

FOR OFFICIAL USE

--	--	--	--	--	--

C

KU

PS

Total Mark

--	--

**3700/31/01**

NATIONAL  
QUALIFICATIONS  
2012

MONDAY, 30 APRIL  
1.00 PM – 2.30 PM

SCIENCE  
STANDARD GRADE  
Credit Level

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Date of birth

Day    Month    Year

--	--	--	--	--	--

Scottish candidate number

--	--	--	--	--	--	--	--	--	--

Number of seat

- 1 Answer as many questions as you can.
- 2 Read the whole of each question carefully before you answer it.
- 3 Write your answers in the spaces provided. Showing working may help in some questions.
- 4 Before leaving the examination room you must give this book to the Invigilator. If you do not, you may lose all the marks for this paper.







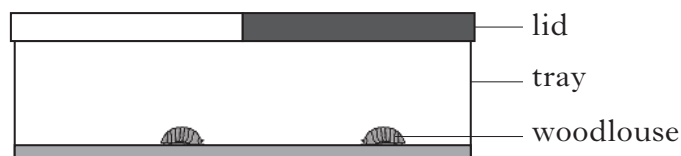
Marks

KU	PS
----	----

4. An investigation was carried out to find out how light affects where woodlice are found.

Two woodlice were placed in a tray with a plastic lid. Half of the lid was black to keep out light. The other half was clear to let in light.

After 1 minute the number of woodlice in each half of the tray was recorded.



Results

<i>Number of woodlice in light</i>	<i>Number of woodlice in dark</i>
1	1

The investigation was **fair** but could be improved to make the results more reliable.

Suggest **two improvements**.

1 .....

2 .....

2

--	--

--	--





Marks

KU	PS

**6. (continued)**

(d) Give **one** way in which the *lactose tolerance test* and the *hydrogen breath test*

(i) are similar. ....  
 ....

**1**

(ii) are different. ....  
 ....

**1**

(e) Explain why the diagnostic tests are not given to very young children.

.....

**1**

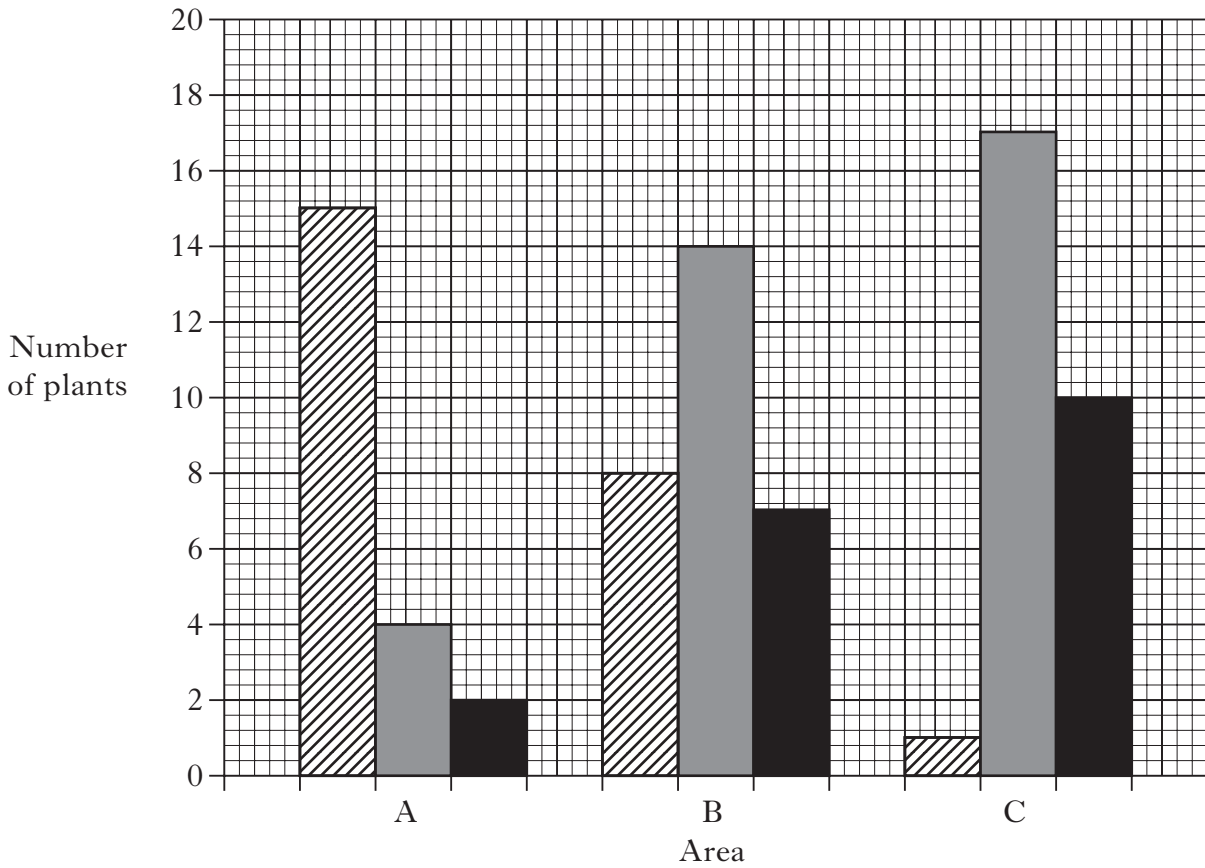
**[Turn over**







10. A group of students investigated the effect of light intensity on the numbers of wild plants in a woodland. They counted the numbers of wood sorrel, clover and daisies in areas A, B and C. For each area they recorded the light intensity. The results are shown in the bar graph and table below.



<i>Area</i>	<i>Light intensity</i> (units)
A	5
B	10
C	15





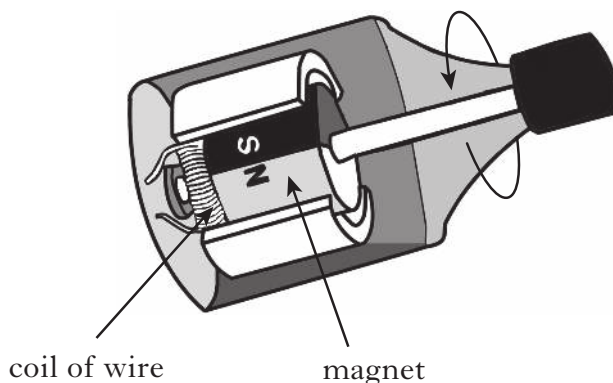




Marks

KU	PS
----	----

16. The diagram shows a simple electrical generator.



The magnet rotates beside a coil of wire and this produces an electrical current.

The current can be increased by using **more turns of wire** in the coil.

Give **two** other ways in which the electrical current can be increased.

1 .....

2 .....

2

17. The following table shows the number of river pollution incidents reported to an Environmental Agency in one year.

<i>Type of pollution incident</i>	<i>Number of reports</i>
Oil spill	9
Farm waste	27
Industrial waste	16
Rubbish dumping	63
Discoloured water	65

What percentage of the total number of reports was about rubbish dumping?

Space for working

Answer .....%

2

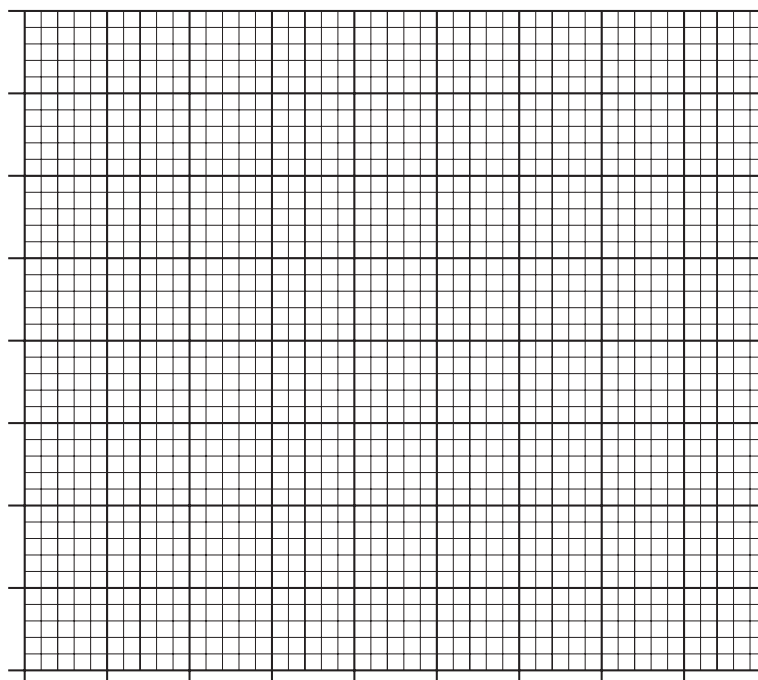
Marks

KU	PS

18. The table shows the oil production from three North Sea oilfields in the years 2004 and 2006.

Oilfield	Oil production (thousands of tonnes)	
	2004	2006
Buchan	370	320
Thistle	180	160
Tartan	175	105

(a) Construct a **single bar graph** to show all of this information.  
(Additional graph paper, if required, is provided on *Page twenty-five*.)



3

(b) Calculate the percentage decrease in oil production in the Tartan oilfield between 2004 and 2006.

Space for working

Answer .....%

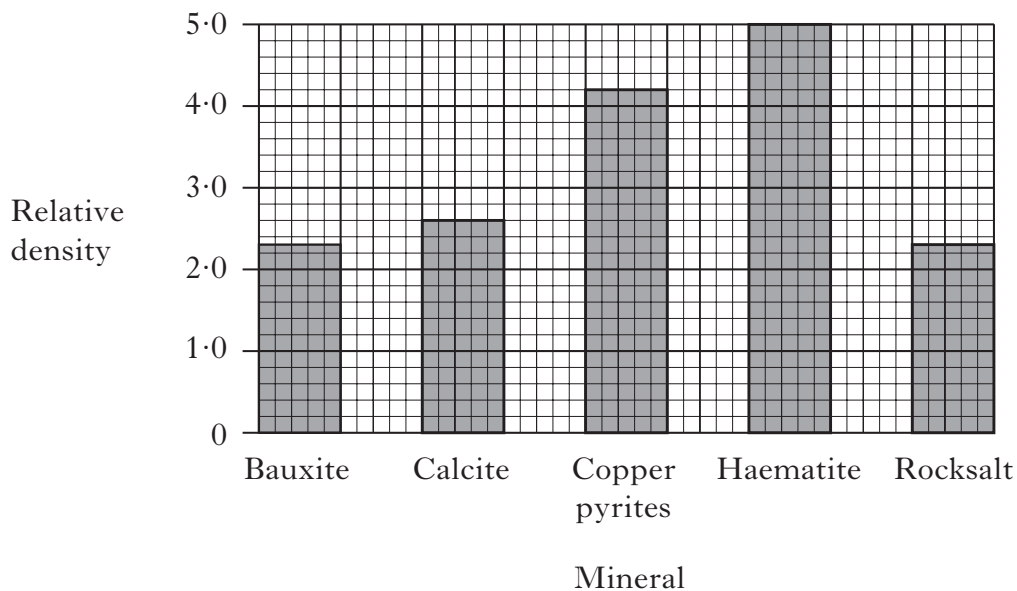
2





21. Some information about minerals found in the Earth's crust is given below.

<i>Mineral</i>	<i>Supply in Earth's crust</i>	<i>Annual world production (million tonnes)</i>	<i>Hardness value</i>	<i>Reaction with acid</i>
Bauxite	plentiful	80	2.0	no gas given off
Calcite	plentiful	1500	3.5	gas given off
Copper pyrites	limited	20	4.2	no gas given off
Haematite	plentiful	900	5.2	no gas given off
Rocksalt	plentiful	150	2.2	no gas given off



The **relative density** of a mineral is a measure of its density compared to water.

The **hardness** of a mineral is tested by scratching it.

A mineral with a higher hardness value can scratch any mineral with a lower hardness value.

Carbonate minerals react with acid to give off **gas**.

Marks	KU	PS
1		
1		
1		
1		

**21. (continued)**

Use **all** of the information to answer the following questions.

(a) What is the relative density of the mineral with a limited supply in the Earth's crust?

.....

(b) Which mineral is a carbonate?

.....

(c) A fingernail has a hardness value of 2.5.

List all the minerals that can be scratched by a fingernail.

.....

(d) What is the annual production of the mineral which has a relative density of 2.6?

..... million tonnes

**[Turn over**

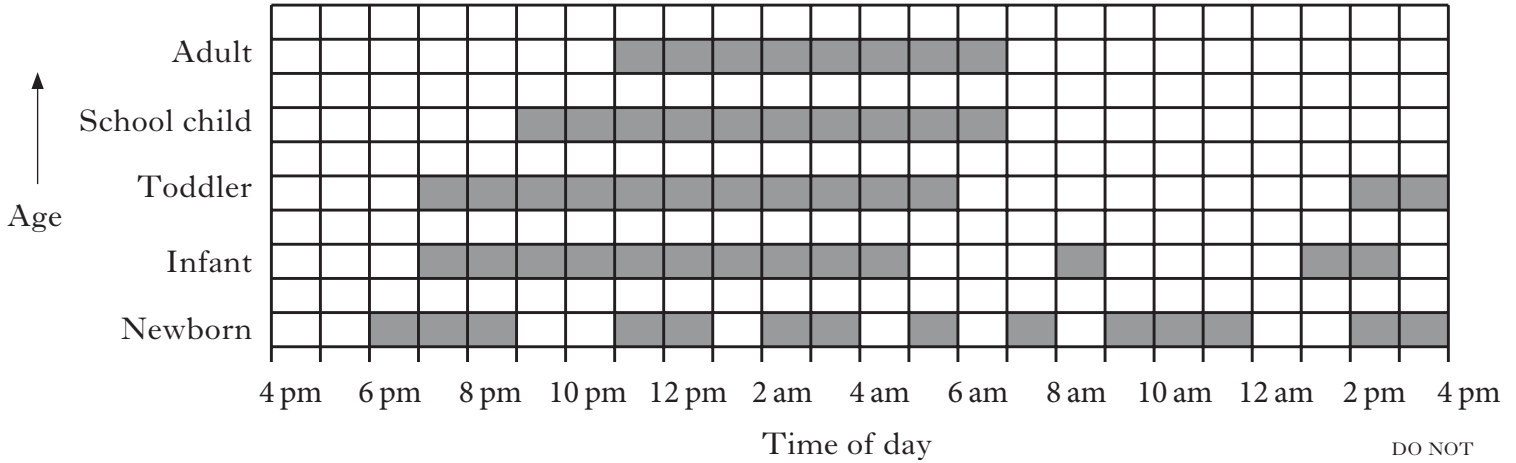




23. As humans get older their sleep patterns change.

The chart below shows sleep patterns over a 24 hour period for five people.

Key:  Awake  Asleep



DO NOT WRITE IN THIS MARGIN

- (a) Which person
- (i) has the longest continuous period of sleep?  
 ..... **1**
- (ii) sleeps for a total of 10 hours?  
 ..... **1**
- (b) Which **two** people are awake between 2 pm and 4 pm?  
 ..... and ..... **1**
- (c) The infant has the same sleep pattern every day for one week.  
 Calculate the total number of hours of sleep the infant gets in this week.

Space for working

Answer ..... hours **2**

Marks	KU	PS
<b>1</b>		
<b>1</b>		
<b>1</b>		
<b>2</b>		



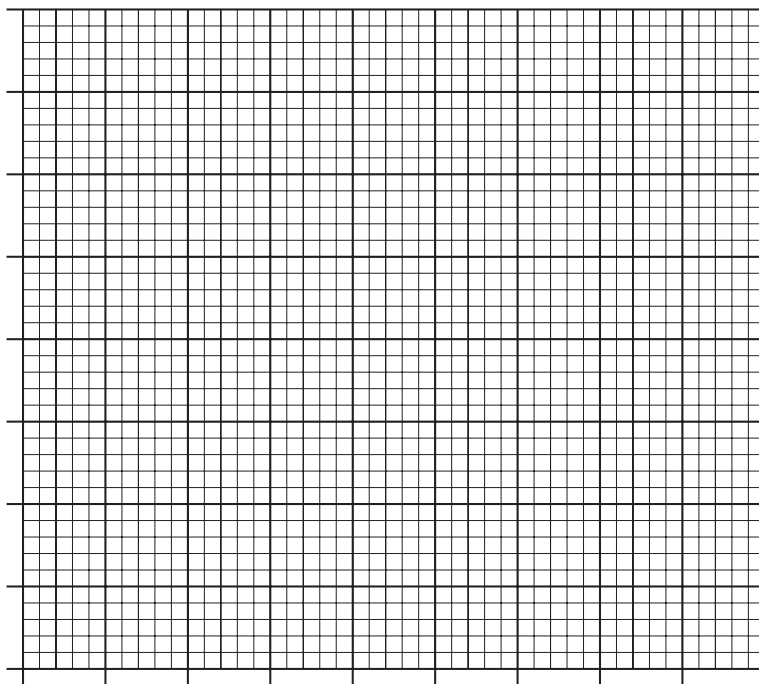




Marks

KU	PS

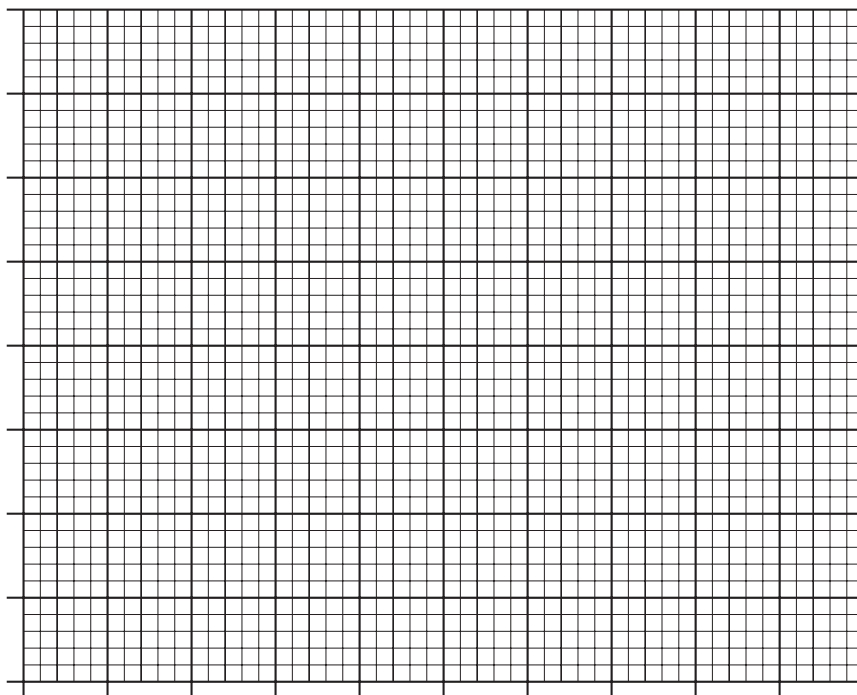
ADDITIONAL GRAPH PAPER FOR USE IN QUESTION 18(a)



Marks

KU	PS

ADDITIONAL GRAPH PAPER FOR USE IN QUESTION 25(a)



**[BLANK PAGE]**

**[BLANK PAGE]**