Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination 2015

Mathematics

Foundation Level

Friday 5 June – Afternoon 2:00 to 4:00

300 marks

Examination number

Centre Stamp

Running total	

For examiner			
Question	Mark	Question	Mark
1		11	
2		12	
3		13	
4		14	
5			
6			
7			
8			
9			
10		Total	

Grade

Instructions

There are 14 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.

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:

Question 1 **(Suggested maximum time: 10 minutes)**

Find the value of each of the following.

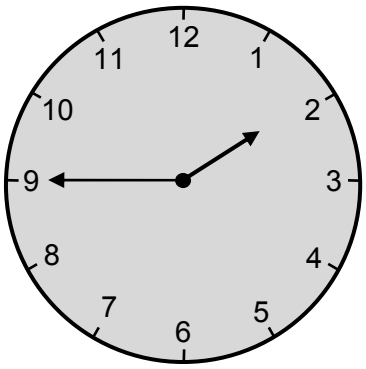
(a) $542 + 419 =$

(b) $3125 \div 5 =$

(c) $2^3 =$

(d) $2 \times (8 + 3) =$

(e) The clock shows the time Peadar's Maths class begins.



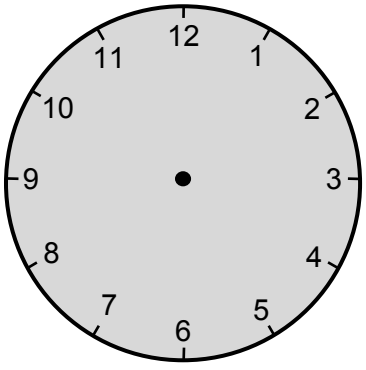
(i) At what time does Peadar's Maths class begin?

The class finishes 40 minutes later.

(ii) At what time does the class finish?

School finishes at 16:10.

(iii) Show this time on the clock.



Question 2 **(Suggested maximum time: 5 minutes)**

A bus fare is €1·85 per student.

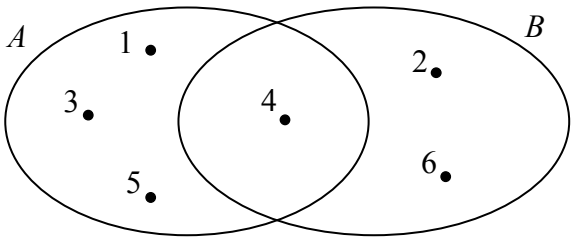
(a) Find the fare for four students.

Aisling pays the fare for the four students with a €10 note.

(b) How much change should she get?

Question 3 **(Suggested maximum time: 5 minutes)**

(a) The sets A and B are shown in the diagram below.



Fill in the elements of the following two sets.

(i) $A =$ { , , , }

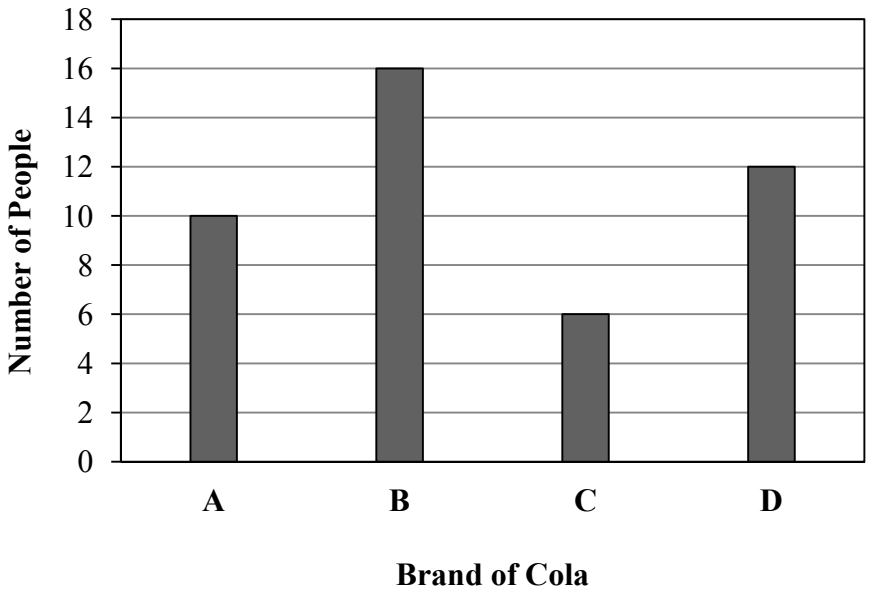
(ii) $A \cap B =$ { }

(b) Find the **mean** of these numbers:

18, 15, 11, 13, 13.

Question 4 **(Suggested maximum time: 5 minutes)**

A group of people was asked which of four brands of cola (**A**, **B**, **C**, or **D**) each liked best.
The results are shown in the bar chart below.



(a) Which brand was **most** popular? Answer: ☐

(b) Which brand was **least** popular? Answer: ☐

(c) Fill in the missing letter in this sentence.

"Brand ☐ was **twice** as popular as brand **C**."

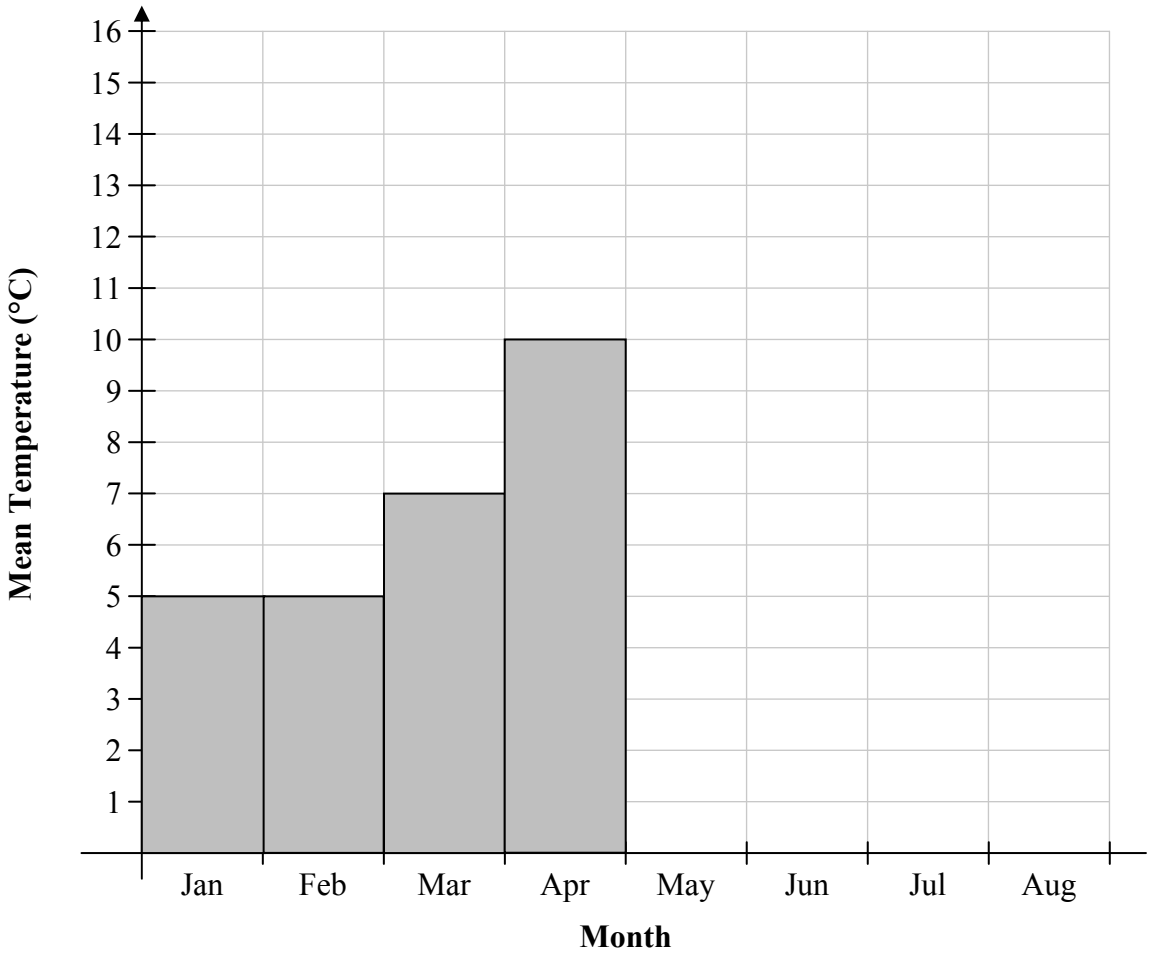
Question 5 **(Suggested maximum time: 10 minutes)**

The table below shows the mean temperature in Moorepark for the first 8 months of 2014.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Mean Temperature (°C)	5	5	7	10	12	15	16	14

The bar chart below shows this information for the first 4 months in the table.

(a) **Finish** the graph to show all the information in the table.



(b) In which month was the mean temperature 12°C?

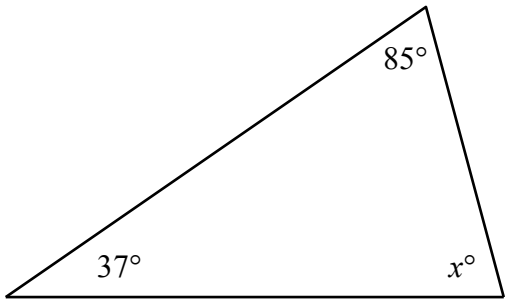
Answer:

(c) For how many of these months was the mean temperature **above** 9°C?

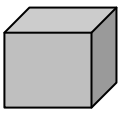
Answer:

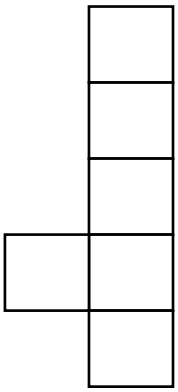
Question 6 **(Suggested maximum time: 15 minutes)**

(a) **Calculate** the value of x in this triangle.

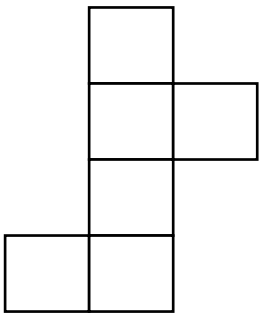


(b) Which of the shapes **A**, **B**, or **C** is a correct **net** of a **cube**?

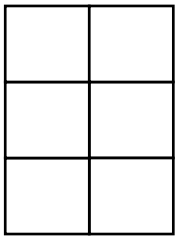




A



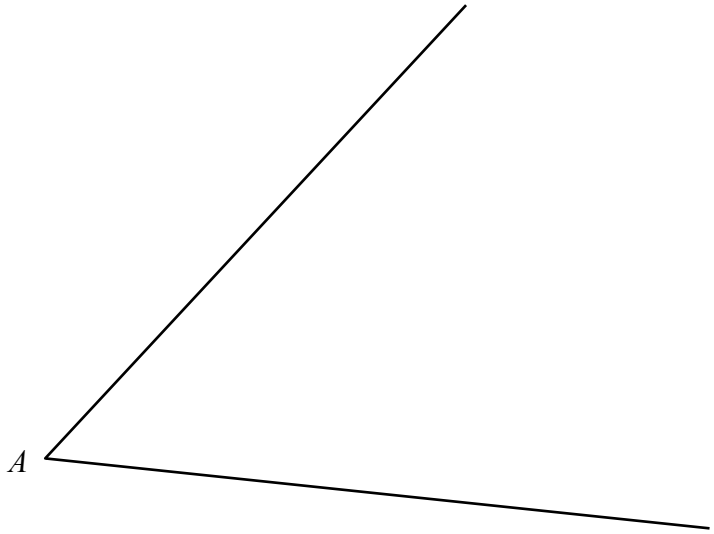
B



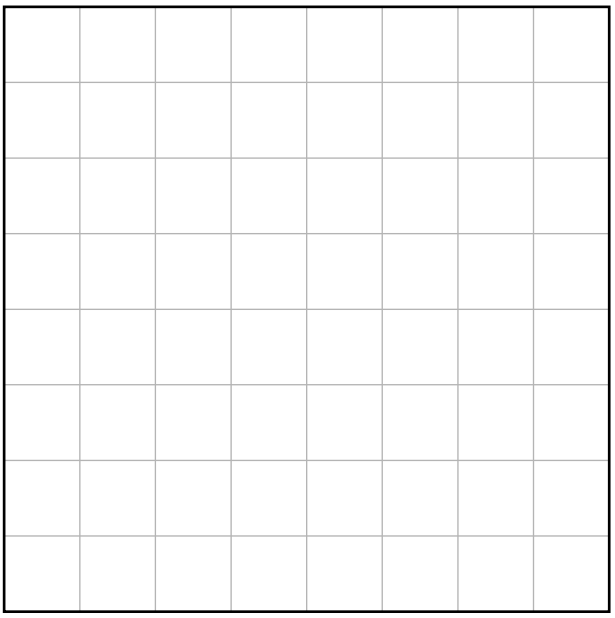
C

Answer:

(c) **Construct** the **bisector** of the angle at A, using only a compass and ruler.
Show your construction lines clearly.



(d) **(i)** Using a compass, draw the **biggest circle** that will fit into the big square below.



(ii) Find the **radius** of your circle, in centimetres.

Radius = ☐ cm

Question 7 **(Suggested maximum time: 10 minutes)**

Wayne wants to buy a motorbike. He has two options to pay for it.

Option 1: Wayne can pay a deposit of €800, and then pay €120 a month for 24 months.

(a) Find the total cost of the motorbike, using **Option 1**.

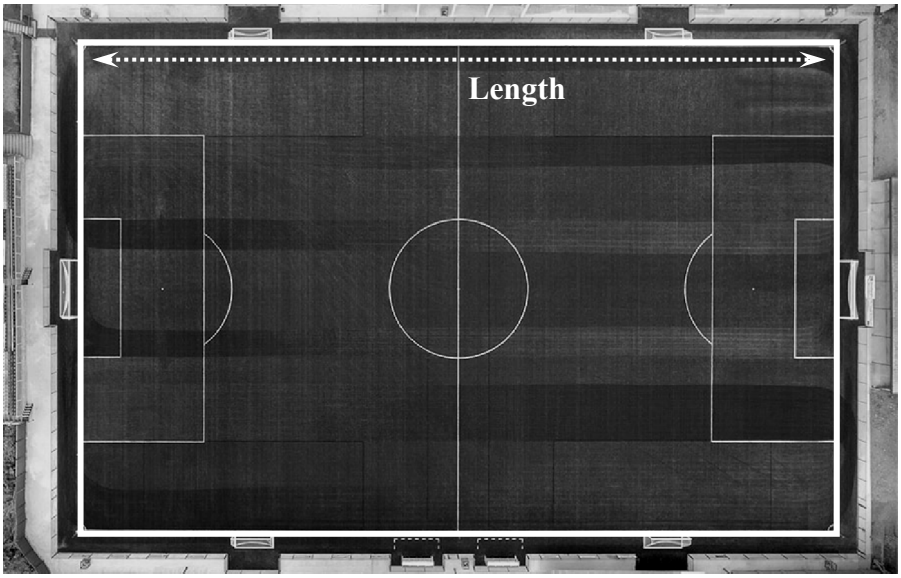
Deposit =	€
24 months @ €120 per month =	€
Total Cost =	€

Option 2: Wayne can make one payment of €3200 for the motorbike.

(b) How much money would Wayne save if he chose **Option 2** instead of **Option 1**?

Question 8 **(Suggested maximum time: 5 minutes)**

Below is a photograph of a soccer pitch.
The pitch is a rectangle. It is outlined in white in the photograph.
The length of the pitch is marked.



Source: www.horizonimaging.co.uk. Altered.

(a) Using your ruler, find the **length** and the **width** of the pitch in the photograph.
Give each answer in centimetres, correct to one decimal place.

Length = ☐ cm

Width = ☐ cm

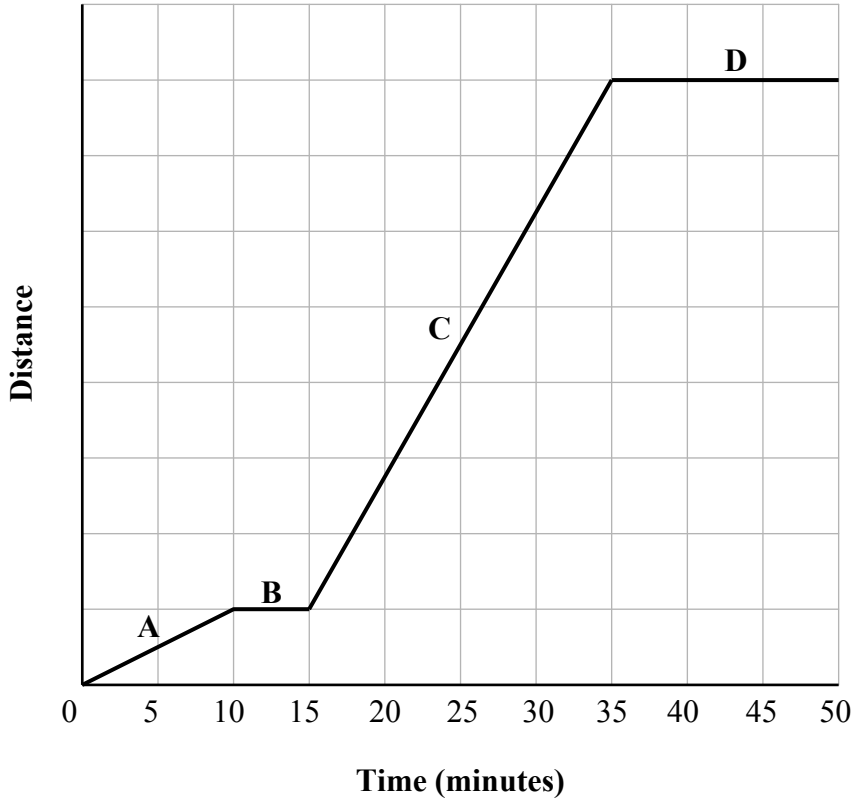
(b) Find the **perimeter** of the pitch in the photograph, in centimetres.

The photograph is to a scale of 1 cm = 10 m.

(c) Find the **actual perimeter** of the pitch, in metres.

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

Gráinne is taking part in a training session.
The graph shows the distance she travelled during the session.
The four parts of the graph are labelled **A**, **B**, **C**, and **D**.



Write the letters **A**, **B**, **C**, and **D** into the table to match each description with the correct part of the graph.

Description	Part of the Graph
Gráinne runs for 20 minutes	
Gráinne stops for 15 minutes	
Gráinne walks for 10 minutes	
Gráinne stops for 5 minutes	

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

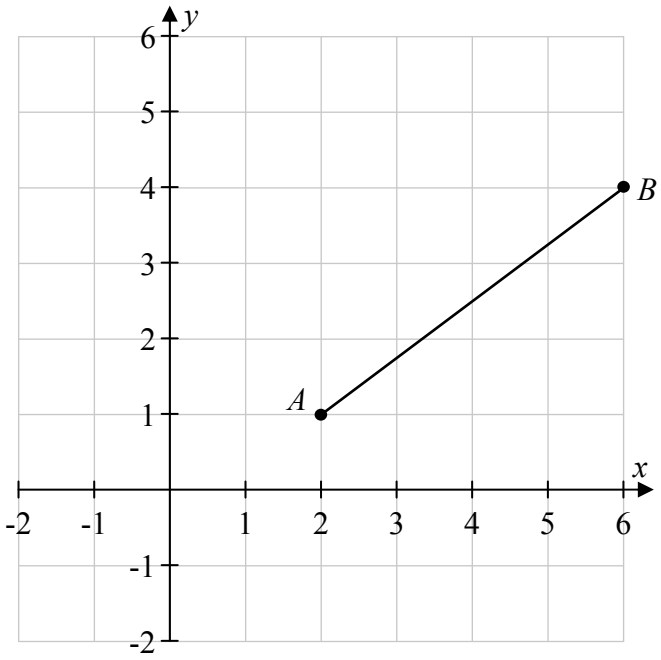
(a) Find the value of $3x + 2$ when $x = 5$.

(b) Simplify $7x + 2y + x + 3y$.

(c) Solve the equation $3x - 1 = 11$.

Question 11 **(Suggested maximum time: 10 minutes)**

The line segment $[AB]$ is shown on the co-ordinate diagram below.



(a) Write down the **co-ordinates** of A and B.

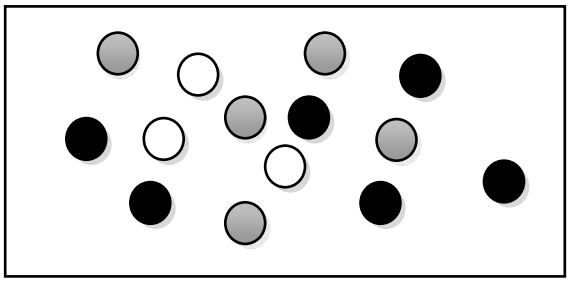
$A =$ (,) $B =$ (,)

(b) Find the **slope** of the line AB.

(c) Using your ruler, **draw** a line on the diagram through A that has a slope **greater** than the slope of AB.

Question 12 **(Suggested maximum time: 5 minutes)**

Shauna has a bag of marbles. The picture shows the number of marbles of each colour in the bag.



(a) Fill in the table to show the number of marbles of each colour in Shauna's bag.

Colour	Black	White	Grey
Number of marbles		3	

(b) Find the **total** number of marbles in the bag.

One marble is picked at random from the bag.

(c) Find the **probability** that a **white** marble is picked.

Answer =

(d) Find the **probability** that a **black or grey** marble is picked.

Answer =

Question 13 **(Suggested maximum time: 5 minutes)**

x is a number. Here are five terms containing x.

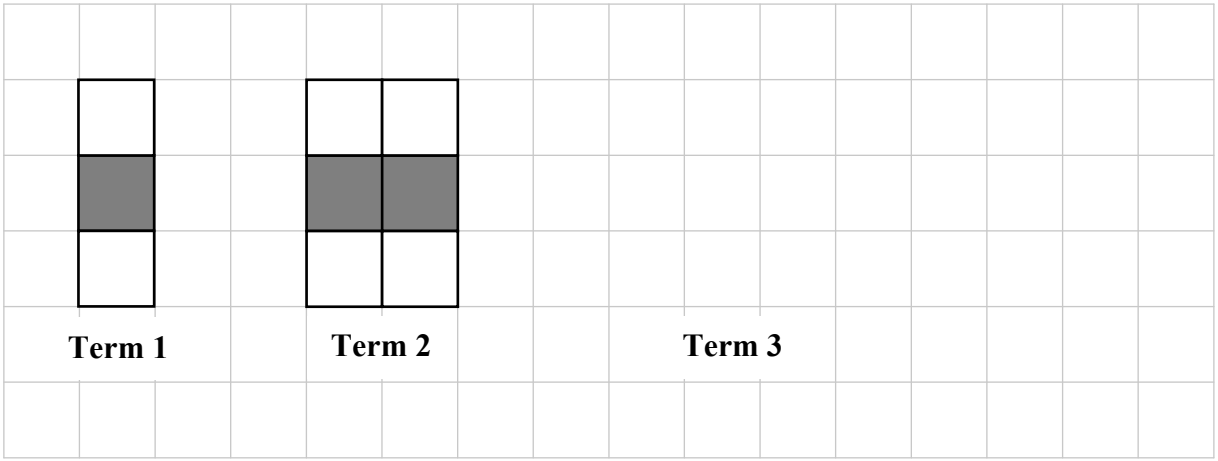
$$2x \qquad \frac{x}{2} \qquad x^2 \qquad 2+x \qquad \sqrt{x}$$

Write each term into the table below to match it with the correct description.

Description	Term
The **square root** of the number.	$\sqrt{x}$
The number is **divided** by 2.	
The number is **multiplied** by 2.	
The number is **added** to 2.	
The number is **squared**.	

Question 14 **(Suggested maximum time: 10 minutes)**

A pattern is made using white tiles and shaded tiles.
Here are the first two terms in the pattern.



(a) **Draw Term 3** of the pattern in the grid above.

(b) Fill in the fraction boxes below to show what fraction of each term is shaded.

Term 1	Term 2	Term 3
$\frac{\quad}{3}$	$\frac{2}{\quad}$	$\frac{\quad}{\quad}$

Ciarán draws another term of the pattern. It has 14 white tiles.

(c) How many shaded tiles should it have?

You may use this page for extra work.

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