

## SET 2 - Aiming for level 5-6 at GCSE

**Q1.**

Two groups of pupils investigated the factors affecting the time taken for an indigestion tablet to dissolve in 100 cm<sup>3</sup> of water.



Group 1 recorded their results in the table below.

**results of group 1**

tablet	time taken to dissolve (s)
whole tablet	34
broken tablet	28
finely crushed tablet	22

- (a) What factor did group 1 change as they carried out their investigation?

.....

1 mark

- (b) Before the investigation, group 1 made a prediction.  
They found this prediction was supported by the results in the table.

What prediction did group 1 make?

.....

.....

1 mark

- (c) Group 2 investigated how the temperature of the water affects the time taken for a whole tablet to dissolve.

Here are their results.

### results of group 2

temperature of water (°C)	time taken to dissolve (s)
65	24
40	35
15	90
5	100

What factor did group 2 change as they carried out their investigation?

.....  
 .....

1 mark

(d) What pattern do the results recorded by group 2 show?

.....  
 .....

1 mark

(e) Look at the results presented by group 1 and group 2.

Both groups used the same type of tablet.

Estimate the temperature of water used by group 1.

.....°C

1 mark  
 maximum 5 marks

## Q2.

An alloy is a mixture of elements.

The table shows the mass of each element present in 100 g of five different alloys, **bronze**, **solder**, **steel**, **stainless steel** and **brass**.

alloy	mass of each element in 100 g of alloy							
	lead (g)	tin (g)	copper (g)	zinc (g)	carbon (g)	iron (g)	chromium (g)	nickel (g)
bronze		4	95	1				
solder	62	38						
steel					1	99		
stainless steel						70	20	10
brass			67	33				

- (a) Which **alloy** in the table above contains an element which is a non-metal?

.....

1 mark

- (b) Which **two alloys** in the table contain only **two metals**?

..... and .....

1 mark

- (c) Another alloy called nichrome contains only the elements chromium and nickel.  
100 g of nichrome contains 20 g of chromium.

How much nickel does it contain?

..... g

1 mark

- (d) Before 1992, two-pence coins were made of bronze.  
Steel rusts but bronze does **not** rust.

- (i) Why does bronze **not** rust?  
Use information in the table above to help you.

.....

.....

1 mark

- (ii) Rusting requires water and a gas from the air.  
Give the name of this gas.

.....

1 mark

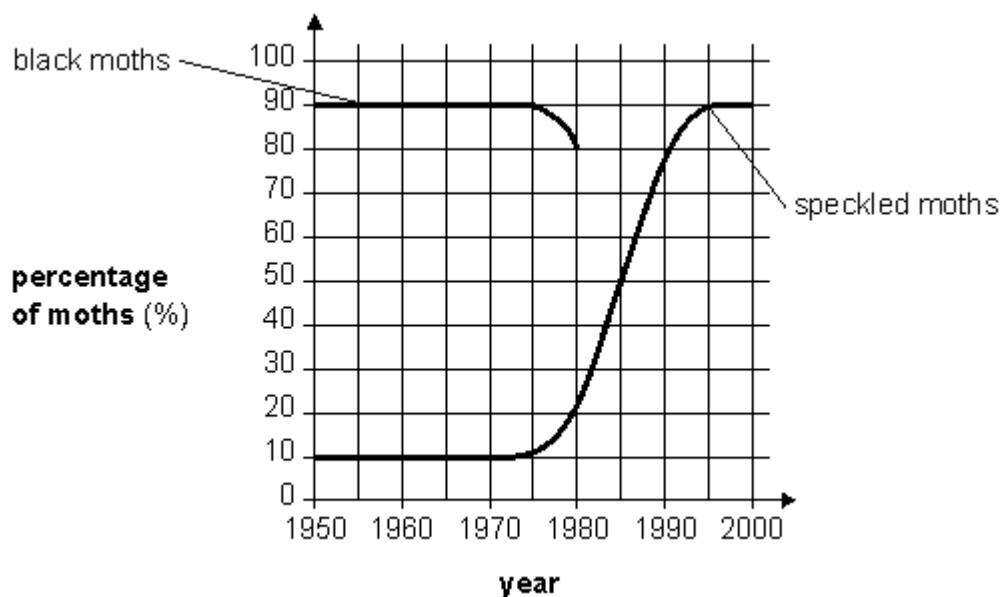
maximum 5 marks

### Q3.

The diagram below shows the two different forms of the same moth.  
All these moths are either speckled or black.



- (a) The graph below shows how the percentage of **speckled** moths changed between 1950 and 2000 in one city.



- (i) Complete the table below with the missing **year** and **percentage**. Use the graph.

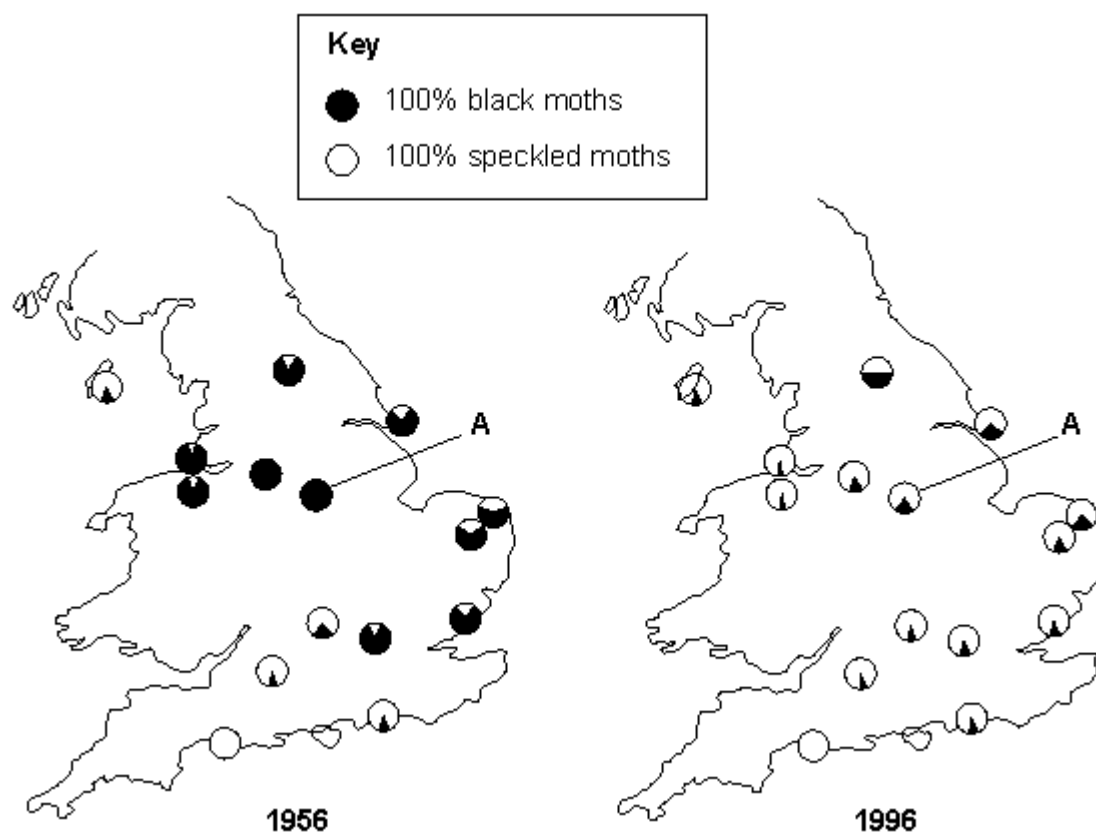
year	percentage of speckled moths (%)	percentage of black moths (%)	total percentage (%)
1970	10	90	100
_____	50	50	100
1990	78	_____	100

2 marks

- (ii) The percentage of **black** moths from 1950 to 1980 is also shown on the graph. **Continue** the line on the graph above to show how the percentage of **black** moths changed between 1980 and 2000.

2 marks

- (b) The maps below show the percentage of speckled moths and black moths at different places in Britain in 1956 and 1996.



How did the percentage of black moths change at place **A** between 1956 and 1996?

.....

1 mark

- (c) (i) Describe **one** way in which the data shown in the graph is better than the data shown in the maps.

.....

.....

1 mark

- (ii) Describe **one** way in which the data shown in the maps is better than the data shown in the graph.

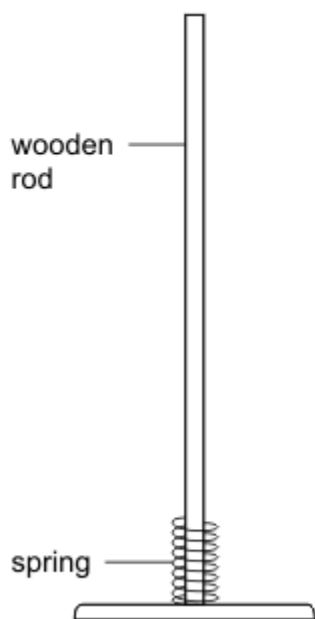
.....

.....

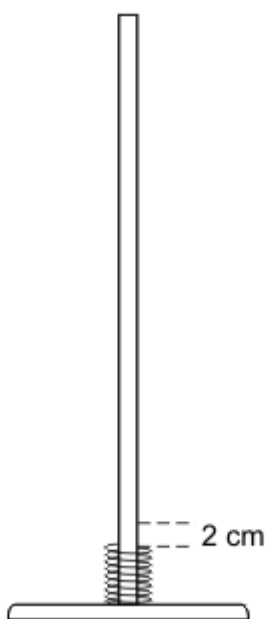
1 mark  
maximum 7 marks

**Q4.**

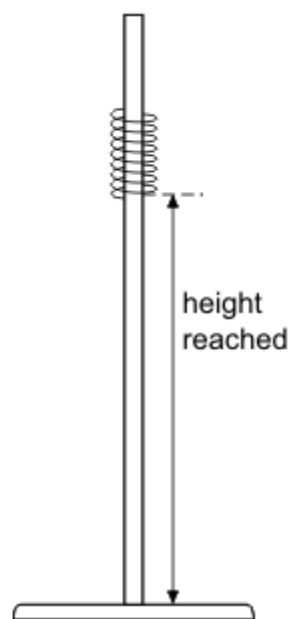
Jenny put a spring over a wooden rod.



She pressed the spring down 2 cm.

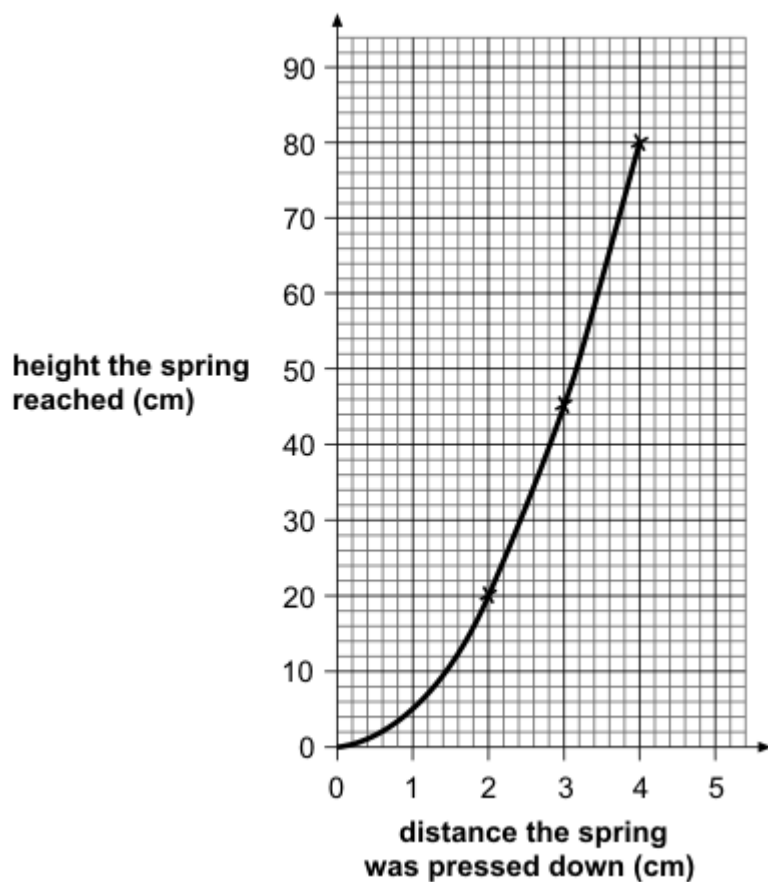


She let go of the spring and measured the height it reached.



*not to scale*

Jenny repeated her experiment. She pressed the spring down more each time. Her results are shown in the graph below.



- (a) Use Jenny's graph to complete the table below.

distance the spring was pressed down (cm)	height the spring reached (cm)
2	
3	
4	

1 mark

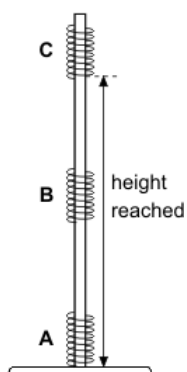
- (b) Jenny said, 'If I double the distance I press the spring down, the height it reaches will also double'.

How do the results show she was wrong?

.....  
 .....

1 mark

- (c) This diagram shows the moving spring in three different positions.



Complete the sentences below by choosing words from the box.  
 You can use each word more than once.

<b>most</b>	<b>some</b>	<b>least</b>
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- (i) When the spring is moving at **B** it has kinetic energy and ..... gravitational potential energy.
- (ii) When the spring reaches **C** it has ..... gravitational potential energy and ..... kinetic energy.
- (iii) When the spring stops at **A** it has ..... kinetic energy and ..... gravitational potential energy.

1 mark

1 mark

1 mark  
 maximum 5 marks

