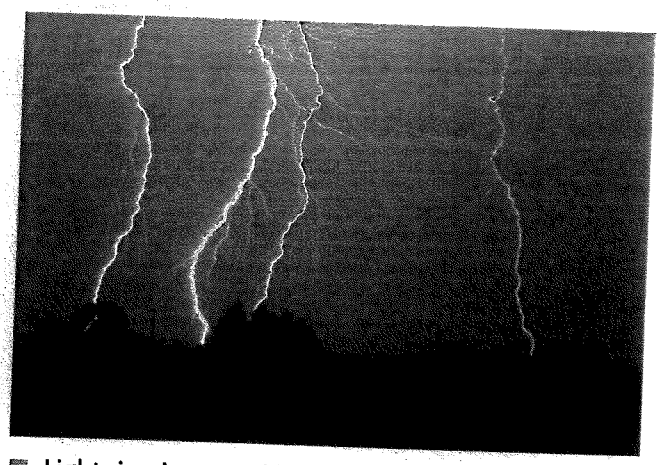


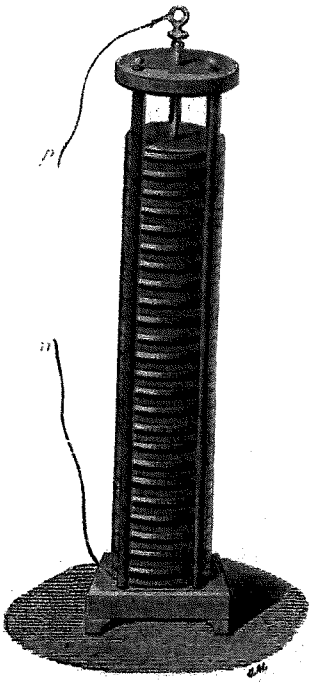
Lightning is caused by huge charges in the clouds

To make electricity useful, we need to make lots of it and make it move in a controlled way so it can carry its energy around to make things work.

Go further

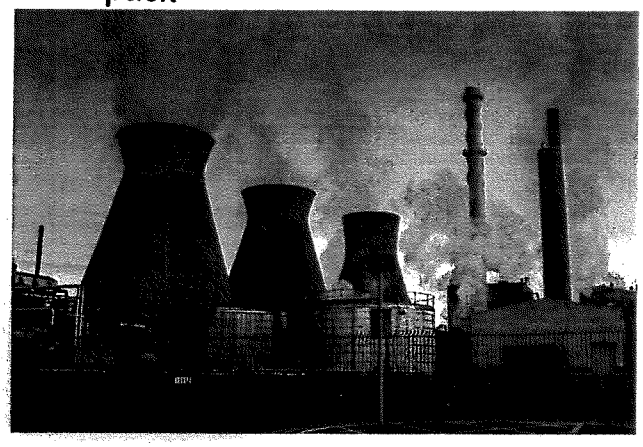
In 1792, an Italian scientist, Alessandro Volta, invented the first battery. It was a big pile of metal plates with wet sheets of card in between. He discovered that he could make the tiny charged particles from his battery flow along wires instead of making sparks.

Another important discovery was the electric light bulb. Two people, a British scientist called Joseph Swan and an American called Thomas Edison, both invented light bulbs at about the same time. No one really knows who had the idea first and the two men set up a company together to make their light bulbs. Some of these light bulbs were attached to Volta's batteries. A few years earlier another British scientist, Michael Faraday, had discovered how to make electricity using a magnet and a moving electrical conductor, which was a copper disc. The flow of electricity around a circuit made by this apparatus was quite small. However, when the copper disc was replaced by a coil of wire, bigger flows of electricity could be produced and the first useful electrical generator was made. This made it possible to make lots of electricity. Edison improved Faraday's design and, in 1882, a street in New York became the first street to be lit with electricity.



The first battery was a pile of metal discs with wet card between them

Electricity is now made in huge power stations, but it is still made in a similar way. In most power stations, steam is used to make the generator work. Steam is usually made by burning coal or gas. These are called **fossil fuels**, and they release carbon dioxide and other harmful gases into the air as they burn and are **non-renewable**. Carbon dioxide is a **greenhouse gas** and scientists believe that rising levels of this gas in the atmosphere are causing **global warming** (see Chapter 5). If we can reduce the amount of electricity we use we can help to reduce our contribution to global warming as well as saving money.



Electricity is made in power stations, usually by burning fossil fuels

Exercise 8.1a

1 What must happen to make electricity useful?

2 What was the name of the Italian scientist who made the first battery?

3 Describe the battery made by the scientist you have named.

4 Who invented the electric light bulb?

5 Who discovered how to make electricity using a magnet and a moving electrical conductor?

6 Where was the first street to be lit by electric lights?

7 What is the name given to the non-renewable fuels that are used in most power stations?

8 Why are these fuels harmful to the planet?

9 List three things that you have used today that need electricity to make them work.

10 Suggest two things you could do to reduce the amount of electricity you use.

Multiplying decimals

Write the missing numbers.

1 ☐ × 2·3 = 230

1. 100 × 2·3 = 230

2 10 × ☐ = 15

3 10 × ☐ = 34

4 100 × ☐ = 760

5 100 × ☐ = 480

6 ☐ × 31·2 = 312

7 ☐ × 4·23 = 423

8 100 × ☐ = 675

9 10 × ☐ = 80·9

10 100 × ☐ = 938

11 ☐ × 16·45 = 1645

12 10 × ☐ = 93·8

13 100 × ☐ = 895

14 ☐ × 67 = 6700

15 1000 × ☐ = 730

16 1000 × ☐ = 210

Problems

17 Stephen cycles **3·7 km** to work and the same distance home **5** days a week.

How far does he cycle in a fortnight? How far in **20** weeks? How far in a year if he has **4** weeks holiday?

18 A beanstalk is **3 mm** high.

Each day it grows to **10** times its original height that day.

How many days will it take until it is **3 km** high?

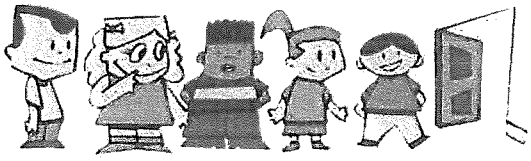
Explore

Multiply 2·1 by 10, 100, 1000, 20 and 200.

Explore quick ways of multiplying other decimal numbers by 10, 100, 1000, 20 and 200.

How quickly can you find the answers mentally?

Dividing decimals

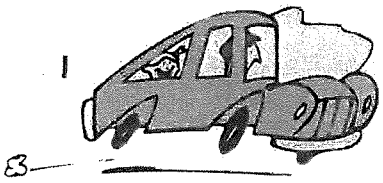


Place-value N16

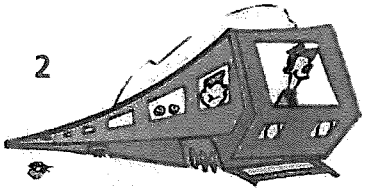
These are the total distances each child travels to and from school each week.

Write how far each child lives from school.

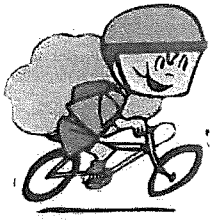
1. 47·3 km ÷ 10 = 4·73 km

1 

47·3 km

2 

61·4 km

3 

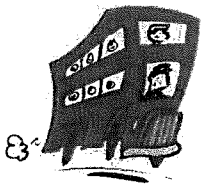
9·8 km

4 

11 km

5 

3·5 km

6 

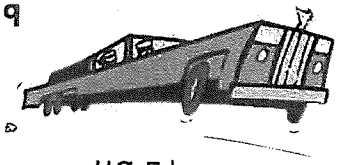
16·3 km

7 

75 km

8 

8 km

9 

119·5 km

How far does each child travel in 100 school days?

Copy and complete.

10. 14 ÷ 10 = 1·4

10 14 ÷ 10 = 

11  ÷ 10 = 0·173

12 6 ÷  = 0·6

13  ÷ 10 = 0·87

14 73 ÷ 10 = 

15 7·0 ÷ 10 = 

16  ÷ 10 = 0·975

17 0·3 ÷ 10 = 

18  ÷ 10 = 1·76

19 1·1 ÷ 10 = 

Investigate

Autobiographies

Investigate Workpack

An autobiography is an account of your own life.

- **Read the extracts. Tick the ones that are from autobiographies.**

1. The light shone brightly through the window as the tall man crept towards it. This was not the first time he had done this but he was fascinated by the riches which lay beyond the glass. Never in his life had he seen anything like it. It was worth the threat of prison. ☐

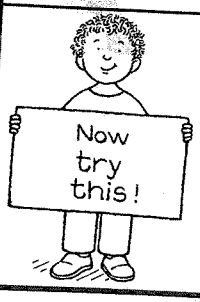
2. Many famous stars of the screen have changed their names because they thought their names were boring. The singer Judy Garland was born Frances Gumm. The actor Richard Burton was born Richard Jenkins. ☐

3. My mother never told me the truth about her family. If I had known that she had been really born a duchess, things might have been different for me. She always said, 'It's not who you are, young lady. It's who you make yourself that matters.' ☐

4. I always consider that my life really started when my uncle bought me the guitar. I would never be the world-famous name that I am if I had not started to strum on those plastic strings twenty years ago. ☐

- **Which pronouns are used in an autobiography?** _____
- **In which tense are autobiographies written?** _____

Extract	Autobiography or not?	How I know
1.		
2.		
3.		
4.		

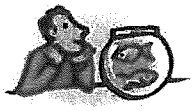


- **Find an example of an autobiography.**
- **Read the first page and write down some of the features you notice, such as verb tenses.**

Teachers' note Model with the children the characteristics of autobiography – especially the use of the first person. Discuss with children any autobiographies they have read, (such as *Boy* by Roald Dahl). Use this page with page 39 and compare the features of autobiography with those of biography.

Developing Literacy
Text Level Year 6

Multiplying by doubling



Copy and complete each line.

Use doubling to help you.

1. 3 × 8 = 24
   3 × 16 = 48
   3 × 32 = 96

1	3 × 8 =	3 × 16 =	3 × 32 =
2	5 × 7 =	5 × 14 =	5 × 28 =
3	4 × 9 =	4 × 18 =	4 × 36 =
4	7 × 6 =	7 × 12 =	7 × 24 =
5	3 × 7 =	3 × 14 =	3 × 28 =

Write the cost of tickets for each group of children.

6. £8 × 13 = £104
   £16 × 13 = £208

6	13 children	7	24 children
8	11 children	9	31 children
10	12 children	11	20 children
12	35 children	13	23 children
14	17 children	15	21 children
16	33 children	17	42 children