



Coimisiún na Scrúduithe Stáit  
State Examinations Commission

Junior Certificate Examination 2014  
Sample Paper

Mathematics  
(Project Maths – Phase 2)

Foundation Level

Time: 2 hours

300 marks

Examination number
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Centre stamp
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Running total	
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For examiner			
Question	Mark	Question	Mark
1		11	
2		12	
3		13	
4		14	
5		15	
6		16	
7		17	
8		18	
9		19	
10		Total	

Grade
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## Instructions

There are 19 questions on this examination paper. Answer **all** questions.

Questions do not necessarily carry equal marks. To help you manage your time during this examination, a maximum time for each question is suggested. If you remain within these times you should have about 10 minutes left to review your work.

Write your answers in the spaces provided in this booklet. You may lose marks if you do not do so. There is space for extra work at the back of the booklet. You may also ask the superintendent for more paper. 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.

You will lose marks if all necessary work is not clearly shown.

Answers should include the appropriate units of measurement, where relevant.

Answers should be given in simplest form, where relevant.

Write the make and model of your calculator(s) here:

**Question 1**

(Suggested maximum time: 5 minutes)

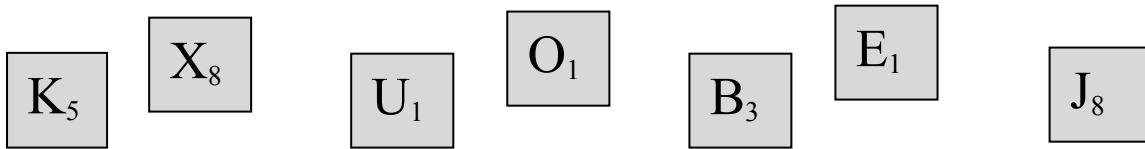
Find the value of:

(a) (i)  $293 + 78 =$  \_\_\_\_\_

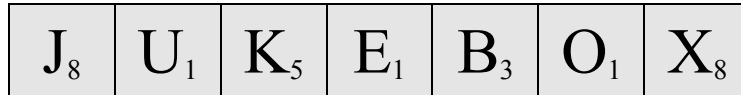
(ii)  $38 \times 7 =$  \_\_\_\_\_

(b) In the game of *Scrabble*, players score points by forming words from individual lettered tiles and placing them on a board. The points for each letter are written on the tile. To find the total score for a word, a player adds together the points for each tile used.

In a game, Maura selects these seven tiles.



She then arranges them to form the word below.



(i) Find the total number of points that Maura would score for the above word.

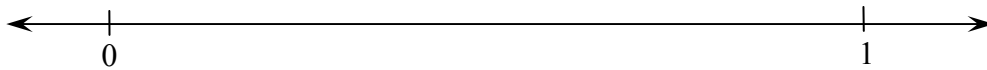

(ii) Liam looks at the same letters but can only form a three-letter word worth 12 points. Write down a three-letter word that Liam might have chosen.

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**Question 2**

**(Suggested maximum time: 2 minutes)**

- (a) (i) Represent the numbers 0.6 and 0.4 on the number line below.



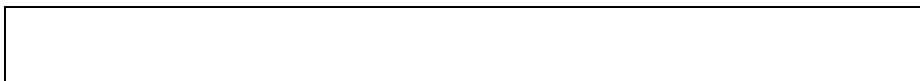
- (ii) Which is the bigger of the two numbers? \_\_\_\_\_

- (b) Estimate what fraction of the strip below is shaded.

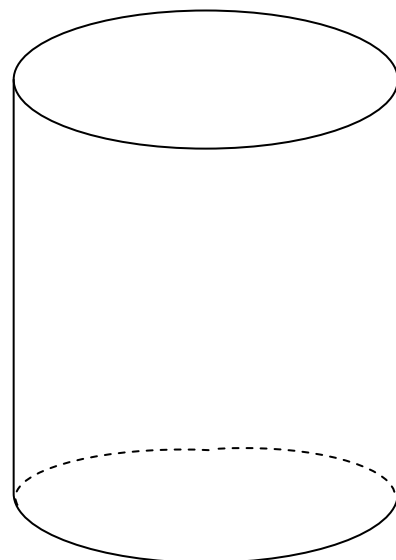


Answer:


- (c) Shade in  $\frac{3}{4}$  of the strip below.



- (d) Show the approximate height of water in the cylinder if the cylinder is  $\frac{4}{5}$  full.





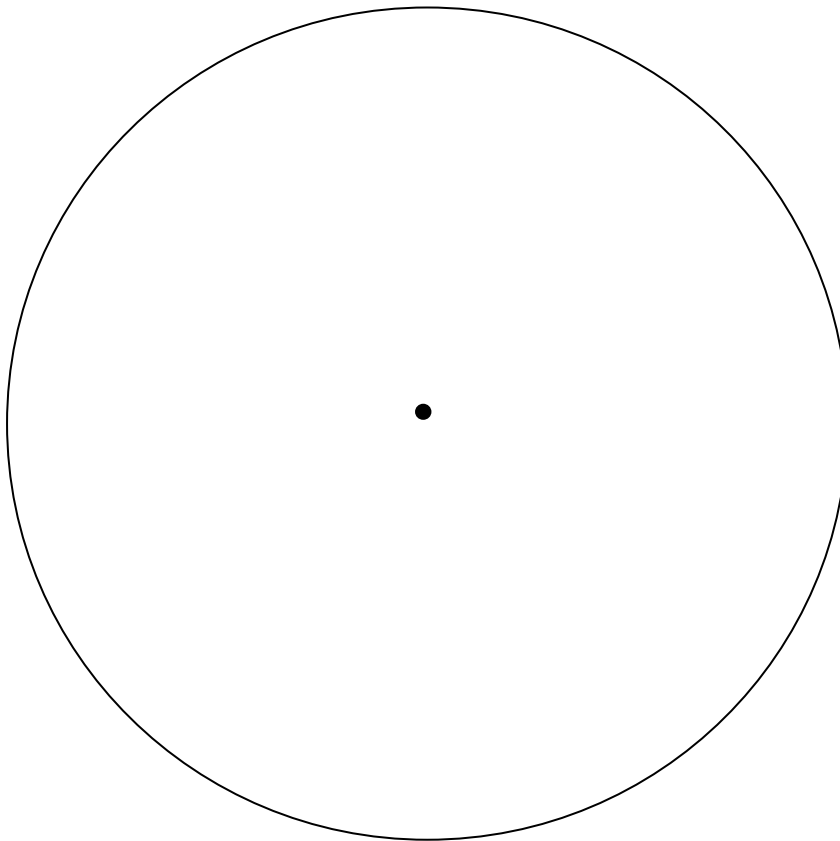
- (c) Mary travels to the airport on a motorway at a steady speed of 100 km/h. How long does it take her to travel 25 km at this speed?

Time =	<div style="border: 1px solid black; width: 80px; height: 20px; margin: 0 auto;"></div>	=	
	<div style="border: 1px solid black; width: 80px; height: 20px; margin: 0 auto;"></div>	=	

**Question 4**

**(Suggested maximum time: 5 minutes)**

- (i) Measure and write down the diameter of the circle below. Give your answer correct to the nearest cm.



Diameter = \_\_\_\_\_ cm

- (ii) Find the radius of the circle.

Radius = \_\_\_\_\_ cm

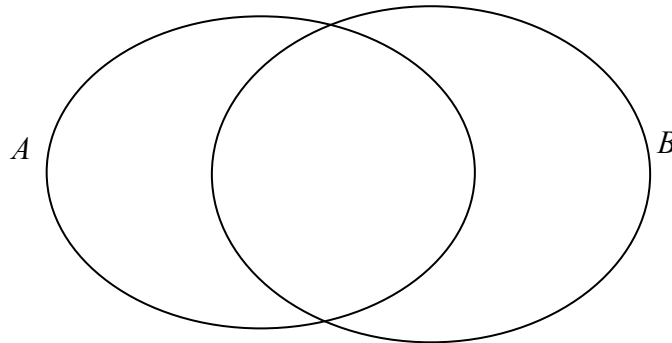
- (iii) Find the area of the circle.


**Question 5**

**(Suggested maximum time: 2 minutes)**

$A = \{c, e, l, w\}$  and  $B = \{m, e\}$ .

(i) Show the elements of the sets  $A$  and  $B$  on the Venn diagram below.



(ii) List the elements of  $A \cup B$ .  $A \cup B = \{ \quad , \quad , \quad , \quad , \quad \}$

**Question 6**

**(Suggested maximum time: 5 minutes)**

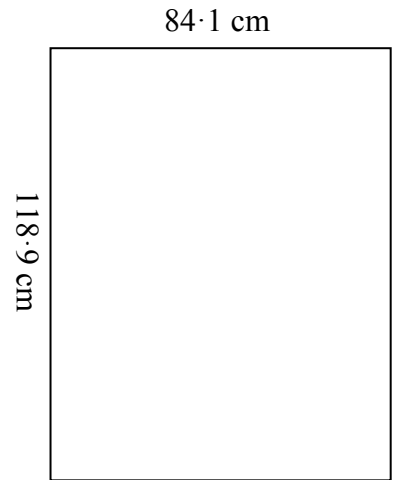
(i) The diagram shows an A0-sized sheet of paper which measures 84.1 cm by 118.9 cm. In order to estimate the area of an A0 sheet:

Write down the nearest whole number to 84.1: \_\_\_\_\_

Write down the nearest whole number to 118.9: \_\_\_\_\_

Multiply your two answers to estimate the area.

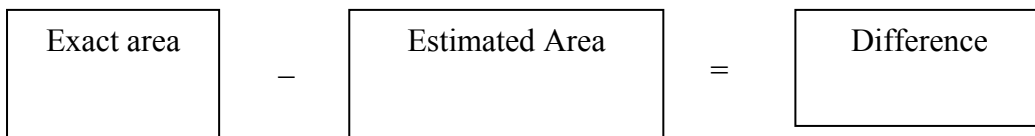
\_\_\_\_\_  $\times$  \_\_\_\_\_ = \_\_\_\_\_



(ii) Find the exact area of the sheet using the original measurements.

$84.1 \text{ cm} \times 118.9 \text{ cm} = \underline{\hspace{2cm}}$

(iii) Find the difference between the exact area from (ii) and your estimate of the area from (i).



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**Question 9****(Suggested maximum time: 5 minutes)**

For each of the events **A**, **B**, **C**, **D**, and **E** below, estimate its probability and place the letter in the most appropriate position on the probability scale below.

A name is picked at random from a list of 50 girls and 50 boys.

**A** = A girl's name is picked.

One card is drawn at random from a pack of playing cards.

**B** = The card is a diamond.

A day is chosen at random from a list of the days of the week.

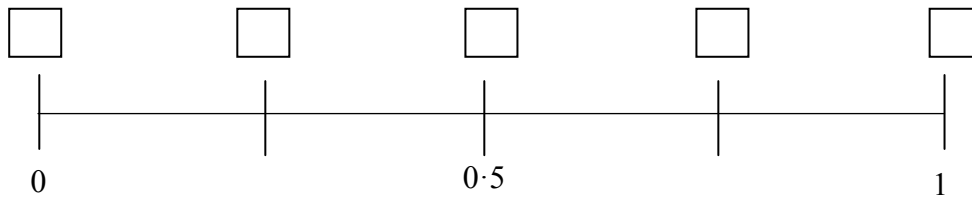
**C** = The name of the day contains the letter **a**.

One number is picked at random from the set {1, 2, 3, 4, 5, 7, 11, 13}.

**D** = The number chosen is a prime number.

The three angles of a particular triangle are measured and added together.

**E** = The answer is  $100^\circ$ .

**Question 10****(Suggested maximum time: 5 minutes)**

Sophie has a box of buttons.

<i>Contents</i>
3 yellow buttons
5 green buttons
7 red buttons
4 purple buttons
1 black button

(i) How many buttons are in the box? \_\_\_\_\_

She takes a button from the box at random.

(ii) What is the probability that Sophie will get a black button?


(iii) Write the missing colour in the sentence below.

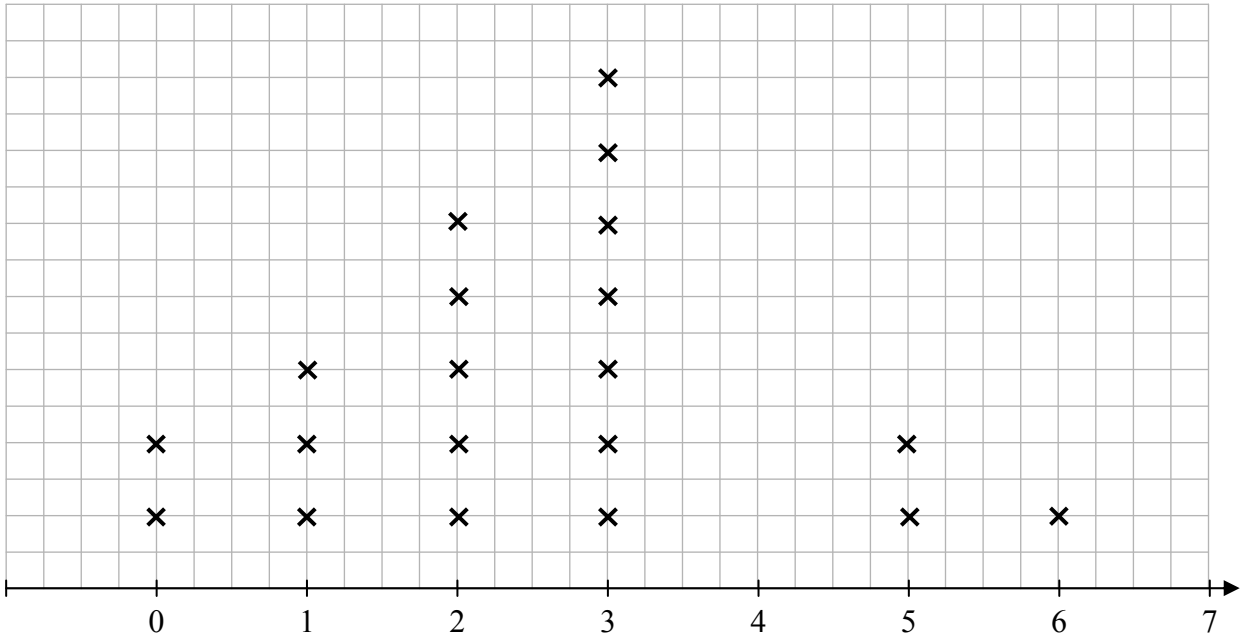
The probability that Sophie will get a \_\_\_\_\_ button is  $\frac{1}{4}$ .



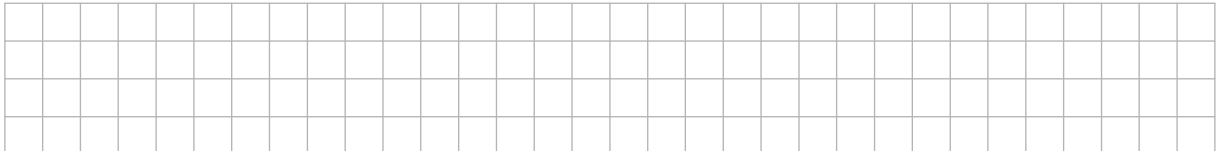
**Question 12**

**(Suggested maximum time: 5 minutes)**

Students in a class were asked how many books they had read in the previous month. The results are shown in the line plot below.



- (i) What is the mode of the data? \_\_\_\_\_
- (ii) How many students read more than two books during the month? \_\_\_\_\_
- (iii) How many students were in the class?



**Question 13**

**(Suggested maximum time: 5 minutes)**

These are the names of fifteen people on a youth club basketball squad.

Alex	Claire	Kevin	Yetunde	Brian
Claire	Lucy	Tom	Claire	James
Seya	Ryan	Jodi	Liam	Tom

- (i) What name is the **mode**? \_\_\_\_\_
- (ii) One person leaves the squad. A different person joins the squad. Now the **mode** is **Tom**. Write the missing names in the sentences below.

The name of the person who **leaves** is \_\_\_\_\_.

The name of the person who **joins** is \_\_\_\_\_.







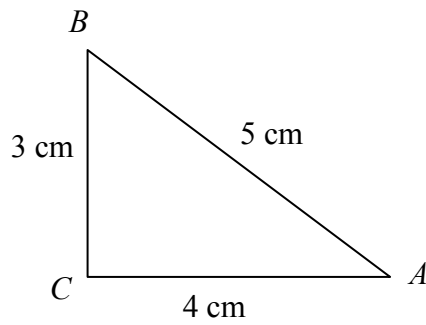




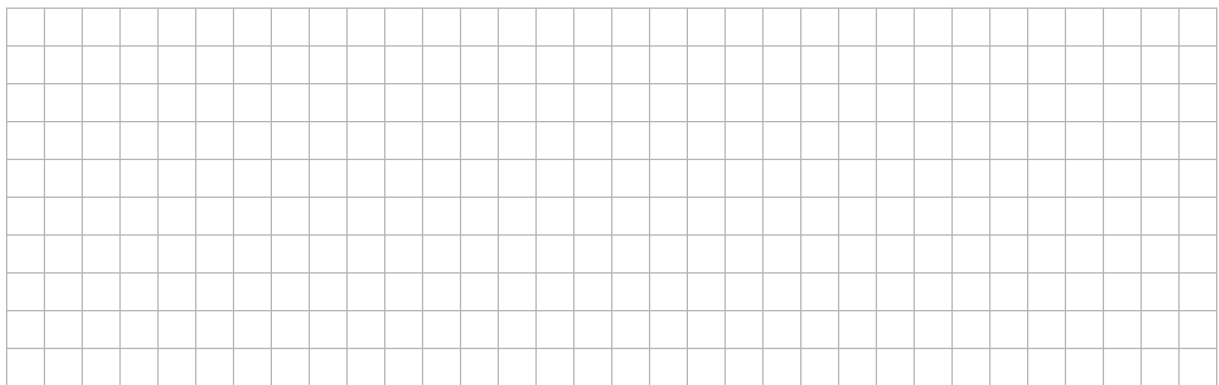
**Question 18**

**(Suggested maximum time: 5 minutes)**

Jamie constructs the triangle  $ABC$  shown in the diagram:



- (i) Use the Theorem of Pythagoras to verify that  $\triangle ABC$  is a right-angled triangle.



$X$  is one of the angles in  $\triangle ABC$ , and  $\sin X = \frac{4}{5}$ .

- (ii) What is the length of the side opposite the angle  $X$ ?      Answer: \_\_\_\_\_

*Hint:*  $\sin X = \frac{\text{opposite}}{\text{hypotenuse}}$ .

- (iii) Mark in the angle  $X$  on the diagram above.

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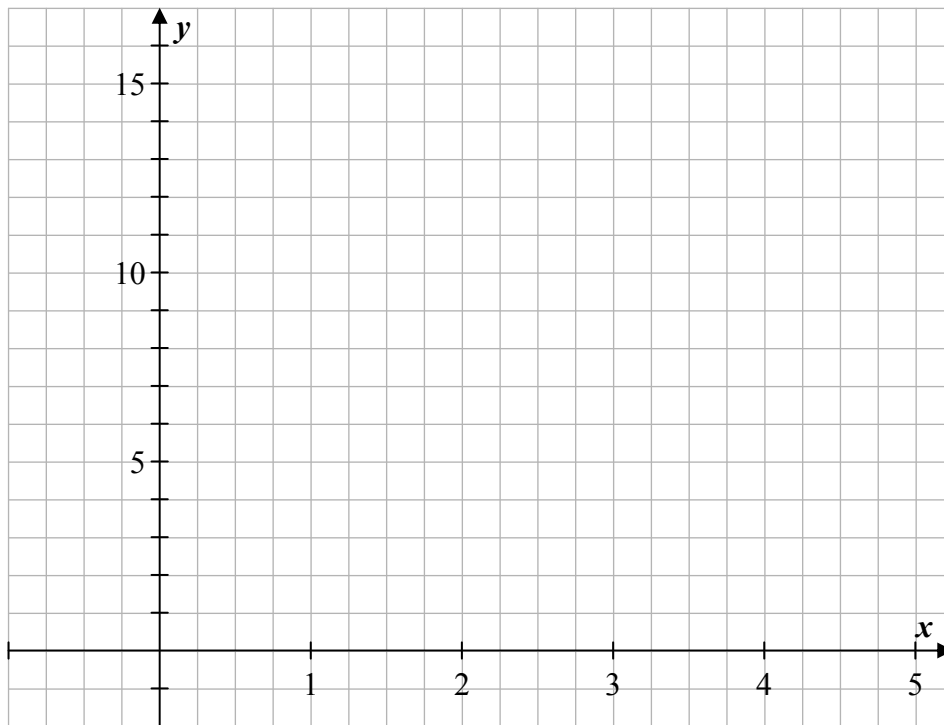
**Question 19**

**(Suggested maximum time: 10 minutes)**

**(i)** Given that  $y = 3x + 1$ , complete the table below. Show all your work.

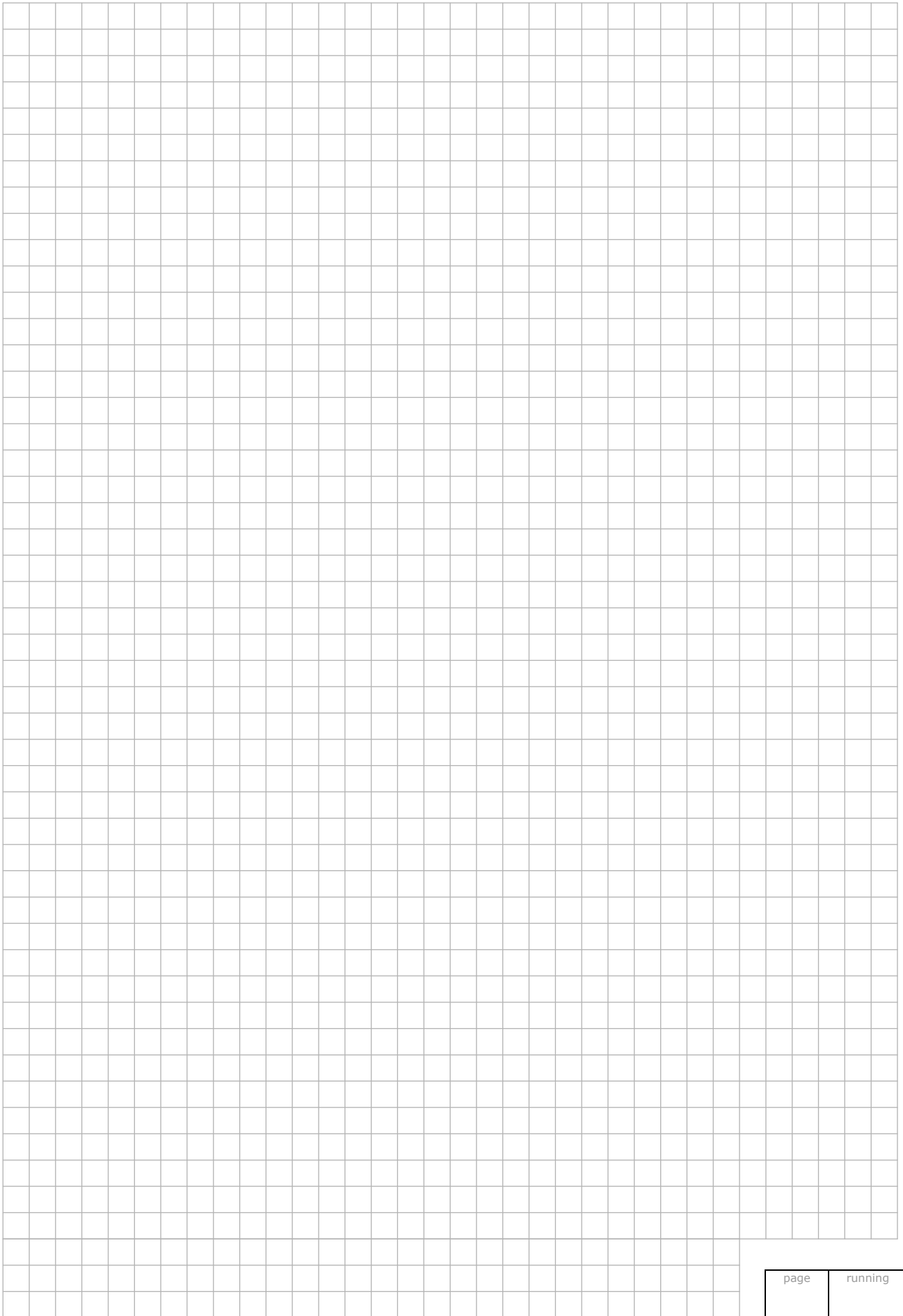
$x$	1	2	3	4
$y$			10	

**(ii)** Using your answers from **(i)**, draw the graph of  $y = 3x + 1$  from  $x = 1$  to  $x = 4$ .

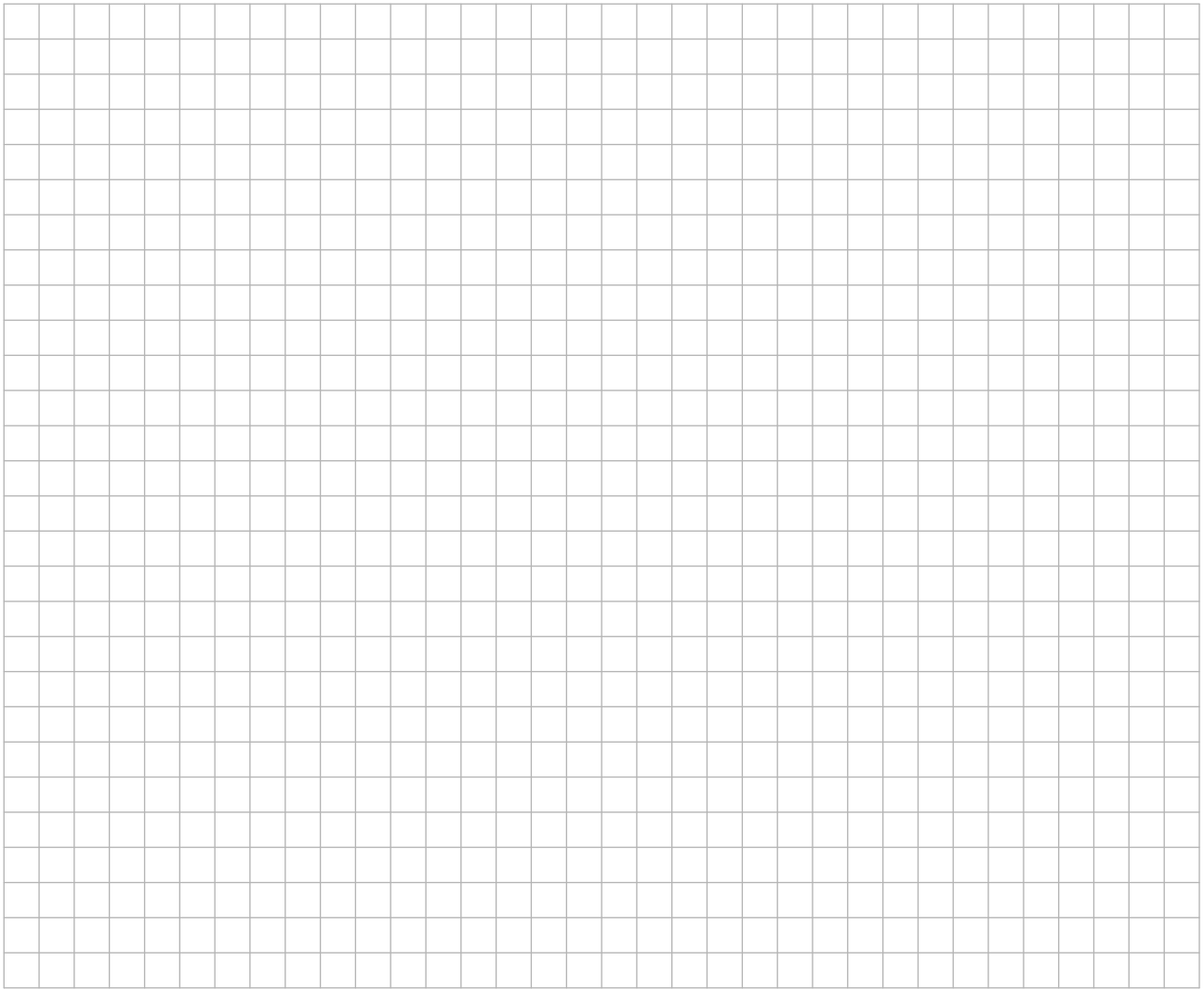


**(iii)** Use your graph to find the value of  $y$  when  $x = 3.5$ . Show your work on the graph.

You may use this page for extra work



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*Note to readers of this document:*

This sample paper is intended to help teachers and candidates prepare for the June 2014 examination in *Mathematics* under Phase 2 of *Project Maths*. The content and structure do not necessarily reflect the 2015 or subsequent examinations.

In the 2014 examination, the material in one question will be based on content from the previous syllabus. This will be similar in style and content to previous such questions. On this sample paper, Question 14 from the 2013 examination has been inserted, as Question 19, to illustrate.

Junior Certificate 2014 – Foundation Level

## Mathematics (Project Maths – Phase 2)

Sample Paper

Time: 2 hours