

Before you start

- 1 Work with a partner. In your own language, think of four words to describe engineering. Compare your words with another pair and agree on four words. How do you say these words in English? Write down four English words to describe engineering.

Reading

- 2 Read the headings of the paragraphs (1–4) below. Underline any new words and look them up in the glossary or your dictionary. What do you think each paragraph will be about?
- 3 Read the paragraphs (1–4) below and check.

1 Engineering is everywhere

Almost everything we use in modern life is made by engineers. For example, if **a manufacturer** wants a faster car, a smaller personal stereo, or a better pen, they will ask a design engineer to find a practical **solution**.

2 Engineering is both theoretical and practical

Engineers use theory (ideas about engineering) to produce practical answers. The design solution must be a reasonable price, safe, and reliable. A new idea that is expensive, dangerous, or doesn't always work is not a good solution.

3 Engineers use a method

Generally, engineers solve problems in a **methodical** way. Engineers:

- 1 **define** the problem,
- 2 **design** a solution,
- 3 test the solution,
- 4 **evaluate** the solution.

If the solution isn't right, the process is repeated. When a good solution is found, the next step is to:

- 5 communicate the solution.

4 Anyone can use engineering ideas

This method of problem-solving is useful in **everyday** life. For example, you can use the five steps next time you prepare for a test.

- 1 Define the problem: I want to pass my test next week.
- 2 Design a solution: I will study for three hours a day.
- 3 Test the solution: Study for three hours a day and take the test.
- 4 Evaluate the solution: Have I passed the test with a good mark? Yes = a good solution. No = a bad solution, so think of a better one.
- 5 Communicate the solution: Tell your friends about your test-passing technique.



- 4 Read the four paragraphs again and decide if the sentences (1–4) below, are true (T) or false (F).

- | | |
|---|-----|
| 1 Lots of things are made by engineers. | T/F |
| 2 Engineering isn't practical. | T/F |
| 3 Engineers must think carefully. | T/F |
| 4 Only engineers can solve problems. | T/F |

Vocabulary

- 5 Match the **highlighted** words from the text with the meanings (1–7) below.

- | | |
|---------------|-------------------------|
| 1 plan | 5 careful |
| 2 say exactly | 6 assess the success of |
| 3 a business | 7 normal |
| 4 answer | |

Writing and Speaking

- 6 Read the paragraph headings again. Do you agree with them?
- 7 Work with a partner. Choose one of the problems below or your own problem. Solve it using the five steps. Make notes.
 - You want to go away for a weekend with your friends but your parents want you to study.
 - You want to buy a CD player but you haven't got any money.
- 8 Explain your problem and the solution to another pair of students.
- 9 Look at the four words you wrote to describe engineering at the beginning of the unit. Do you want to change them?

▶ Get real

Find an example of a new, improved design, for example, a new model of car, household appliance, or personal stereo. Compare the original and the new one. Which features are different? Is the new one better?