2011. S31

FOR THE EXAMINER

EXAM. NUMBER:

Total Marks

Coimisiún na Scrúduithe Stáit
State Examinations Commission

JUNIOR CERTIFICATE EXAMINATION, 2011

MATHEMATICS – FOUNDATION LEVEL – (300 marks)

FRIDAY, 10 JUNE – AFTERNOON, 2.00 TO 4.00

Time: 2 hours

Attempt **ALL** questions. Each question carries 50 marks.

Answers and supporting work should be written into the boxes provided.

Extra pages and graph paper can be obtained from the Superintendent, if needed.

The symbol ✍ indicates that supporting work must be shown to obtain full marks.

Make and model of calculator used:

For the Superintendent/Examiner use only:

Centre Stamp

Question	Mark	Adv. Exam.
1		
2		
3		
4		
5		
6		
Total		
Grade		

1. (a)

(i) $34 + 66 =$

(ii) $21 \times 57 =$

(b)

(i) Write 16·3 correct to the nearest whole number.

Answer: _____

(ii) Write 3·7 correct to the nearest whole number.

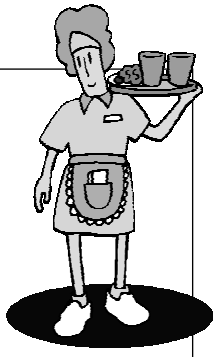
Answer: _____

(iii) Use the answers from parts **(i)** and **(ii)** to estimate the value of $\frac{16 \cdot 3}{3 \cdot 7}$

$\frac{16 \cdot 3}{3 \cdot 7}$ is approximately equal to $\frac{\square}{\square} = \square$

(iv) Using a calculator or otherwise find the value of $\frac{16 \cdot 3}{3 \cdot 7}$ correct to one decimal place.

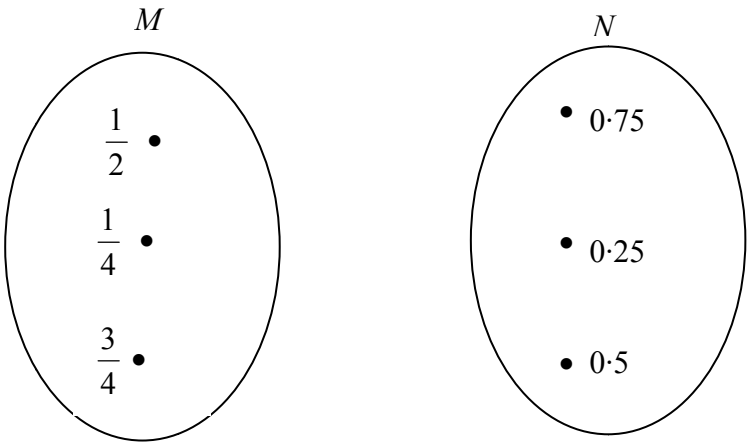
(c) **(i)** In a restaurant, dinner for an adult costs €25·50 and dinner for a child costs €15. Find the cost of dinner for two adults and three children.



Adults: 2× €25·50	= €
Children: 3× €15	= €
Total	= €

(ii) Dinner is paid for with two €50 notes. How much change should there be?

2. **(a)** Draw arrows from set *M* to set *N* to show the relation "is equal to".

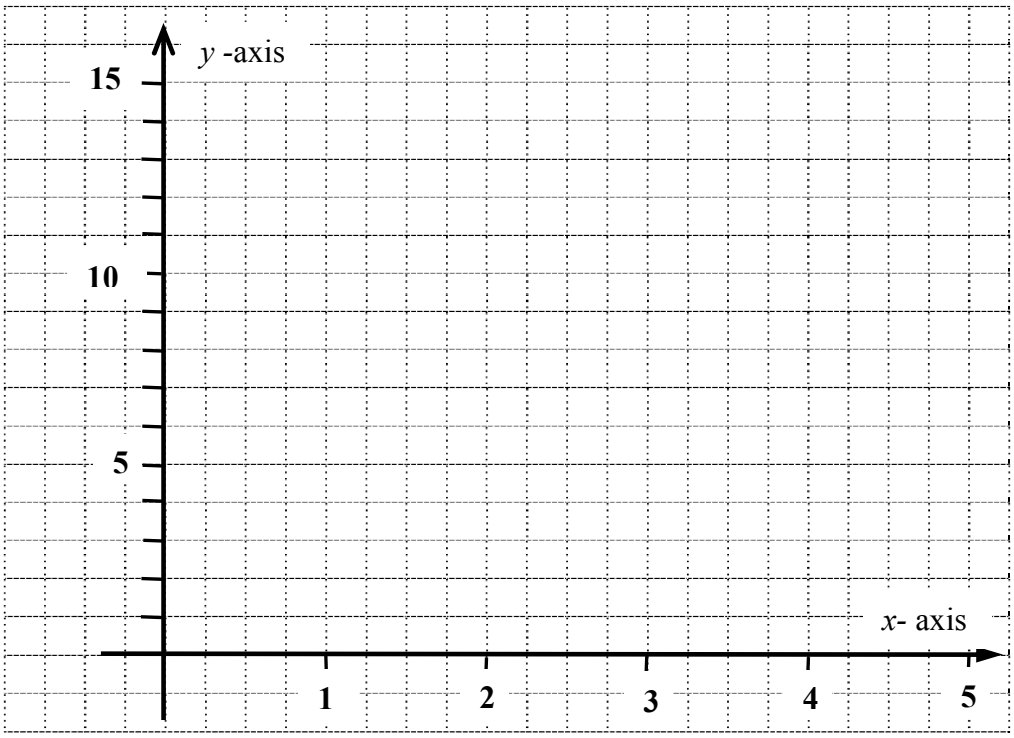


Part (b) is on next page

(b) **(i)** Given that $y = 2x + 5$, complete the table below.
Show all your work in the box provided.

x	1	2	3	4	5
y			11		

(ii) Using your answers from **(i)**, draw the graph of $y = 2x + 5$ from $x = 1$ to $x = 5$.



(iii) Use your graph to find the value of y when $x = 3{\cdot}5$.

Work to be shown on the graph and answer to be written here.

Answer:

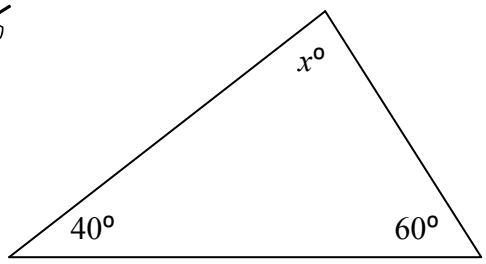
(c) **(i)** Find the value of $x^2 + 5x + 2$ when $x = 4$.

Part (c) is continued on next page

(ii) Solve for x:

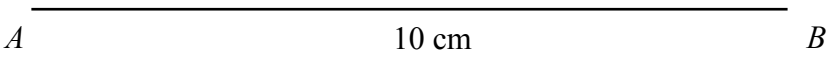
$4(x-2)=28$

3. **(a)** Find the value of x in the following diagram.



$x =$

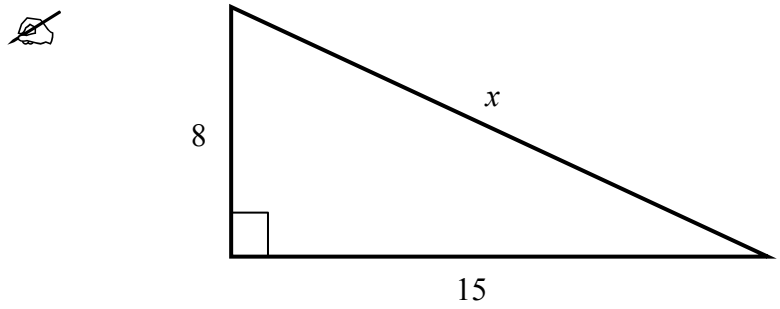
(b) **(i)** Construct a triangle ABC with
$|AB| = 10$ cm, $|\angle ABC| = 30°$ and $|\angle BAC| = 60°$.
Show all your construction lines.



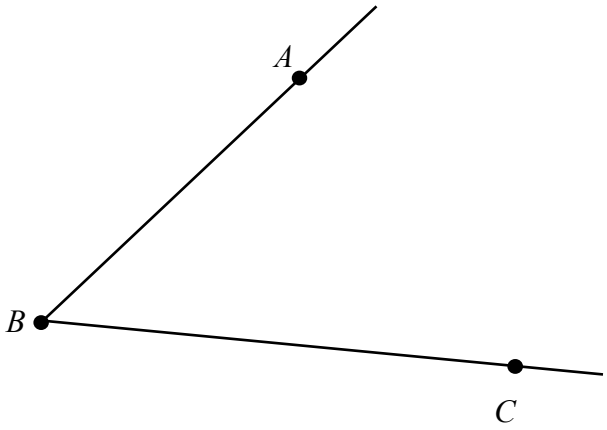
(ii) Use your ruler to measure the length of the side $[AC]$.

Length of side $[AC]$ =

(c) **(i)** Use the Theorem of Pythagoras to find the length of the side marked x in the right-angled triangle below.



(ii) Using ruler and compass only, bisect the angle ABC.
Show all construction lines.



4. **(a)** Find the mean of the following numbers:

8, 5, 4, 11, 10, 16

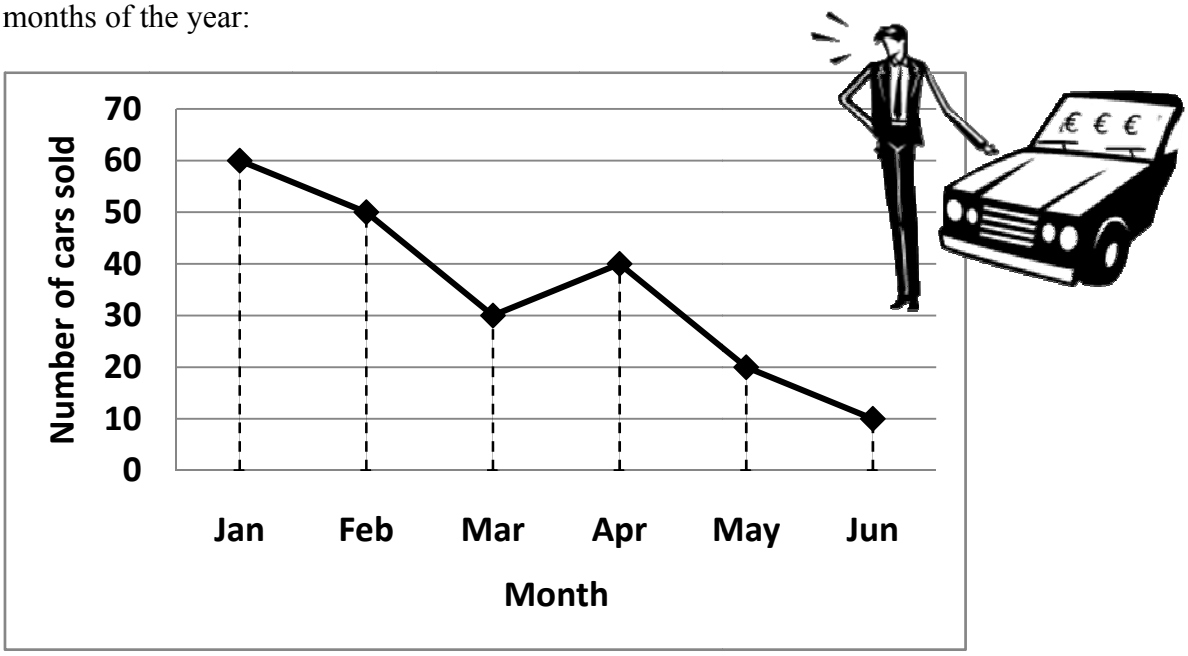
Mean =

(b) 40 people were asked to choose their favourite sport.
The table below shows the results.

Sport	Boxing	Golf	Basketball	Soccer	Tennis
Number of people	4	9	12	10	5

Draw a bar chart to show this information.
Use the grid below to draw your bar chart.

(c) The trend graph shows the number of cars sold by a garage during the first 6 months of the year:

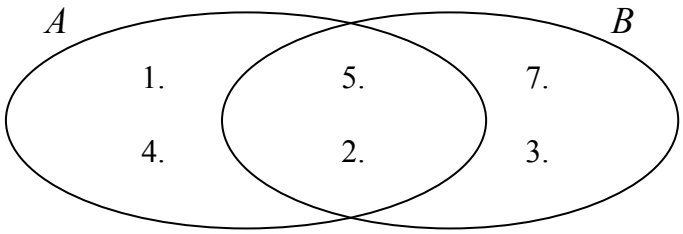


(i) How many cars were sold during March?

(ii) Find the total number of cars sold during the first six months of the year.

(iii) Write the number of cars sold in March as a fraction of the total sold in the first six months?

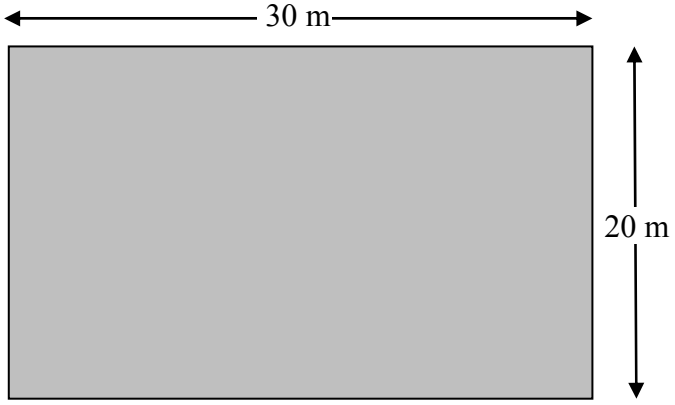
5. **(a)**



(i) $B = \{ \quad , \quad , \quad , \quad \}$

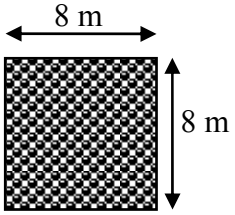
(ii) $A \cup B = \{ \quad , \quad , \quad , \quad , \quad , \quad \}$

(b) A rectangular garden is 30 metres long and 20 metres wide.



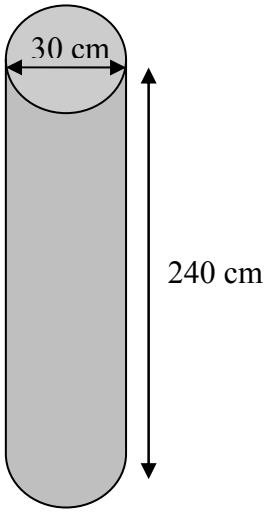
(i) Find the area of the garden in m^2.

(ii) A square flowerbed is dug in the garden.
The side of the flowerbed is 8 metres long.
Find the area of the flowerbed in m^2.



(iii) The rest of the garden is covered in grass. Find the area under grass in m^2.

(c) A concrete pillar is in the shape of a cylinder.
The diameter of the pillar is 30 cm and its height is 240 cm.



(i) Write down the length of the radius of the pillar.

Radius =

(ii) Find the volume of the pillar, taking $\pi = 3{\cdot}142$.

Volume = $\pi r^2 h$

=

(iii) Four of these pillars are used in a building.
Find the total volume of concrete needed for the four pillars.

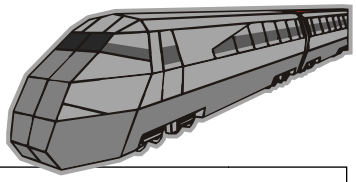
6. **(a)** A piece of wood is 3·65 metres in length.

(i) What is the length of the piece of wood in centimetres?

1 metre = 100 cm.

(ii) This piece of wood is cut in two. The longer piece is 195 cm long.
Calculate the length of the shorter piece in cm.

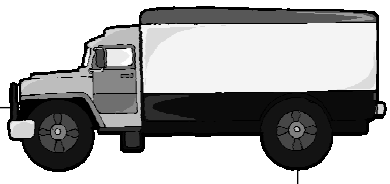
(b) A train left Dublin at 11:30 and arrived in Cork at 14:00.



(i) How long did the journey take?

(ii) The train travelled from Dublin to Cork at an average speed of 96 km/h.
What distance did the train travel?

(iii) A lorry took four hours to travel the same distance.
What was the average speed of the lorry in km/h?



(c) **(i)** A table in a furniture store was bought for €500. It was sold for €700.

Calculate the percentage profit on the cost price.

Selling Price =

Cost Price =

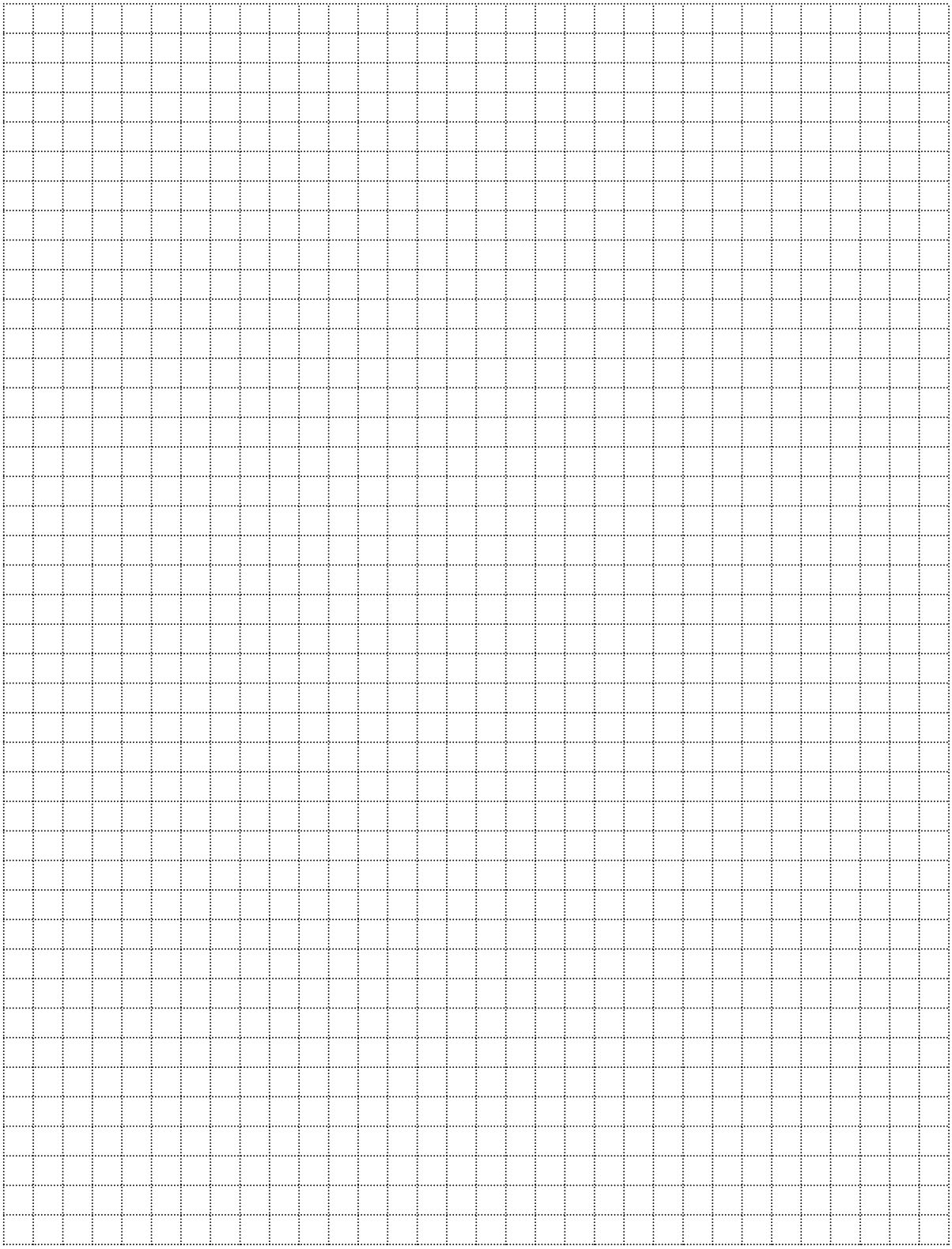
Profit =

Percentage Profit =

(ii) Another table in the store is priced at €800.
The price will be reduced by 20% in a sale.

Calculate the sale price.

Space for extra work



Space for extra work

Space for extra work