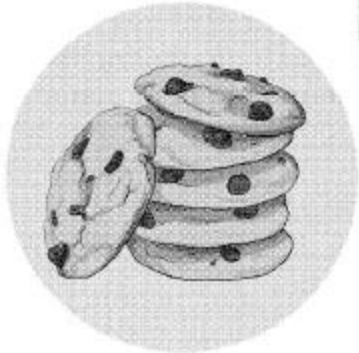
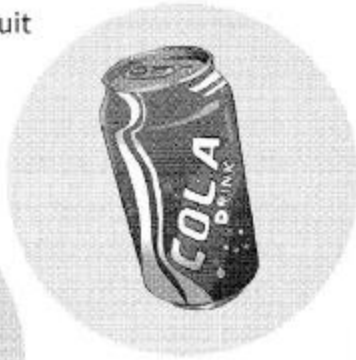


**1** Tick the inventions that you think were made by mistake. Read the text quickly to check your answers.

- 1 the internet
- 2 a popular soft drink
- 3 the first antibiotic
- 4 a popular type of biscuit



**2** Read the article and complete the sentences with one or two words in each space.

- 1 Silver Spencer was trying to make a glue that was easy to take off and didn't \_\_\_\_\_ the paper or pages it was stuck to.
- 2 Art Fry found that the glue didn't make the pages of his books dirty and so was very good for \_\_\_\_\_.
- 3 Constantine Fahlberg left a chemical on his hands by mistake, and while eating his lunch he found that his bread tasted unusually \_\_\_\_\_.
- 4 Saccharine is used instead of \_\_\_\_\_ to make soft drinks.
- 5 Alexander Fleming noticed that \_\_\_\_\_ weren't growing around the mould.
- 6 He realised that the substance could be used to cure \_\_\_\_\_.
- 7 Ruth Wakefield didn't have the right kind of \_\_\_\_\_.
- 8 The chocolate and dough didn't \_\_\_\_\_ together.

# Inventions that changed the world but were made by mistake

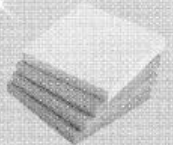


When you think of people who have invented something that has changed the world, you immediately think of the achievements of some very intelligent scientist. But their success often comes in an unexpected way. Did you know that the medicine penicillin was discovered because of a mistake? It's amazing to think that something that was an accident then became something that the whole world now uses to stop serious illness.

**Here are a few examples of inventions that were made by mistake:**

## Sticky notes

In 1968, scientist Spencer Silver created a type of glue that would stick to things but could be removed easily from any surface. He was really trying to create a super-strong glue but failed. Art Fry, another scientist, was tired of his bookmarks falling out of his books. He remembered Silver's special glue and wondered if this might be the answer to his problem. When he tried the glue on his bookmarks, they stuck and didn't damage the pages. It worked. It was then that he thought of the idea of using the glue on notes.



## Saccharine

Saccharine was discovered in 1879 by the chemist Constantine Fahlberg while he was working in his university laboratory. The discovery came because he forgot to wash his hands after spilling a chemical on them, and when he was eating his bread at lunch it tasted unusually sweet. It was later produced in huge quantities as an artificial sweetener and is now used in soft drinks to reduce the sugar and calories.



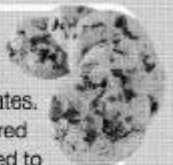
## Penicillin

Scientist Alexander Fleming invented penicillin, which helps stop infections by killing bacteria. He was on holiday and he had left a petri dish (a special dish used by scientists to grow bacteria) in his laboratory. When he returned, the dish had an unusual mould on it, but there were no bacteria growing. He realised that something in the mould was killing the bacteria. He also realised that if you use this substance on the human body, it stops serious illness. This became the first antibiotic, penicillin, which has saved millions of people's lives over the years.



## Chocolate chip cookies

In the 1930s, Ruth Wakefield owned a very popular restaurant called the Toll House Inn in the United States. While making some chocolate cookies, she discovered she had no special baker's chocolate left and decided to use some normal chocolate instead. She poured it into the dough, but the chocolate did not mix with the dough and this was how the chocolate chip cookie was born.



As Mark Twain said: 'Name the greatest of all inventors. Accident.' Many great inventions are the result of the creative use of a mistake.

### 3 Match the highlighted words in the text to their meanings.

- 1 a mixture made of flour and water used to make bread, biscuits and cakes .....
- 2 a substance used to stick things together .....
- 3 something that grows on old food .....
- 4 an artificial substance that has a similar taste to sugar .....
- 5 a room for doing scientific tests .....

### 4 Complete the sentences with the correct form of the words from Exercise 3.

- 1 Don't eat that! It's got ..... on it.
- 2 Diet cola is the same as normal cola, but it contains a ..... instead of sugar.
- 3 You have to wear special glasses to protect your eyes when working in the .....
- 4 After you've made the ....., put it in the oven.
- 5 It hasn't stuck properly. This ..... isn't very strong!

**1** Complete the zero conditional sentences using the correct form of the verbs in brackets in the correct order.

- 1 If you \_\_\_\_\_ your experiment work, you \_\_\_\_\_ happy. (feel, see)
- 2 If you \_\_\_\_\_ water, it \_\_\_\_\_ at 100 °C. (boil, heat)
- 3 I \_\_\_\_\_ always exhausted the next day if I \_\_\_\_\_ to bed very late. (be, go)
- 4 They \_\_\_\_\_ the schools in the United States if the temperature \_\_\_\_\_ to -20 °C. (close, drop)
- 5 If my brother \_\_\_\_\_ under a ladder, he \_\_\_\_\_ he will have bad luck. (think, walk)
- 6 My sister \_\_\_\_\_ her science classes if she \_\_\_\_\_ in a group with her friends. (work, enjoy)

**2** Complete the text with the correct form of the verbs in the box.



become	get	go
pour	make	say

There is a hole in my roof. When it rains, the water <sup>1</sup> \_\_\_\_\_ in. When the water comes in, it <sup>2</sup> \_\_\_\_\_ the floor wet. When the floor is wet, the walls <sup>3</sup> \_\_\_\_\_ green. When the walls are green, I <sup>4</sup> \_\_\_\_\_ ill. When I am ill, I <sup>5</sup> \_\_\_\_\_ to the doctor. When I see the doctor, he always <sup>6</sup> \_\_\_\_\_ the same thing: 'Fix the roof!'

**3** Match the sentence halves.

- |                              |       |
|------------------------------|-------|
| 1 If you freeze water,       | _____ |
| 2 If you take penicillin,    | _____ |
| 3 If you pour oil on water,  | _____ |
| 4 If you don't water plants, | _____ |
| 5 If you heat ice,           | _____ |
- a it becomes liquid.  
 b they will die.  
 c it will become solid.  
 d it will kill the infection.  
 e it floats.

**4** Complete the text with the correct form of the verbs.

My mum enjoys talking about science because she studied it at university. If someone <sup>1</sup>is / will be interested, she shares her knowledge with them because she <sup>2</sup>believes / doesn't believe that one of the main benefits of having knowledge is that you can pass it on to other people. If there <sup>3</sup>is / will be a science programme on TV, she <sup>4</sup>will watch / won't watch it. Last week she was really disappointed because her favourite science TV show wasn't on. If this happens, she <sup>5</sup>reads / will read her science magazine instead. I'm really lucky that my mum is good at science because if I have science homework, she <sup>6</sup>helps / will help me with it. Last week our teacher gave our test results back and I got a good mark. If I have children one day, I <sup>7</sup>share / will share my knowledge with them too.

**5** Choose the correct sentence in each pair.

- 1 a If you'll meet her, I'm sure that you'll like her.  
 b If you meet her, I'm sure that you'll like her.
- 2 a If you don't go with us, you'll missed out on a lot of fun.  
 b If you don't go with us, you'll miss out on a lot of fun.
- 3 a If you go, we'll have a better time.  
 b If you will go, we'll have a better time.
- 4 a It'll be a pleasure if you came.  
 b It'll be a pleasure if you come.
- 5 a If he doesn't smile, I know he's not happy with me.  
 b If he doesn't smile, I know he will be not happy with me.



Science tries to answer the biggest questions. For example, 'If we explore nearby galaxies, will we find other forms of life?' or 'What will happen to the planet if we don't stop climate change?' The greatest scientific achievements are awarded a Nobel Prize: Alexander Fleming (penicillin), Marie Curie (radioactivity) and Albert Einstein ( $E=mc^2$ ) are all Nobel Prize-winners. Science is serious, but scientists are only human and sometimes they want answers to questions like: 'Why do shower curtains blow towards you when you have a shower?' And so the Ig Nobel Prize was born, with the aim of making people smile first, and then think about science.

## Here's a selection of scientific ideas that have won an Ig Nobel Prize

**If a cow has a name, it produces more milk!** Farmers have always known this, but now there's **proof**. Cows *without* names produce about 13,000 litres a year, but cows *with* names produce 13,500 litres. This is probably because the cows with names feel more loved by farmers.



**Mosquitoes love the smell of feet.** They'll bite your feet if you take off your shoes! But Limberger cheese smells like feet and is even more attractive to mosquitoes, so they bite you less when there's Limberger nearby. This is a good example of how a silly discovery can be important. 'Cheesy' mosquito **traps** now help in the fight against malaria, a disease that is carried by mosquitoes. Malaria kills 500,000 people per year.

**When you **flip** a slice of toast, it falls to the ground with the buttered side down 80% of the time,** according to experiments. This is because it usually falls from table height and only has time to turn over once before it reaches the floor.



Only one person has won both an Ig Nobel and a Nobel Prize: Andre Geim made the headlines in 1997 for his 'flying frog' experiment, in which he made a frog **float** in the air! Then in 2010 he discovered graphene, a form of carbon that is one atom thick. Graphene is the thinnest and strongest substance known to man. There are no prizes for guessing which experiment won an Ig Nobel!



### 3 Answer the questions.

- 1 What's the difference between a Nobel Prize and an Ig Nobel Prize?
- 2 Why do cows without names produce less milk?
- 3 Why does toast fall with the buttered side down?
- 4 Why are some mosquitoes dangerous?
- 5 Which of Andre Geim's experiments do you think won a Nobel Prize? Why?

### 4 Match the **highlighted** words in the article to the meanings.

- 1 stay in the air without support
- 2 the reason for doing something
- 3 something for catching animals
- 4 information to show that something is true
- 5 allow something to fall
- 6 something difficult that you succeed in doing



### TALKING POINTS

What 'problem' would you like the Ig Nobel Prize to solve?  
What do you think are the biggest questions of our time? Why?

## 1 Read the examples and complete the rules.

- 1 If a cow **has** a name, it **produces** more milk.
- 2 Mosquitoes **bite** you less **when** there's cheese nearby.

## Zero conditional

- a We use the zero conditional for things that are *true / probable* or always happen.
- b We use the present simple in *the first / both* clauses.
- c The *if* or *When* clause can come first or second. The meaning is *different / the same*.

## 2 Complete the zero conditional sentences.

- 1 Water \_\_\_\_\_ (boil) when you \_\_\_\_\_ (heat) it to 100°C.
- 2 If you \_\_\_\_\_ (not add) sugar to this coffee, it \_\_\_\_\_ (taste) very bitter.
- 3 If you \_\_\_\_\_ (press) 'play', the music \_\_\_\_\_ (start).
- 4 When a player \_\_\_\_\_ (score) a goal, the fans \_\_\_\_\_ (go) crazy.
- 5 My journey to school \_\_\_\_\_ (be) quicker if I \_\_\_\_\_ (take) the bus.

## 3 Read the examples. Then choose the correct words to complete the rules.

- 1 What **will happen** to the planet **if we don't stop** climate change?
- 2 Mosquitoes **will bite** your feet **if you take off** your shoes.

6 Complete the sentences with *if* or *unless*.

- 1 \_\_\_\_\_ you fill the bottle, the experiment will work.  
The experiment won't work \_\_\_\_\_ you fill the bottle.
- 2 The computer won't turn on \_\_\_\_\_ you enter the password.  
\_\_\_\_\_ you enter the password, the computer will turn on.
- 3 I won't cover the picnic \_\_\_\_\_ the rain gets worse.  
I'll cover the picnic \_\_\_\_\_ the rain gets worse.
- 4 I hate soap operas. I'll watch TV with you \_\_\_\_\_ you turn to another channel.  
\_\_\_\_\_ you turn to another channel, I won't watch TV with you.

## 7 Correct the mistake in each sentence.

- 1 You want to start a fire, blow the flame gently at first.
- 2 Dad won't cook a pizza for you unless you'll text him later.
- 3 When it's OK with you, I'll come to your place after school.
- 4 Unless we'll meet before 8 pm, we won't have time to buy tickets.
- 5 Wrap yourself in a blanket you have a fever.

## First conditional

- a We use the first conditional to talk about possible or probable *future / past* events.
- b We use *if + present simple / past simple*, and *will + infinitive*.

## 4 Choose the correct words to make first conditional sentences.

- 1 If I light the candles, everyone *sing / will sing* 'Happy Birthday'.
- 2 What *will / do* you do if you get lost?
- 3 You *make up / will make up* if you shake hands.
- 4 Where will you go if it *will rain / rains* later?
- 5 The gift will look lovely if we *wrap / will wrap* it in some pretty paper.

## 5 Read the rule and choose the sentence that means the same.

Life will end **unless we stop** climate change. =

- a Life will end **if we don't stop** climate change.
- b Life will end **if we stop** climate change.

First conditional: *if* and *unless*

We can use *unless* instead of *if*. *Unless* means *if not*.