



## Pre-Leaving Certificate Applied Examination 2023

# Mathematical Applications

(200 marks)

**Time: 2 hours**

Name:
School:
Address:
Class:
Teacher:

### General Directions

1. Complete the box above with your details.
2. Write all answers in the boxes or spaces in this answerbook.
3. Show all necessary work in the space provided.
4. Calculators may be used.
5. Answers involving money should be given correct to the nearest cent, unless otherwise indicated.
6. There are 9 questions on this examination paper. Answer **all** questions. Questions do not necessarily carry equal marks.

<i>For the examiner only</i>					
		Question	Mark	Question	Mark
		1		6	
		2		7	
<i>Cumulative check</i>		3		8	
Running total		4		9	
– Disallowed		5			
= Total		↔ Total			
Total mark x 1.15 (to max. of exam. total)					

**Question 1**

A class holds a raffle to raise money for an overnight trip as part of their LCA programme. Tickets cost €2 each.



- The prizes are:
- one prize of €100
  - three prizes of €20 each.

The class sells **120** tickets in total for the raffle.

**(a) (i)** How much money does the class raise by selling 120 tickets?

																																																																																Answer:																			

It costs €10 to print the tickets.

**(ii)** Work out the total cost of running the raffle, including both the printing and the prizes.

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**(b)** Ciarán buys one ticket.

**(i)** Write down the probability that Ciarán wins the €100 prize. Give your answer as a fraction.

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**(ii)** How much money does the class raise in total for their LCA Task?

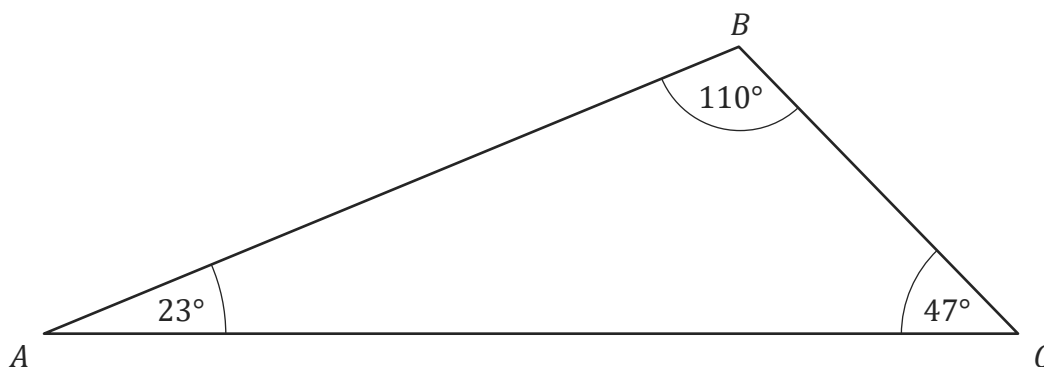
																																																																																Answer:																			





Question 3

(a) The diagram shows a triangle  $ABC$ .



(i) Circle the correct word to describe triangle  $ABC$ .

Scalene

Isosceles

Equilateral

(ii) Explain why you chose this word.

	Answer:

(iii) From the diagram above, write down

$\angle ABC =$
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(iv) Circle the correct word to describe angle  $\angle ABC$ .

Acute

Obtuse

Reflex

(v) Explain your answer.

	Answer:



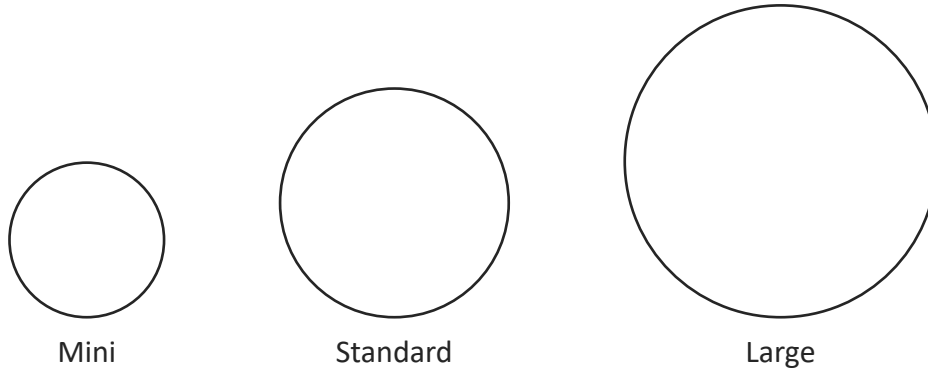






**Question 5**

(a) Joe's pizzas are made in three different sizes.



Joe puts olives on all his pizzas. The number of olives depends on the size of the pizza, as shown in the table.

Size	Diameter, $d$ , (cm)	Number of olives, $n$
Mini	20	8
Standard	30	18
Large	40	32

The relationship between the diameter of the pizza and the number of olives can be expressed by the formula:

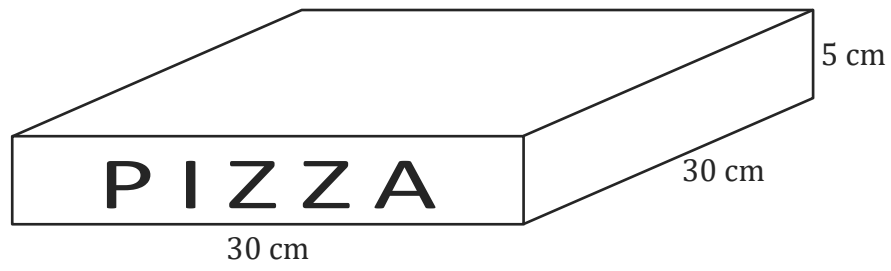
$$n = k d^2, \text{ where } k \text{ is a constant.}$$

(i) Use a pair of values from the table to show that  $k = 0.02$ .

	Answer:
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(c) Joe's standard pizza boxes have dimensions as shown.



(i) What is the surface area of one box?

Grid area for surface area calculation.

Answer:
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(ii) What is the volume of the box?

Grid area for volume calculation.

Answer:
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**Question 6**

Cain and Torie go shopping in a store that is advertising the following:

**SALE**  
20% OFF  
ALL MARKED PRICES



- (a) Torie buys a shirt marked at €75. How much does she pay?

	Answer:
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- (b) Cain saves €17.50 on a pair of jeans. What does he pay for the jeans?

	Answer:
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- (c) Cain wants to make six cushions for the living room in his new flat. For each cushion, he will need a length of 75 cm of the material that he has chosen. The material costs €6.75 per metre. How much will the material cost for the six cushions?

	Answer:
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**Question 9**

- (a) (i) Ryan invested €7,500 at 4% per annum compound interest. Find the amount of the investment at the end of two years. You should use the formula  $F = P(1 + i)^t$  in your calculations.

	Answer:
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Darragh wanted to buy a particular bicycle. He checked its price in two bicycle shops. Firstly, in Buy-Cycles, the price of the bicycle before VAT was included was €215. The VAT rate was 20%. Next, in Bikes-4-All, the normal price including VAT was €330, but there was a sale with a 25% reduction on the normal price.

- (ii) Find the price Darragh would have to pay for the bicycle in each shop.

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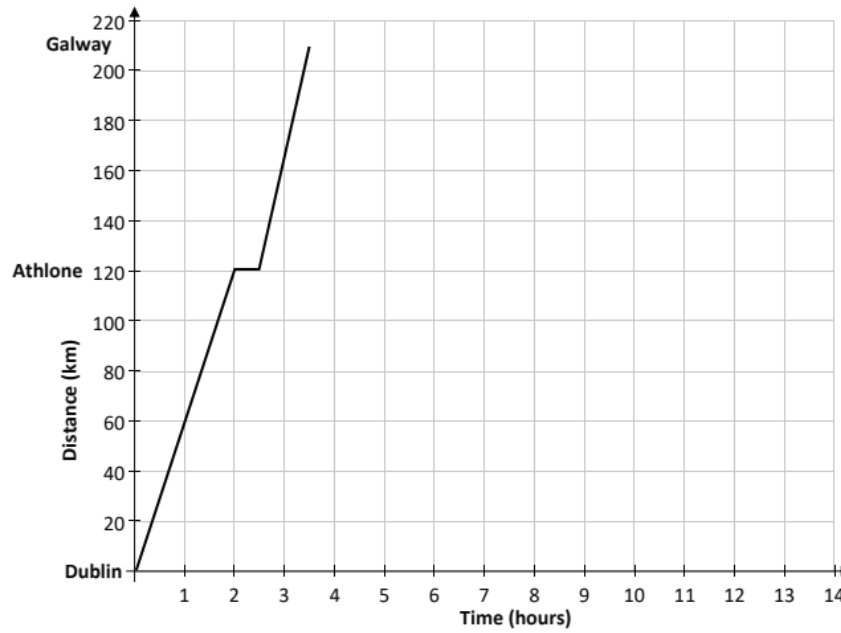
- (iii) How much would Darragh save by buying the cheaper bicycle?

	Answer:
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- (iv) Darragh's aunt Breda lives in London and needs to take a trip to Ireland. Breda needs to convert €350 to pounds sterling. The exchange rate is €1 = £0.91 pounds sterling. Use this exchange rate to convert €350 to pounds sterling.

	Answer:
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- (b) When Breda arrived in Dublin, herself and Darragh went on a trip to Galway, leaving at 10:00 a.m. They returned home later that day. On the way, they stopped for a break in Athlone. The Distance-Time graph shows part of their journey, the journey as far as Galway.



Use the graph to answer the following:

- (i) How long did Breda and Darragh spend in Athlone?

	Answer:
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- (ii) What is the distance from Dublin to Galway?

	Answer:
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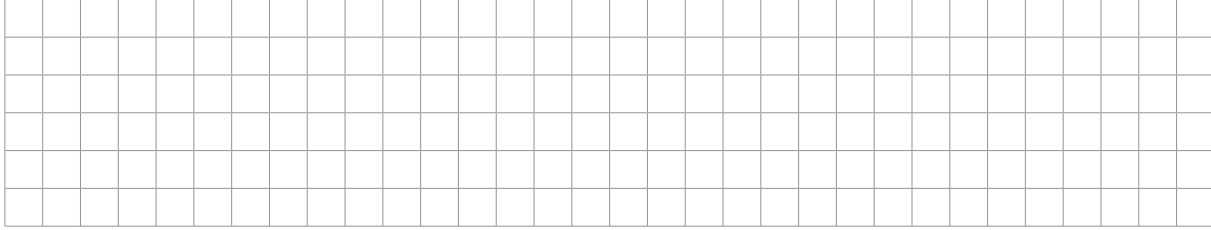
Breda and Darragh left Dublin at 10.00 a.m.

- (iii) At what time did Breda and Darragh arrive in Galway?

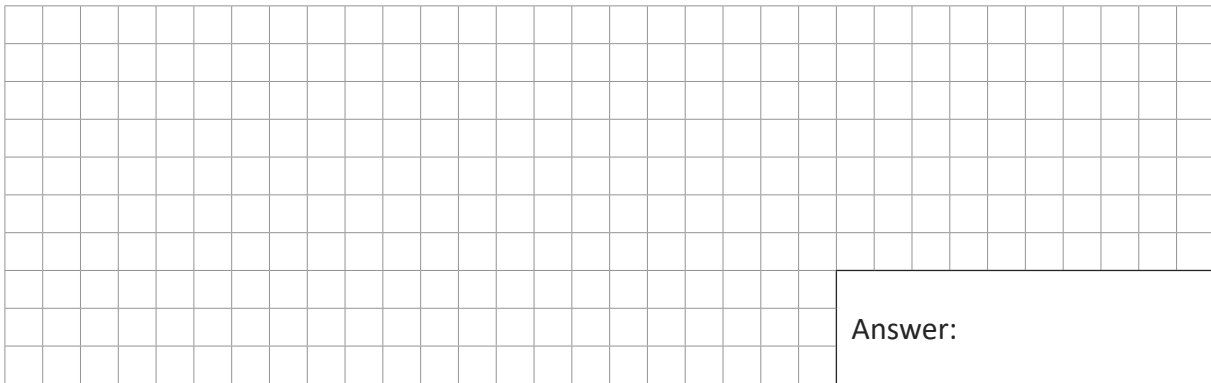
	Answer:
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(c) Breda and Darragh stayed in Galway for four hours and then returned home to Dublin. The return journey took 3.5 hours at a steady speed, without any break.

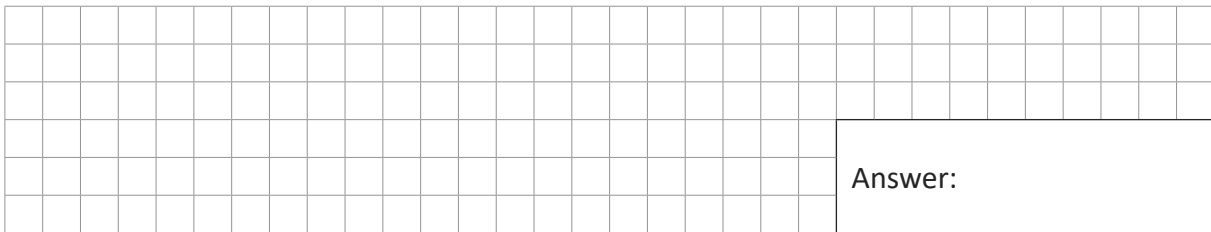
(i) Show this information on the Distance-Time graph on the previous page.



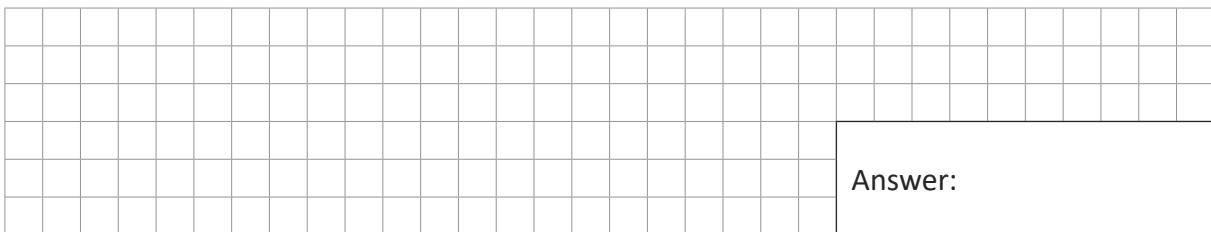
(ii) What was the average speed on the return journey?



(d) The cost of the fuel used by the car for the day trip was €40. What was the average cost, per km, of the fuel? Give your answer to the nearest cent.

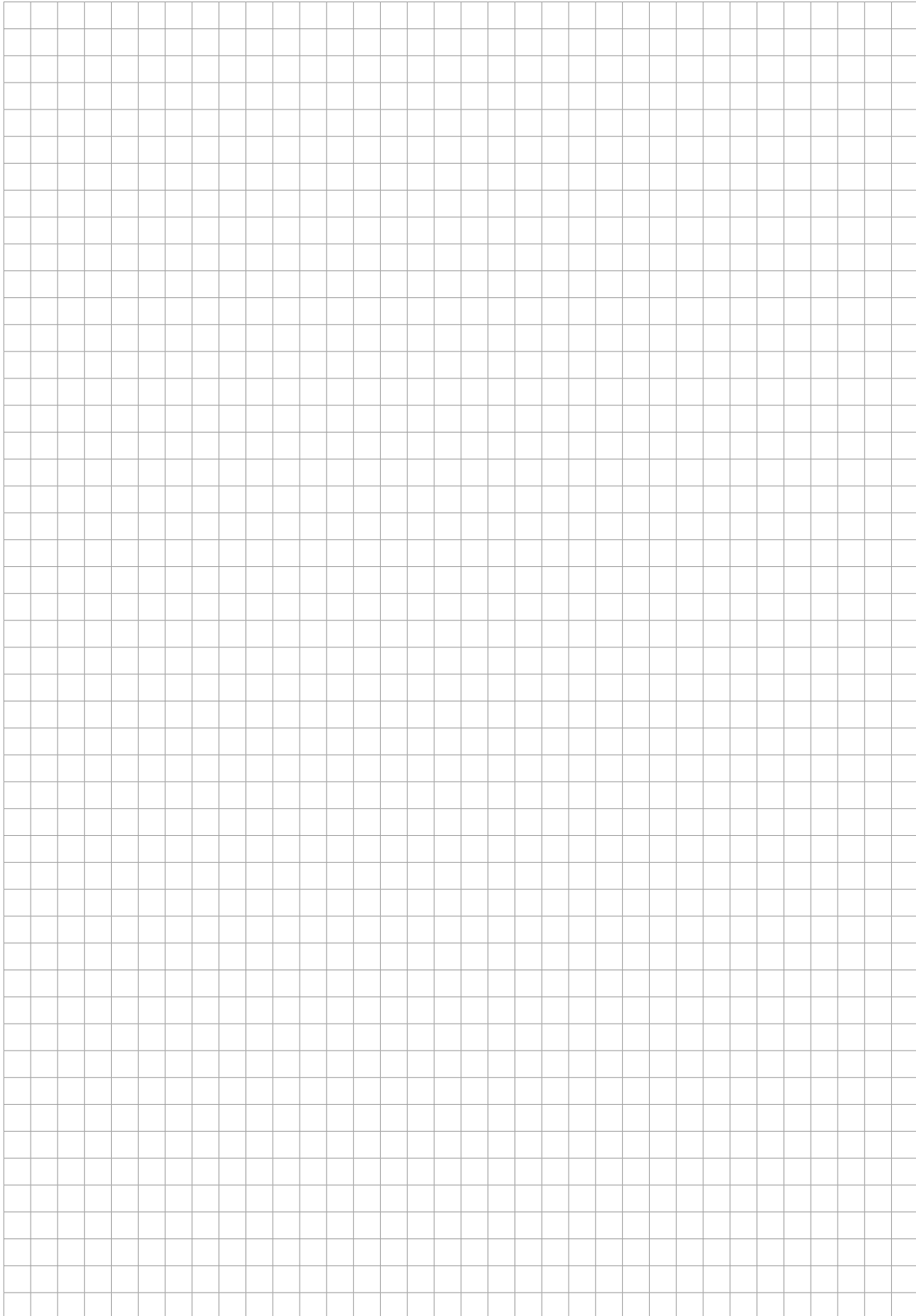


(e) What time was it when Breda and Darragh arrived home?



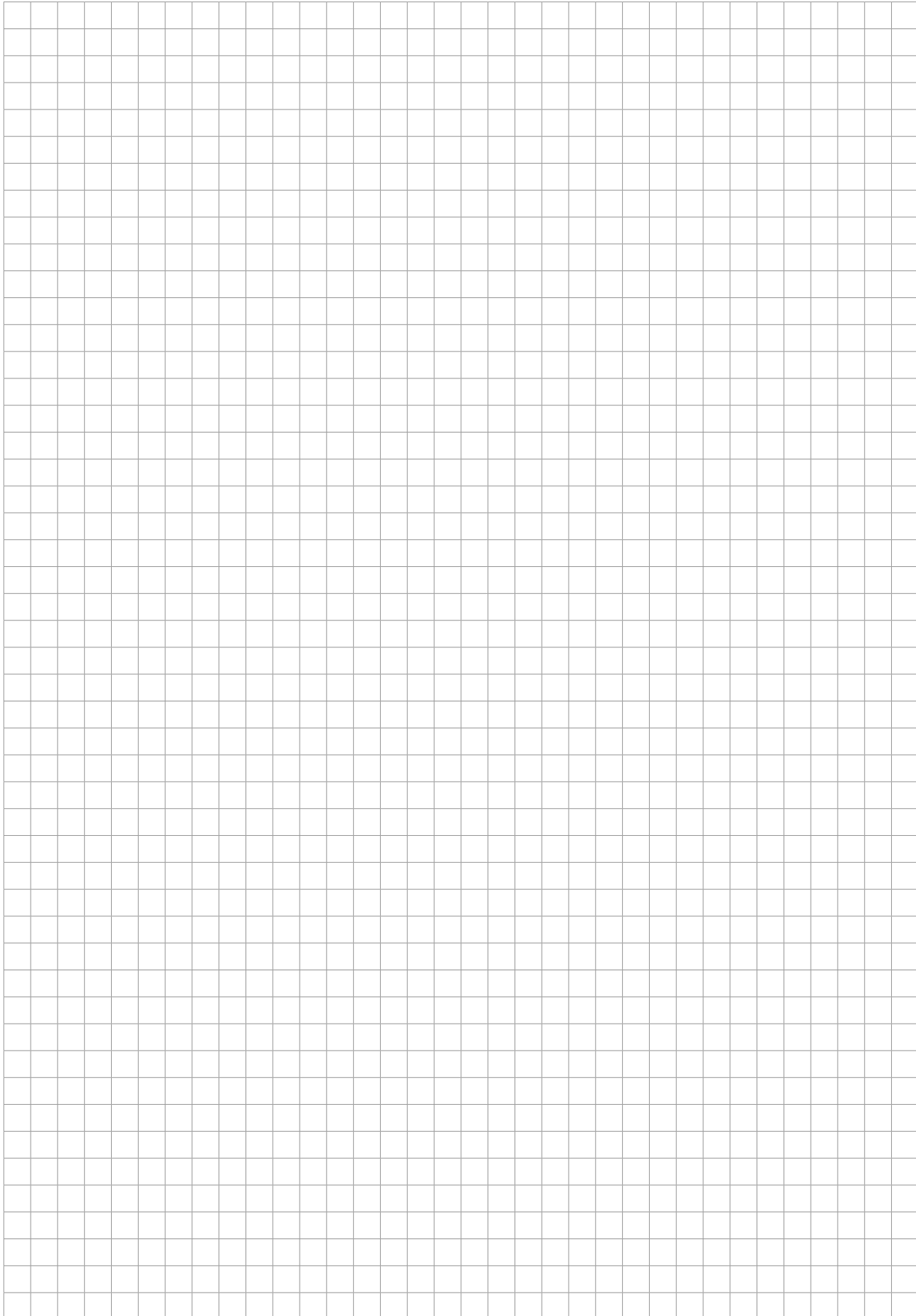
Page for extra work.

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