

**science and nature reading paper  
year 6**

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

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Time: **33 minutes**

Marks: **28 marks**

Comments:

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# Inventions

**Think about your home and all the things inside it. Everything was invented by someone. Many things were invented to speed up housework, some were made for our enjoyment and others help us communicate. A few make homes safer, while others make your house cleaner.**

## The Telephone

In 1849, Italian engineer Antonio Meucci made the first telephone. He came across the idea by accident when he was trying to find a cure for headaches. Meucci believed that headaches could be cured by electricity. During his experiments he found that when the electricity was turned on sound travelled down the wires he was using. Meucci discovered that a pair of small cones joined together by wires made a basic telephone.

Soon after, a very similar invention was produced by a man called Alexander Graham Bell. Sadly, Meucci was unable to prove that his telephone was the first and he failed to make any money for all his hard work.



## The Vacuum Cleaner



At the beginning of the 20th century cleaning a carpet meant lifting it from the floor, carrying it outside and beating it until all the dust fell out. It was hard, dirty work. Surely there was an easier, cleaner way of cleaning?

Hubert Booth, a British engineer, went to watch an inventor demonstrating a cleaning machine that blew dust from the seats of railway carriages. It certainly worked! The jet of air blew dust from the cushions – into the faces of everyone watching!

Booth thought that it would be even more useful if the machine sucked the dirt up, rather than just blowing it to another place. So he put a handkerchief on a chair cushion. Pressing his mouth against it, he took a deep breath and breathed in a lungful of dust. Once he had stopped coughing he turned the handkerchief over. On the back was a dark ring of dirt where his mouth had been. Using this idea, Booth bought an electric motor and pump and in 1901 built the world's first vacuum cleaner.

## The Toaster

Charles Strite was so fed up with burnt toast that he invented a pop-up toaster in 1919. This meant you didn't have to stand around waiting for the bread to toast – you just put it in the toaster and it would pop up when it was ready.



## The Television

Although the invention of the television was the result of work by many people, Scottish inventor John Logie Baird is thought to be the first person to have produced an image on television.

In 1925, he created a camera which was made up of a jumble of lenses, spinning cardboard discs and electric motors. He pointed it at the head of a dummy called 'Stooky Bill'. Amazingly, it worked. An image of the dummy appeared on the little screen.



## The Microwave

During the Second World War in the 1940s, Percy Spencer, an American, was working on the radar – a machine used to detect enemy aeroplanes. One day, while he was working on this machine, he noticed that a bar of chocolate in his pocket had melted. He immediately realised that the microwaves from the radar machine had heated it.

Spencer sent his assistant to buy some dry corn, and put this right in front of the machine. Switching on the power turned it instantly into popcorn.



Next, Spencer put an egg in front of the machine, flipped the switch and waited. It trembled. It fizzed. Finally it exploded, sending shell and yolk everywhere, including in the face of his assistant!

Spencer designed his invention so that it was like a mini-oven. The first microwave cost the same as an expensive car!

## In the future

Now that the internet is being used more, people are inventing 'smart' machines so that owners can control them by phone. Imagine being able to put some washing on by sending a message to your washing machine. One washing machine, which was made recently, can even call out the engineer when it breaks down!

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1. Where could all these inventions be used?

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1 mark

2. Look at the section about the telephone.

What was Meucci trying to do when he had the idea for the telephone?

Tick **one**.

cure headaches

invent a cleaning machine

send sound down a wire

make money

1 mark

3. Look at the section about the vacuum cleaner.

Cleaning carpets the old way was *hard, dirty work*.

What made it hard work?

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1 mark

4. The vacuum cleaner was based on another machine.

What made the vacuum cleaner different to the machine that it was based on?

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1 mark

5. Look at the section about the toaster.

What problems did the pop-up toaster solve?

Write **two** things.

1. \_\_\_\_\_

2. \_\_\_\_\_

2 marks

6. Look at the paragraph beginning: *Next Spencer put an egg...*

How does the writer make this paragraph exciting?

Give **two** ways.

1. \_\_\_\_\_

2. \_\_\_\_\_

2 marks

7. According to the text, how might our machines be controlled in the future?

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1 mark

8. In what order do the inventions appear in the text?

Tick **one**.

order of importance

no particular order

alphabetical order

chronological order

1 mark

9. Who invented what?

Fill in the missing information.

Invention	Inventor
vacuum cleaner	
	Charles Strite
	John Logie Baird
microwave	

2 marks

10. Which two of the inventions were invented by accident?

1. \_\_\_\_\_

2. \_\_\_\_\_

2 marks

11. Where would you expect to find this text about inventions?

Tick **one**.

in a diary

in a story book

in a non-fiction book

in an atlas

1 mark



This text is about how ladybirds helped farmers in California to get rid of a plague of tiny insects that were killing their orange trees.

## California's Unlikely Warriors



Over 100 years ago in America, Californian orchards were almost destroyed by a plague of thousands of tiny creatures called scale insects. These tiny sap-sucking bugs were attacking the orange trees and ruining all the fruit.

Scale insects had never been seen in America before. So where had they come from? Eventually the invasion was traced to some acacia plants that had been shipped in from Australia.

The scale insects spread so quickly that unless something was done to get rid of them, the whole fruit industry in California would be ruined. The situation was so bad that Californian fruit growers were pulling up their fruit trees and burning them to destroy the pests. Soon, the takeover started to spread to other parts of America. Different kinds of pesticides were used to try to kill the insects but none of them worked.

By now thousands of orange trees were dying.

A professor from the Department of Agriculture, Charles V. Riley, suggested that the scale insects might be controlled by introducing other insects to feed on them. But no-one listened to him. No-one had ever heard such a theory before! They thought it was a crazy idea and laughed at his suggestion. This made Mr Riley more determined. He was sure that he was right.

He had heard that in Australia, scale insects were much less of a problem. So, why was this? Why were the Australians not suffering the same damage to their trees and plants?



Mr Riley predicted that the Australian scale insects must have a natural enemy that was reducing their numbers. Eventually he was able to persuade a researcher called Alfred Koebele to go to Australia to try to find out if this was the case.



In Australia, Mr Koebele visited many of the trees that attracted scale insects and made a surprising discovery – a large number of small colourful beetles were living in them. They were ladybirds, and everywhere he found scale insects on the fruit trees of Australia, he found ladybirds feasting on them. Mr Koebele scooped up as many of the little red and black creatures as he could and sent them back to California.

When the unlikely warriors were set free in one of the dying Californian orange groves, they cleared all the scale insects from the trees in just a few days. The original 350 ladybirds sent from Australia multiplied at such a staggering rate that by June that year over 10,000 were available to be distributed to fruit growers across California. The speed at which the pests were wiped out was astonishing. One grower, who had abandoned all hope for his young orange trees, was able to harvest two to three boxes of oranges from each tree by the end of the growing season.

So successful was the experiment that soon the Americans were breeding and distributing more and more ladybirds. Not only that, but before long other countries around the world also decided to import and breed Australian ladybirds.

Because of this remarkable result, we now know a lot more about these ladybirds. We know that scale insects are their favourite food and that some ladybirds can eat large amounts in a day. Ladybirds also like to eat honeydew, nectar and pollen – but they still need insects to help them grow and breed.

Today, scientists are still studying ways of using insects to help control the pests and parasites that regularly destroy our plants and trees. As we learn about some of the damage that chemical pesticides can cause, it seems even more important to take care of small creatures that can help us protect our environment.

There is an old superstition which says that ladybirds bring you luck. They certainly brought good fortune to the fruit growers of California!



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1. How long ago did the plague of scale insects attack in America?

\_\_\_\_\_

1 mark

2. What did the scale insects attack?

\_\_\_\_\_

1 mark

3. The scale insects sound like an army.

**Find** and **copy two** words in the first two paragraphs that support this idea.

1. \_\_\_\_\_

2. \_\_\_\_\_

2 marks

4. It was important to find a solution to the plague of insects quickly.

Explain why.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1 mark

5. Before ladybirds were introduced, how did the fruit growers try to solve the problem of scale insects?

\_\_\_\_\_  
\_\_\_\_\_

1 mark

6. Look at page 1.

1. What did Mr Riley suggest to solve the problem of scale insects?

\_\_\_\_\_

1 mark

2. How did other people react to Mr Riley's suggestion?

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1 mark

7. In the paragraph beginning: *In Australia, Mr Koebele visited ...*, the ladybirds are described as *feasting* on the scale insects.

What does the word *feasting* suggest about the ladybirds?

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1 mark

8. Look at the paragraph on page 2 beginning:

*When the unlikely warriors...*

How does the text emphasise the success of the ladybirds?

Explain fully, referring to the text in your answer.

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3 marks

9. Tick one box in each row to show whether each statement about ladybirds is **true** or **false**.

	<b>True</b>	<b>False</b>
They help protect the environment.		
They only eat scale insects.		
They can survive on just nectar and pollen.		
Some people say that they bring you good luck.		

1 mark