer correct to the nearest euro.



John receives his first pay slip shown below.
Two of the deductions from his wages are included on the payslip.

Some important information about his pay is outlined in the boxes on the right of each of the following answer grids.

Use this information to complete the payslip.

- [illegible]

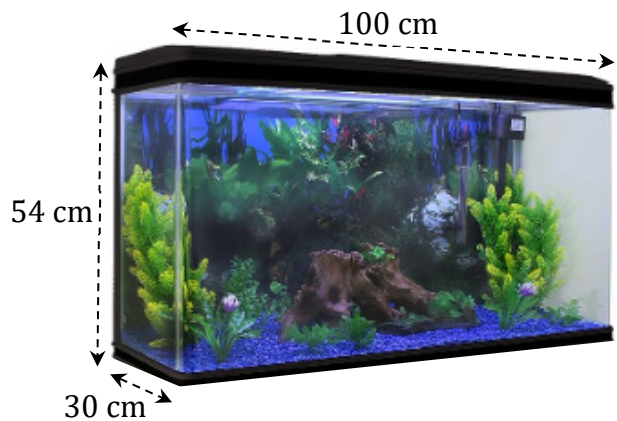
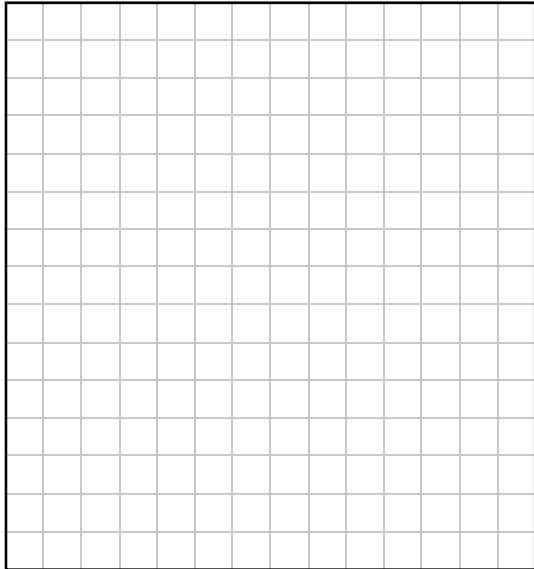
- [illegible]

- 4

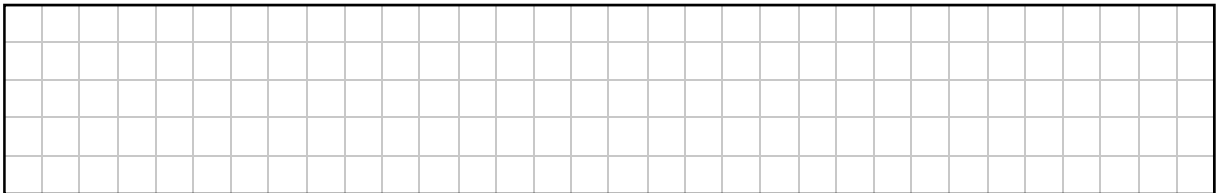
Question 3

Olwyn buys a fish tank in the shape of a rectangular solid.

- (a) (i) Calculate the volume of the fish tank using the measurements on the image below.
Give your answer in cm^3 .

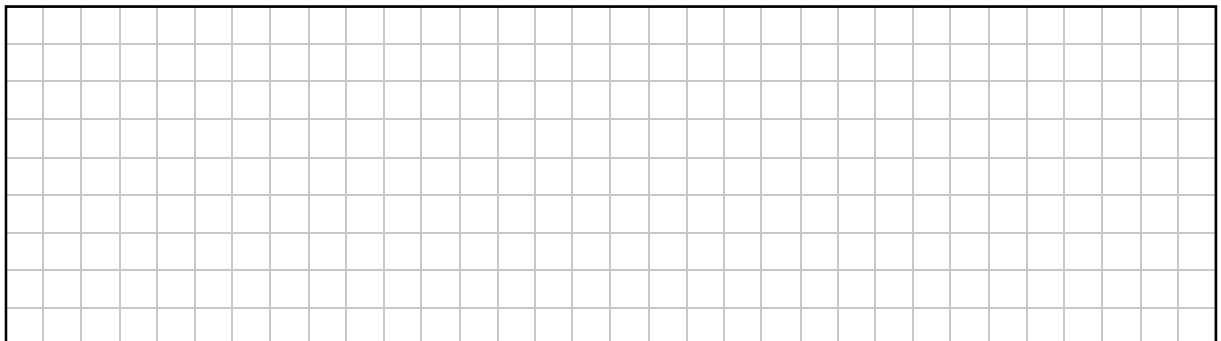


- (ii) Hence, find the volume of the fish tank in litres ($1000 \text{ cm}^3 = 1 \text{ litre}$).

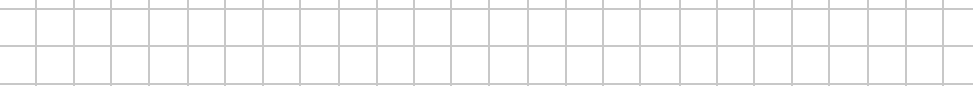


- (b) Olwyn uses a hose to put water in the fish tank for the first time.
The guidelines state that the volume of water in the tank should never exceed 150 litres.
Olwyn fills the fish tank to this maximum volume, using a hose.
The hose delivers **5 litres** of water **every minute**.

Work out how long it will take to fill the tank to this maximum volume.

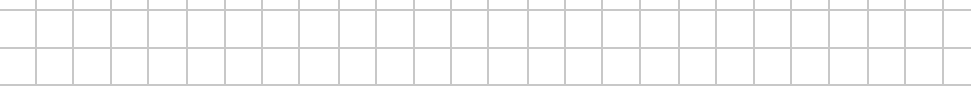


- Work out **how many weeks** the packet of tablets will last.



- Use the table below to work out the cost of running the fish tank for **30 days**.
Give your answer in euro, correct to the nearest cent.

Units used per day	4
Units used per 30 days	
Cost per Unit of Electricity	23 c
Total Cost Before VAT	€
VAT @ 13.5%	€
Total Cost Including VAT	€

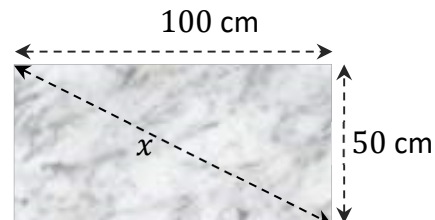
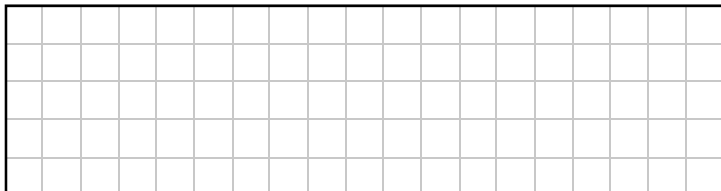


Question 4

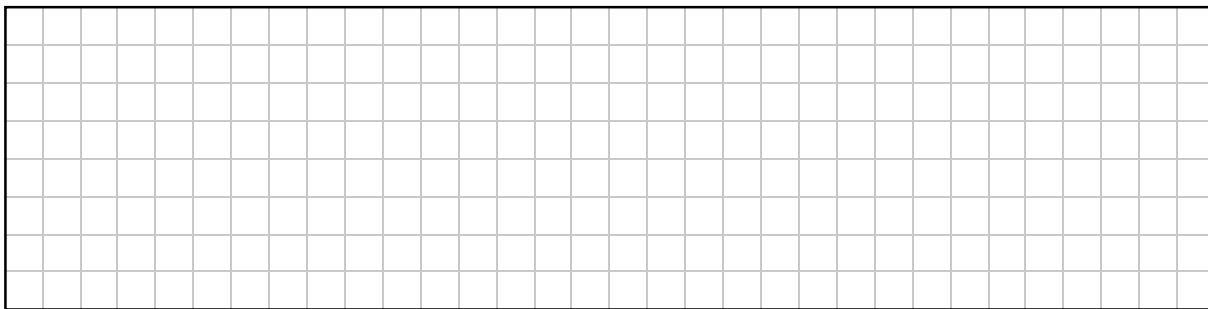
Green Landscapes has been hired to lay a patio in a back garden. They import patio tiles from LuxTiles in Italy.

(a) Each rectangular tile measures $50\text{ cm} \times 100\text{ cm}$.

- (i) Work out the **area** of one tile.
Give your answer in m^2 .

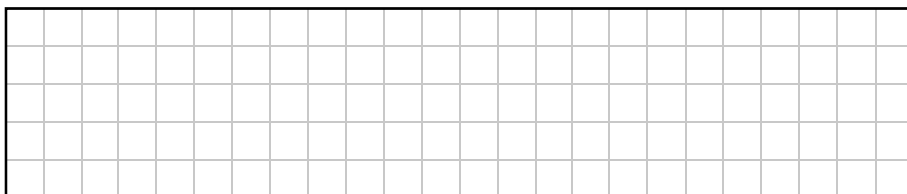


- (ii) To complete the patio Green Landscapes need to cut some tiles in half along the diagonal of the tile. Use **Pythagoras' theorem** to work out the **length of the diagonal**, marked x on the image above.
Give your answer in cm, correct to the nearest cm.

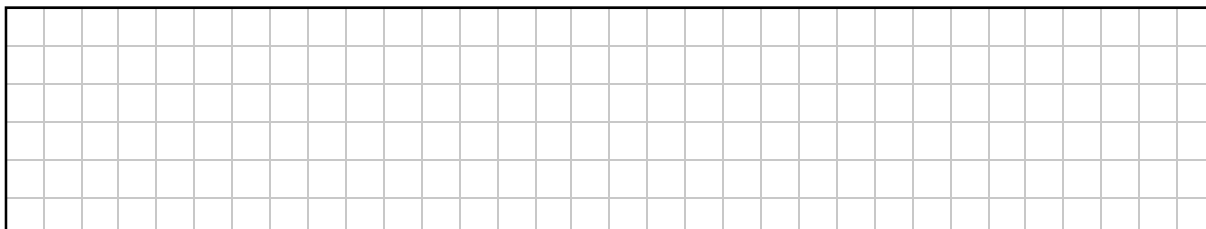


(b) For a different job they use tiles with an area of 0.16 m^2 .
Each box of these tiles can cover 3.2 m^2 .

- (i) Work out **how many tiles** there are in each box.



- (ii) Green Landscapes need to cover an area of 16 m^2 with these tiles.
Allowing for 15% breakages, how many boxes will they need to order?



Question 5

Mai is ordering hoodies for her Leaving Certificate Applied class.
She finds a company in Northern Ireland who supply personalised hoodies.

A plain hoody costs £25 and students can have their name printed on the back at an extra charge of £0.50 per letter.

- (a) Complete the table below to show the cost of a hoody for each of the students listed.

Name	Number of letters	Extra cost for printing letters	Cost of a plain hoody	Total cost for the hoody
John	4	£2		£27
Olwyn	5	£2.50		
Adriana			£25	£28.50
Sinéad		£3	£25	

In order to simplify the process, the students agreed to pay the same amount regardless of the number of letters in their name.

Twenty-one students placed an order and the total cost of all the hoodies was £577.50.



- (b) Work out the price, in sterling, each student should pay for a hoody **and** find the average number of letters per name.

Price per student:	
Average number of letters:	

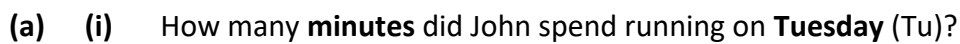
Mai found a **euro to sterling** conversion rate online and decided to charge each student €34. When the invoice arrived, Mai discovered that the company who supplied the hoodies used a different rate, as outlined below.

£1 = €1.20

- (c) Show that Mai had collected enough money to cover the payment.
(**Remember:** The cost of the hoodies was £577.50 and twenty-one students paid €34 each.)

[illegible]

John uses an app on his smart phone to collect data on daily runs. The images below show this information over the course of a week (7 days). Use the images below to answer part **(a)(i)** and part **(a)(ii)**.



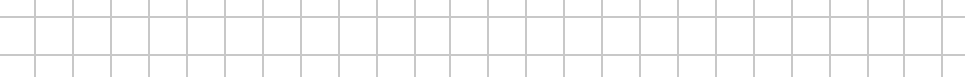
(ii) What **distance** did John run on **Tuesday**?

(iii) Using your answers to part **(a)(i)** and part **(a)(ii)** above, or otherwise, work out John's **average speed** during his run on **Tuesday**.

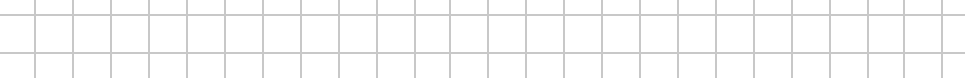
[illegible]

- Answer:

Reason:

- 

- [illegible]

- 

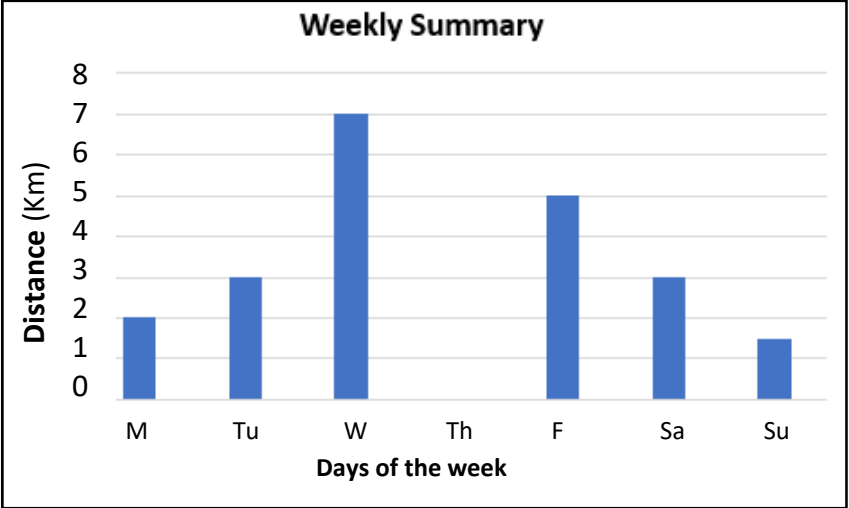
previous	page	running
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John keeps a diary of his runs every week.
 Three diary entries are shown below on the left hand side of this page.
 Three graphs, generated by a fitness app, are shown to the right of each diary entry.
 Note that the scales are **not the same** on each graph.

(d) Draw an arrow from each **diary entry** to match it with the **corresponding graph**.

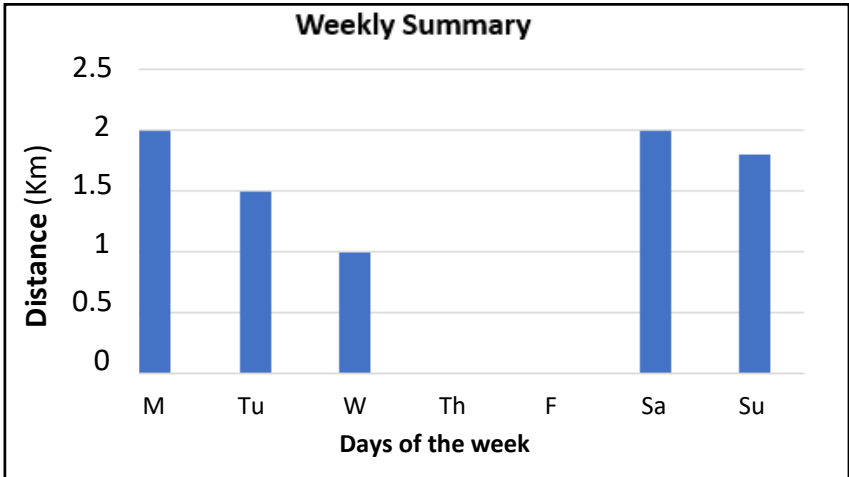
Dear Diary,

This week was a tough week. My longest run was only 2 km. I took two rest days. I will get back on track next week.



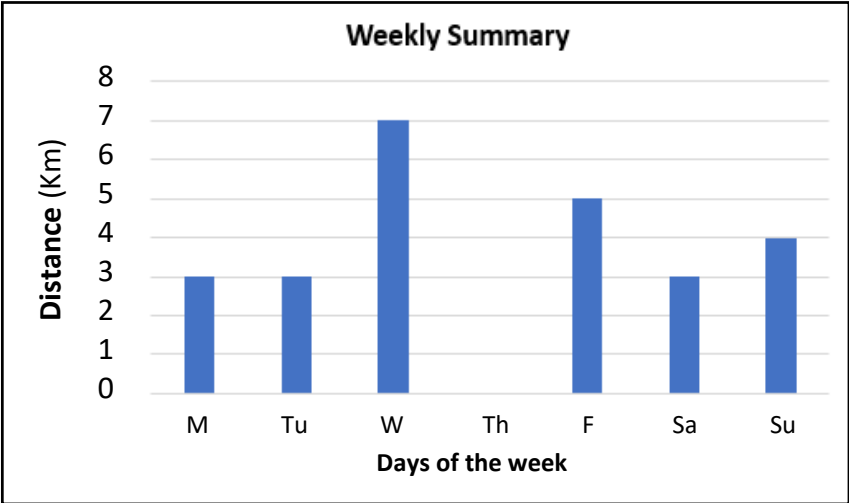
Dear Diary,

I got on great this week. I ran 5 km in 24 minutes on Friday. This is a new personal best. All my hard work is paying off.

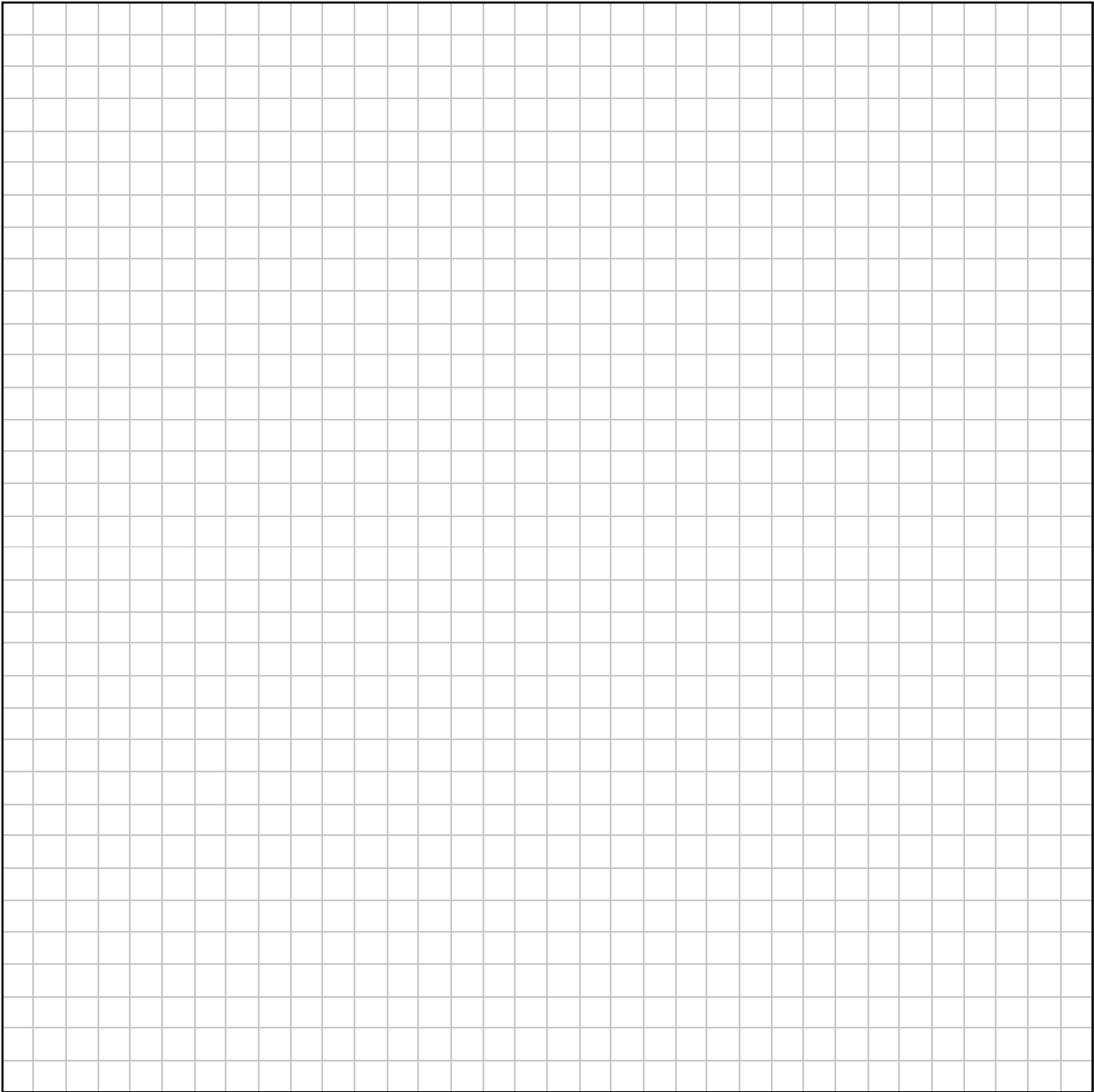


Dear Diary,

This week went well. My longest run was 7 km. I took one rest day, but I should have taken two because I could only manage 1.5 km on Sunday.



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



Acknowledgments

- Image on page 2: www.roscommoncoaches.ie. Altered.
- Image on page 2: www.oharascoaches.com. Altered.
- Image on page 5: www.debtnegotiators.com.au. Altered.
- Image on page 6: www.amazon.ie. Altered.
- Image on page 10: www.etsy.com. Altered.

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Leaving Certificate Applied – Common Level

Mathematical Applications

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