2025.M25

2025L003B1EL

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination 2025

Mathematics

Foundation Level

Friday 6 June Afternoon 2:00 - 4:30

300 marks

Examination Number

Date of Birth

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 in 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)**

The table below is a list of the ages (in years) of a group of 14 people:

13	15	17	18	21	23	26
29	29	30	34	36	44	46

(a) Complete the stem and leaf diagram below to show the information in the table.

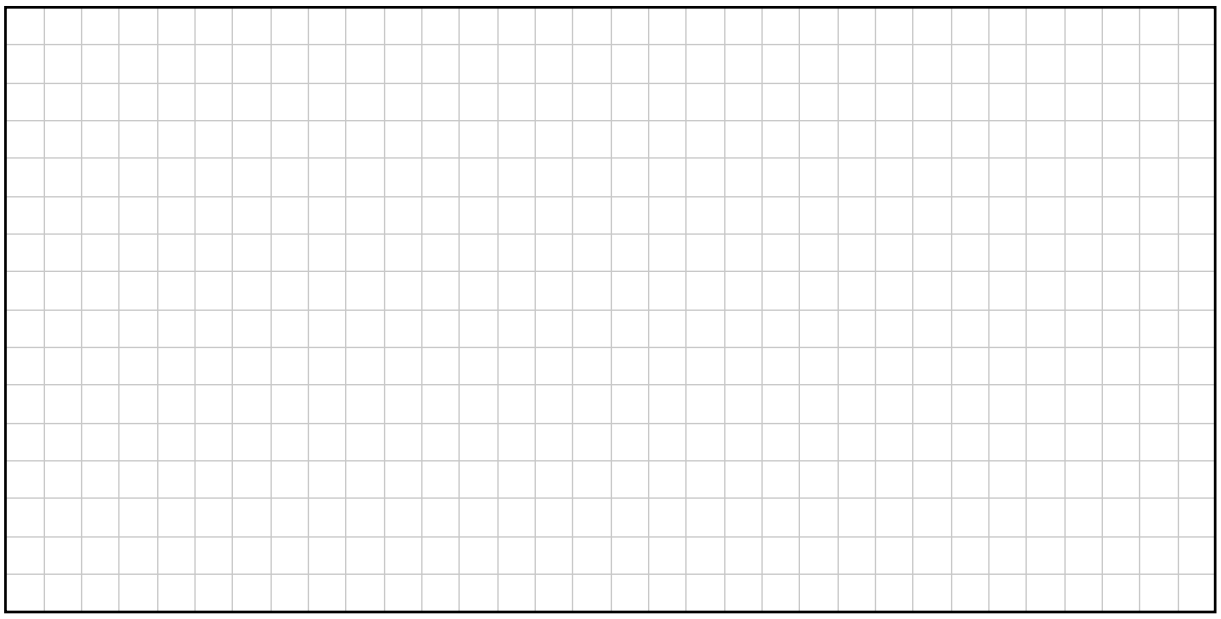
1	3				
2					
3					
4					

Key: 1|3 means 13 years of age

(b) Find the **range** of the ages of the people in the group.

(c) Find the **mode** of the ages of the people in the group.

(d) Find the **mean** age of the five oldest people $(30, 34, 36, 44, 46)$ in the group.



Question 2 **(30 marks)**

(a) A certain cereal is sold in 500 gram boxes and 750 gram boxes.

(i) A group, going on a camping holiday, buy 3 of the 500 gram boxes.
Find the **total weight** of these boxes, in grams.

(ii) They also buy a number of the 750 gram boxes.
In total, the group buy 4500 grams of the cereal.

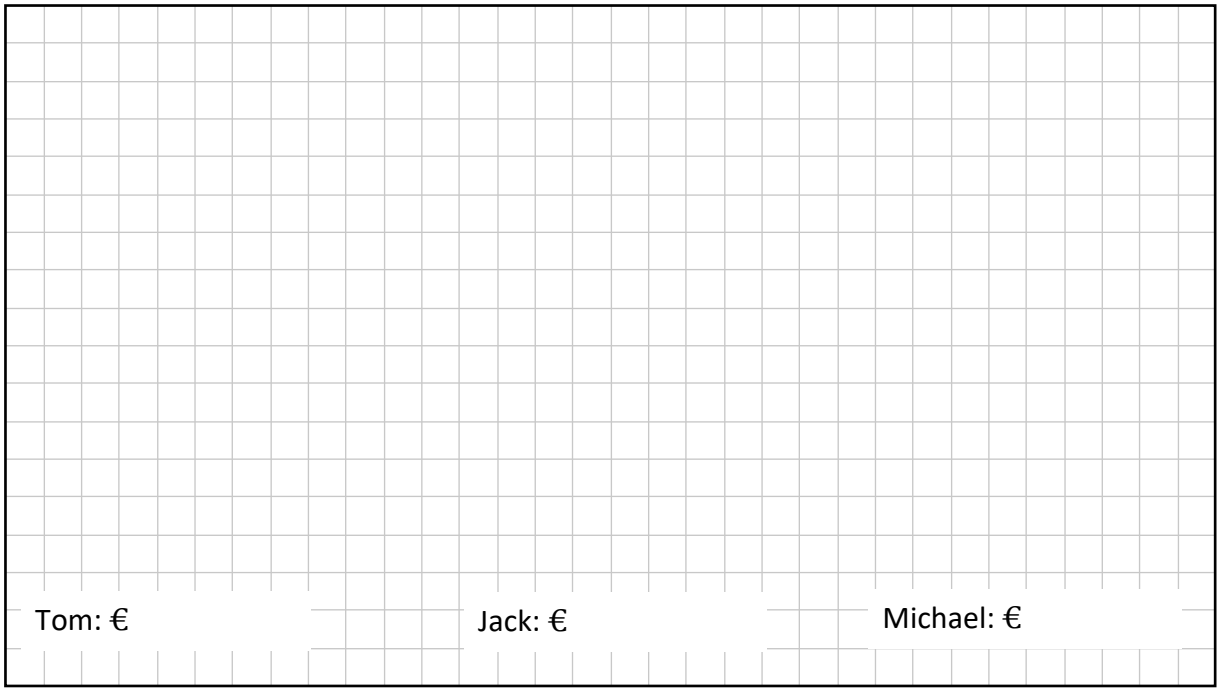
Find how many of the 750 gram boxes they bought.

(b) John and Mary divide €300 between them in the ratio $5:7$.
Mary gets the larger amount.

Find how much money Mary gets.

(c) Tom, Jack, and Michael went shopping and spent a total of €200.
Jack spent €3 more than Tom.
Michael spent €8 more than Tom.

Find how much each of them spent.



Question 3 **(30 marks)**

(a) A restaurant offers a three-course 'lunch special', where a customer chooses one starter, one main course, and one dessert from the menu below.

Starter	Main Course	Dessert
Soup	Roast Chicken	Apple Crumble
Salad	Grilled Fish	Ice Cream
	Steak	Chocolate Cake
	Vegetarian Salad	

(i) Give one example of a 'lunch special' that a customer could choose.

(ii) How many different choices of 'lunch special' are available?

(iii) A particular customer does **not** choose soup nor chocolate cake.
How many different choices of 'lunch special' are available to that customer if they still choose three courses?

(b) In a survey, 42 people were asked to select their favourite exercise from walking, running, and cycling. The table below shows the results of the survey:

	Walking	**Running**	**Cycling**	**Total**
Male	8	5	10	
Female	4		8	19

(i) Complete the table above by filling in the 2 missing values.

(ii) A person is chosen at random from the group of 42 in the table above.
What is the probability that the person chosen is a female?

Answer $=$ $\frac{\quad}{\quad}$

Question 4 **(30 marks)**

Mary has just received her electricity bill.
The bill covers a 58 day billing period.
Some of the data ($\boldsymbol{A}$, $\boldsymbol{B}$, $\boldsymbol{C}$, $\boldsymbol{D}$, and $\boldsymbol{E}$) in the bill needs to be filled in.

Electricity Bill			
Meter Readings		**Units Used (kWh)**	
Present	Previous		
80 877	80 455	$\boldsymbol{A}$	
			Price (€)
Standing Charge: €0·7614 per day for 58 days			$\boldsymbol{B}$
Unit Rate: €0·3970 per kWh			€167·53
PSO levy: €3·23 per month for 2 months			€6·46
Total excluding VAT			$\boldsymbol{C}$
VAT @ 9%			$\boldsymbol{D}$
Total including VAT			$\boldsymbol{E}$

(a) Find the value of $\boldsymbol{A}$, the number of electricity units used.

In each of the next four parts give your answer in euro, correct to 2 decimal places.

(b) Find the value of $\boldsymbol{B}$, the standing charge for this 58 day period.

(c) The electricity units cost €$167{\cdot}53$ and there is also a PSO levy of €$6{\cdot}46$.
Find the value of $\boldsymbol{C}$, the total excluding VAT.

(d) VAT is charged at 9% on the total.
Find the value of $\boldsymbol{D}$, how much VAT Mary must pay.

(e) Find the value of $\boldsymbol{E}$, the total including VAT.

Question 5 **(30 marks)**

Jackie travelled to England to go to a Premier League match.

(a) The exchange rate at the time of her trip was €1 = £0·88 sterling.
Jackie changed €400 spending money into pounds sterling before she travelled.

How much sterling did she get?

(b) The other costs associated with Jackie's trip are listed below:

- Flights - £150
- Accommodation - £110
- Match ticket - £60
- Train fare - £45

(i) Find the total (in pounds sterling) of these other costs.

(ii) Find the total of these other costs in euro.
Use the exchange rate €1 = £0·88 sterling.
Give your answer correct to the nearest euro.

(c) Jackie's home in Ireland is 20 km from the airport.
Her hotel in England is 15 miles from the stadium.

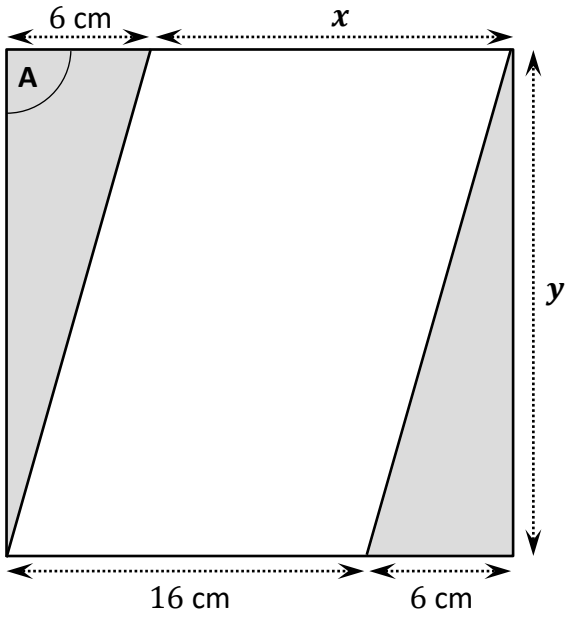
Which of these is the **shorter** distance?
Use the fact that 5 miles is approximately the same distance as 8 km.
Show the calculations you made to come to your answer.

Calculations:

Which is **shorter**?	20 km	15 miles
Tick (✓) **one** box only	☐	☐

Question 6 **(30 marks)**

(a) The diagram below shows a **square** tile.
The pattern on the tile is made up of two right-angled triangles and a parallelogram.
Three lengths are given on the diagram.



(i) What is the size of the angle marked **A** on the diagram.

A = ☐

(ii) Find the length marked x and the length marked y on the diagram.

x = ☐ cm y = ☐ cm

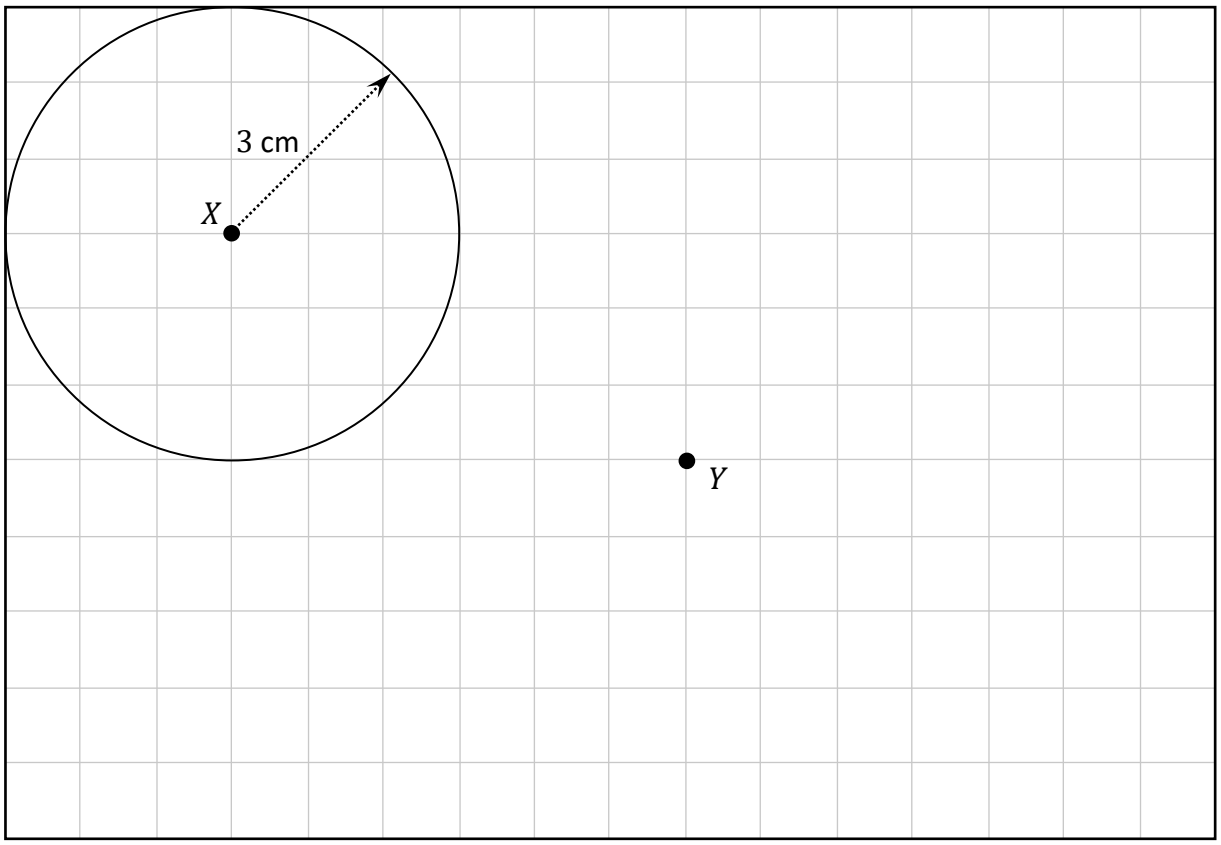
(ii) Lily uses 14 of these tiles to tile the floor of her bathroom.
Find the **total area** of 14 of these tiles.
Give your answer in cm^2.

(b) The diagram below shows the location of two towns, X and Y.
The scale on the diagram is 1 cm $= 10$ km.
Each small square on the grid below has sides of length 1 cm.

The circle below shows the region that is within 30 km of Town X.

A supermarket is to be built between the two towns such that it will be within **30 km** of town X and also within **50 km** of town Y.

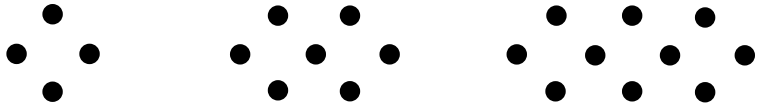
Draw a suitable circle of radius 5 cm on the diagram below and **shade** the region on the diagram where the supermarket could be built.



Question 7 **(30 marks)**

The diagram below shows the first 3 patterns in a sequence of patterns of dots.

Pattern 1 **Pattern 2** **Pattern 3**



(a) Draw pattern 4 of the sequence in the grid below.

(b) The table below shows the number of dots in some of the patterns in the sequence. Complete the table.

	Number of Dots
Pattern 1	4
Pattern 2	7
Pattern 3	
Pattern 4	
Pattern 5	
Pattern 6	

The number of dots in pattern k of the sequence can be found using the formula:

$$\text{Number of dots} = 3k + 1.$$

(c) How many dots are in pattern 42 of the sequence?

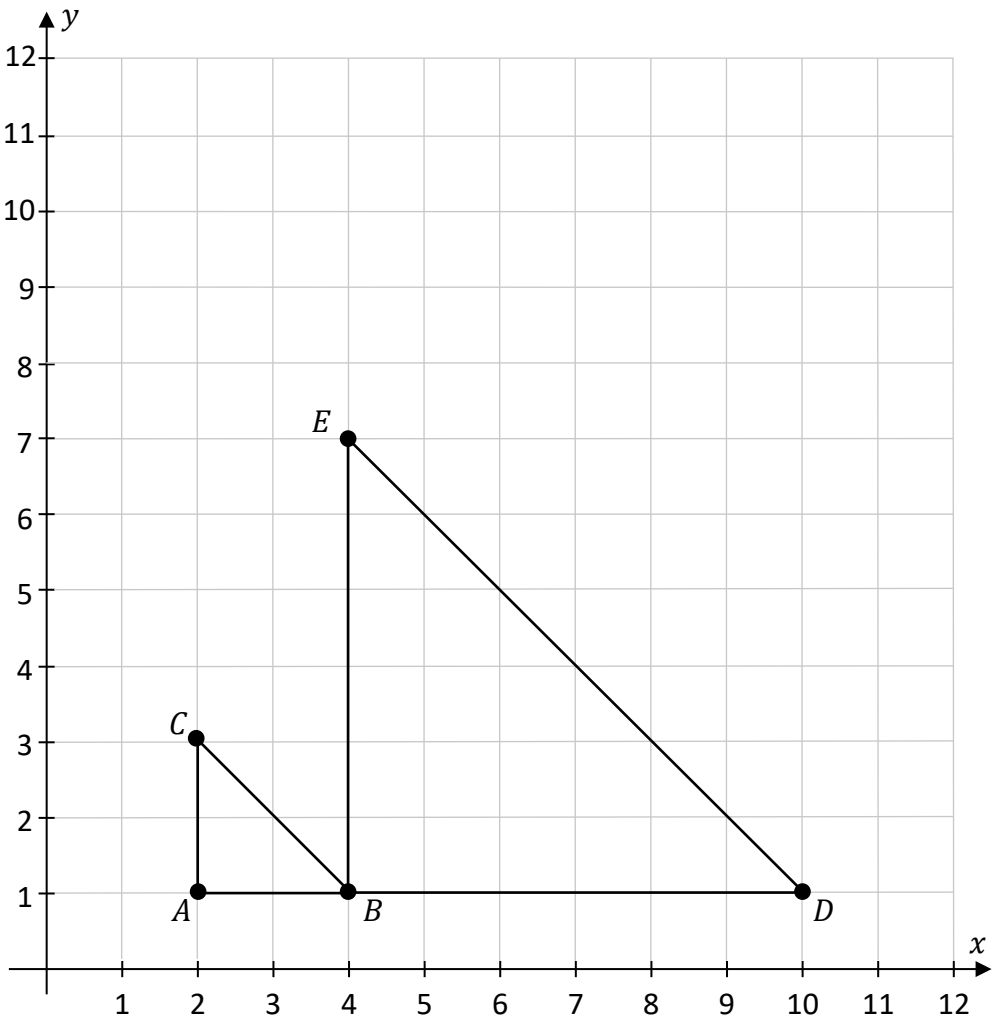
(d) Pattern m in the sequence has 154 dots.
Find the value of m.

Question 8 **(30 marks)**

The diagram below shows the design used to make a company logo.
It shows the triangle ABC, where:

$A = (2, 1)$ $B = (4, 1)$ $C = (2, 3)$

It also shows the triangle BDE.



(a) Write down the co-ordinates of the point E.

$E = ($, $)$

(b) The triangle BDE is the image of the triangle ABC by an enlargement of scale factor k.

(i) Write down the lengths of $[AB]$ and $[BD]$.

$|AB| =$ ☐

$|BD| =$ ☐

(ii) Use your answers to part **(b)(i)** to work out the value of k, the scale factor of the enlargement.

(c) The area of the triangle ABC is 2 square units.
Using this, or otherwise, find the area of the triangle BDE.

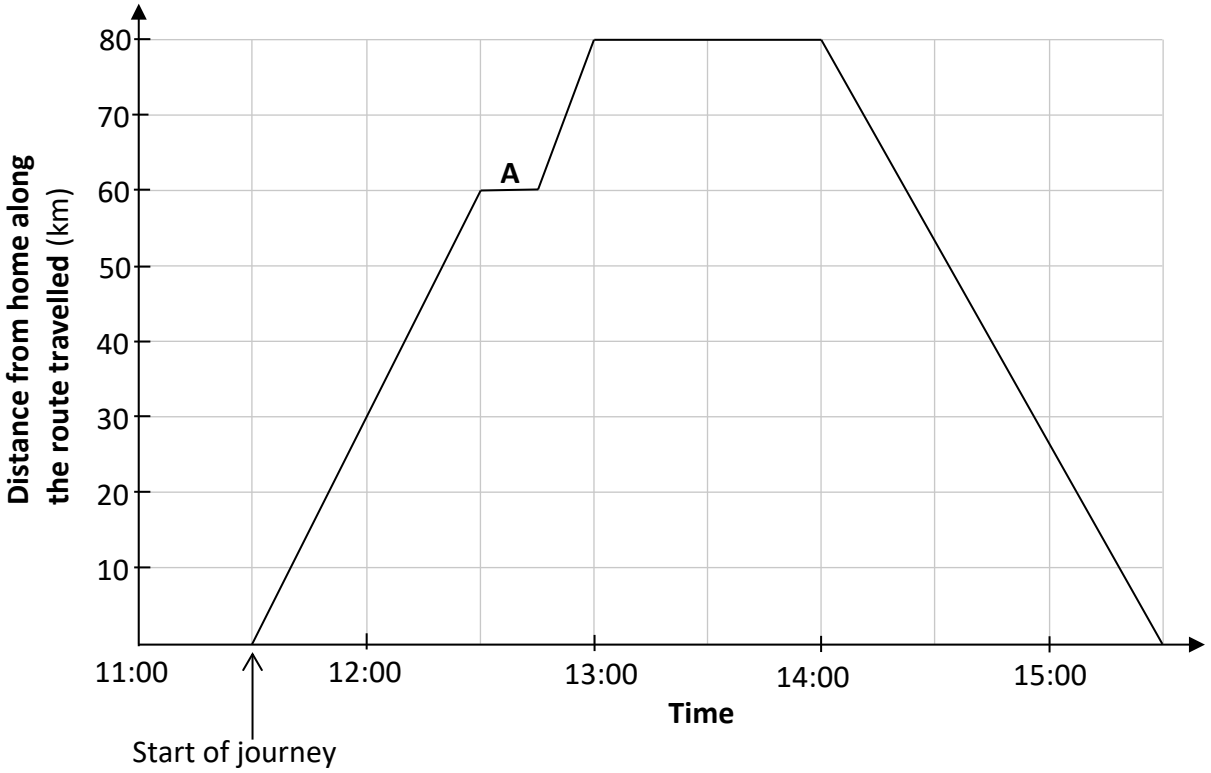
(d) Use the **Theorem of Pythagoras**, or otherwise, to find the distance from B to C.
That is, find $|BC|$.
Give your answer correct to 1 decimal place.

Section B — 90 marks

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

Question 9 **(45 marks)**

(a) Aoife drove from her home to a town 80 km away to visit a friend.
After the visit Aoife drove home without stopping.
The distance-time graph below represents her journey.



Use the information from the graph to answer the following questions.

(i) What time did Aoife start her journey?

(ii) What do you think might have happened during the part of her journey labelled **A**?

(iii) How long did Aoife stay with her friend?

(iv) Find the total distance travelled by Aoife, in km.

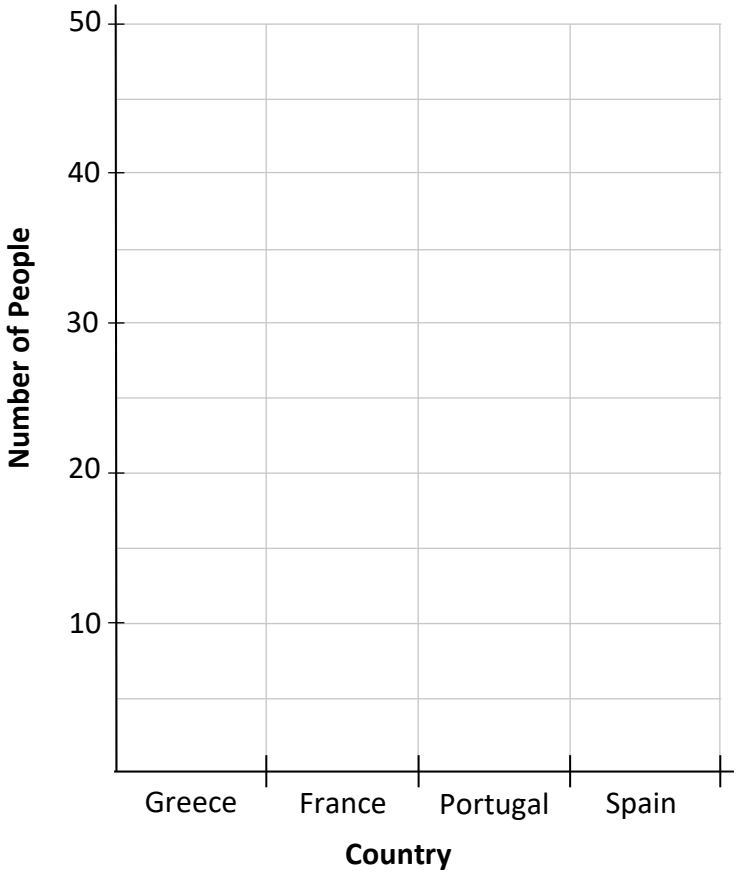
(v) Find Aoife's average speed, in km/hour, **on the journey home**.
Give your answer correct to the nearest whole number.

This question continues on the next page.

(b) In a survey, 120 people in Dublin Airport were asked to name the country that they were flying to. The results of the survey are shown in the table below.

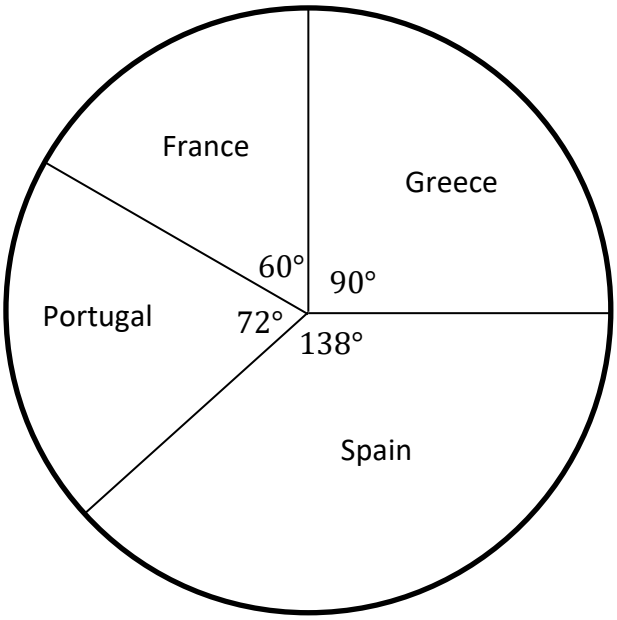
Destination	Greece	France	Portugal	Spain
Number of People	10	35	30	45

(i) On the grid below, draw a bar chart to represent the information in the table.



(ii) Find the **percentage** of the 120 people surveyed who were flying to Spain.

One week later the survey was repeated on a **different group** of 120 people.
The results of this new survey are shown in the pie chart below.

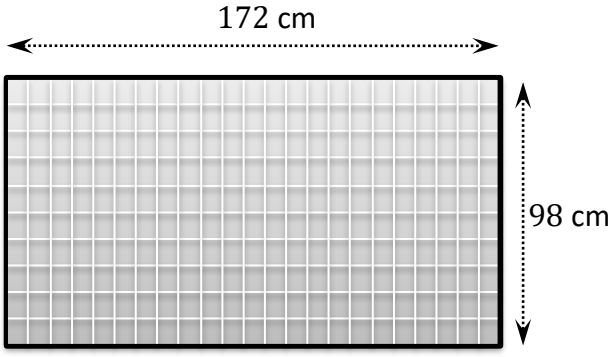


(iii) Use the pie chart to work out the number of people who were flying to **Portugal**.

Question 10 **(45 marks)**

Amanda is buying solar panels.

(a) The solar panels are rectangular in shape.
They are 98 cm wide and 172 cm long.



Find the **area** of one solar panel, in cm^2.

(b) Assume that, on average, one of these solar panels will produce $0{\cdot}4$ units of electricity per hour for 5 hours each day.

(i) Find the number of units of electricity that this solar panel will produce on average per day.

(ii) Find the number of units of electricity that 4 of these solar panels will produce in one year (365 days).

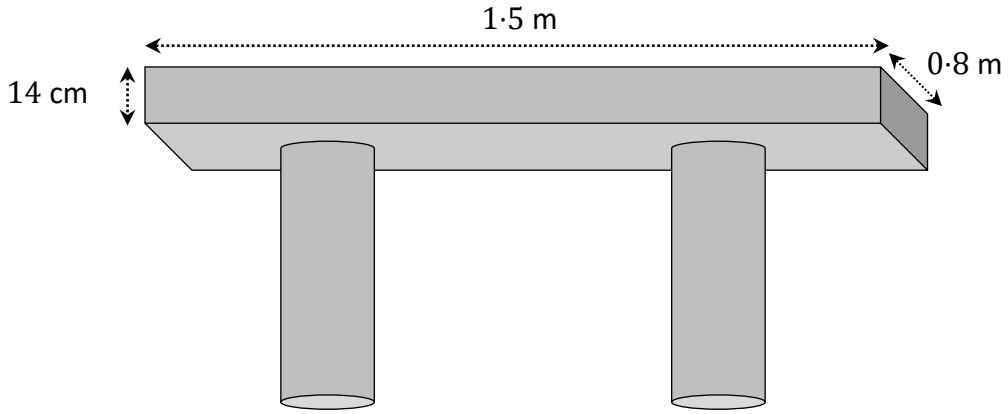
(iii) Amanda has just installed 4 of these solar panels on her roof.
She will use 95% of the units of electricity that they produce.
She is currently paying $€0{\cdot}3970$ for each unit of electricity she uses.

Using your answer from part **b(ii)**, find how much she will save in 1 year because of the panels. Give your answer correct to 2 decimal places.

This question continues on the next page.

(c) Tom has designed a concrete table for the garden.
The design, shown below, has a rectangular table top on two supporting cylindrical columns.

The table top is in the shape of a rectangular solid that is $1{\cdot}5$ m long, $0{\cdot}8$ m wide and 14 cm high, as shown in the diagram below.



(i) Convert $1{\cdot}5$ m and $0{\cdot}8$ m to cm.

$1{\cdot}5$ m = ☐ cm

$0{\cdot}8$ m = ☐ cm

(ii) Find the **volume** of concrete needed to make the **rectangular table top**.
Give your answer in cm^3.

(iii) Each cylindrical column has a radius of 10 cm and a height of 90 cm.
Find the **volume** of concrete needed to make the **2 columns**.
Give your answer correct to the nearest cm^3.

(iv) The **total volume** of concrete needed to make the table is 225 litres.

A litre of concrete weighs $2{\cdot}24$ kg.
Find the **total weight** of the table, in kg.

Question 11 **(45 marks)**

(a) Jacinta starts a new job.
Each week she is paid €11·30 per hour for the first 30 hours she works.
She is paid €16·95 for every **extra** hour that she works beyond the 30 hours.

(i) In Week 1, Jacinta works 30 hours.
Find Jacinta's **gross pay** for Week 1.

(ii) In Week 2, Jacinta works 38 hours.
Find Jacinta's **gross pay** for Week 2.

(iii) In Week 3, Jacinta's gross pay is €525·45.
Find how many **extra hours** Jacinta worked in Week 3 compared to Week 1.

(b) In Week 4, Jacinta's gross pay is $€508{\cdot}50$.
She pays tax at a rate of 20% on her gross pay.

(i) Find Jacinta's **gross tax** for Week 4.

(ii) Her weekly tax credit for Week 4 is $€76{\cdot}92$.
Find Jacinta's **net pay** for Week 4.

This question continues on the next page.

(c) Jacinta drives for 222 km.
Her car uses 1 litre of petrol for every $18{\cdot}5$ km that it travels.

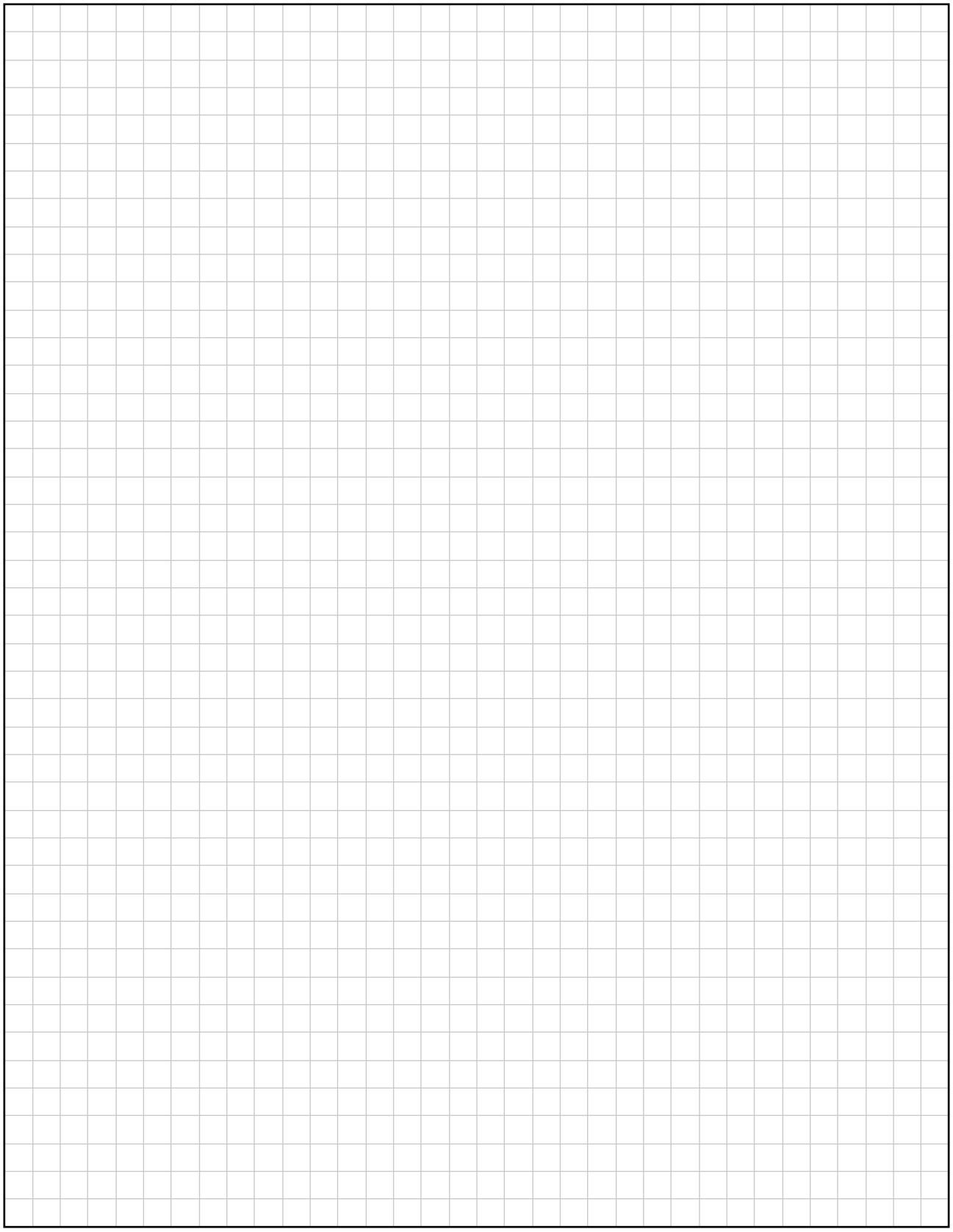
(i) Find the number of litres of petrol used on her drive.

(ii) The petrol used on this journey costs €$1{\cdot}73$ per litre.
Find the cost of the petrol used on her drive.

(d) The value of Jacinta's car **decreases** (depreciates) by 10% each year.
She paid €$23\,000$ for her car exactly 2 years ago.

Find the value of the car today.

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



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Mathematics

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