

**Level:** Intermediate (B1)

**Age:** Teenagers

**Time:** This lesson can be divided up in various ways to suit the time you have with your students. Below are three time options which you can choose from depending on the length of your class. However, these are just suggestions and there are plenty of other ways you could divide the lesson up.

90 minutes – Complete all activities in Use your brain, Brain activities and Einstein's life.

60 minutes – Complete Use your brain and Einstein's life.

45 minutes – Complete Brain activities.

**Summary:** This lesson is divided into three sections: Use your brain, Brain activities and Einstein's life. In the lesson, students will:

1. do a quiz about the human brain;
2. test their memories;
3. find out if the left or right side of their brain is dominant;
4. find out about Albert Einstein.

**Key skills:** reading, speaking and vocabulary

**Subskills:** descriptions, abilities, personal statements, brain expressions, biographies, science, comparative structures

**Materials:** one copy of Use your brain, Brain activities and Einstein's life per student

## USE YOUR BRAIN

1. Dictate the following sentence:

*It's the most complex object in the known universe.*

See if your students can guess what it is. (Answer: *the human brain*)

2. Ask students to tell you everything they know about the brain. Write this up on the board. You can use the following prompts to get the ideas flowing: size, weight, colour, human brain versus animal brains.

3. Now, get the class to decide if the information on the board is definitely true, probably true or possibly true.

4. Hand out the Use your brain worksheet. Students do the quiz individually first. Then, they compare answers in small groups. The groups should try and agree on one answer for each question.

**Key:** 1. *b*; 2. *c*; 3. *c*; 4. *a*; 5. *b*; 6. *b*; 7. *c*; 8. *a*

5. Check the answers with the class. Which group got the most correct answers? Do the answers to the quiz help to determine whether the information on the board is correct or not? Which information in the quiz did your students find the most surprising?

## BRAIN ACTIVITIES

1. Tell students that the brain has a left side and a right side, and that experiments suggest they control different things. Write the following things on the board

and elicit / explain what they mean. Then, ask students to guess which things are controlled by which side of the brain.

- language
- abstract thinking
- intuition
- logical thinking

**Key:** *left side – language and logical thinking; right side – abstract thinking and intuition*

2. Tell students that, in most people, one side of the brain is dominant. Now, hand out Brain activities worksheet 1. Students read the 12 statements in Which hemisphere of your brain is dominant? and circle either *true* or *false* for each one. They should then look at the results to see which side of their brain dominates.

3. Point students towards the Phrasebook and go through the language with them. Then, get them to discuss their results in a small group, using the language.

4. Next, students will learn some common idiomatic expressions that include the word *brain*. Ask your students to do the Brain expressions activity.

**Key:** 1. *b*; 2. *c*; 3. *e*; 4. *d*; 5. *a*

5. Once you have checked the answers as a class, get students to write sentences about themselves, their

family, friends and classmates using the expressions. Then, have them compare their sentences with a partner.

6. The Comparatives activity involves completing the sentences with the correct comparative structures. Students must complete the sentences with the comparative structures that make them true. They must do this without looking back at the quiz.

7. Before going through the answers, have students work together in pairs to check the accuracy of their comparative statements by referring back to the quiz. They should modify their statements accordingly. Then, elicit the correct answers from the class.

**Key:** 1. *less than*; 2. *the biggest*; 3. *smaller than*; 4. *as intelligent as*; 5. *better at*; 6. *as long as*; 7. *less*; 8. *much more*

Point out that the structure in statement 6 – **for as long as 30,000 years** – is used to emphasize the length of time, rather than to compare it with anything. This is a useful device for students to know.

8. Ask students to turn over their worksheets. Write the following prompts on the board and test students' memories of the statements, paying particular attention to the comparative structures.

- weight of human brain v dolphin brain
- human brain v brains of all other animals
- sperm whale v elephant
- sharks
- women v men
- 30,000 years
- energy
- seeing

### EINSTEIN'S LIFE

1. Write the word *genius* in the middle of the board. Ask students to call out the names of all the people that this word brings to mind.

Next, ask them why each person is considered to be a genius. Ask which person students would consider to be the greatest genius of all time. If they disagree, they should try to convince each other and come up with one name only. Then, give them copies of Einstein's life worksheet to see if their choice coincides with the person in the activity.

2. Ask students what they know about Albert Einstein. Write all they know (or think they know) on the board.

3. Then, get students to read the 12 facts. They should tick the facts they knew already, put a cross next to things they didn't know and put an exclamation mark next to facts that surprise them.

4. When they have finished, go through the language in the Phrasebook with the class. Then, get students to practise the language as they compare the Einstein facts that they found interesting and surprising in small groups.

### Homework task

Tell students, for homework, to type *ranker greatest minds of all time* into Google, and open the first website that comes up. The website ranks the greatest geniuses of all time by the power of their ideas and their impact on the world, as voted by the public.

They should choose the genius that most appeals to them and click on their name. This will open up a page with some basic information, some images and a further link to Wikipedia.

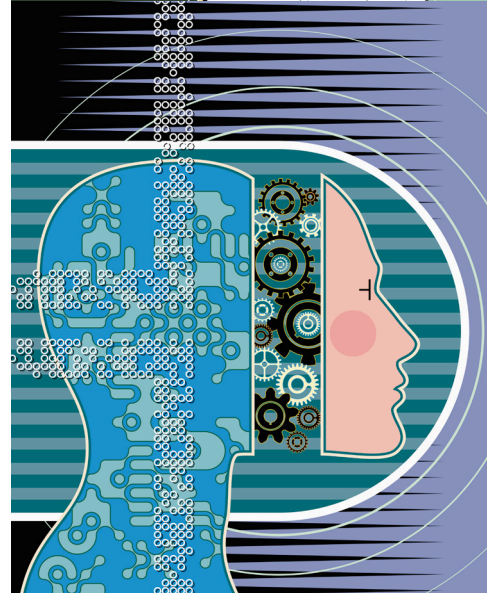
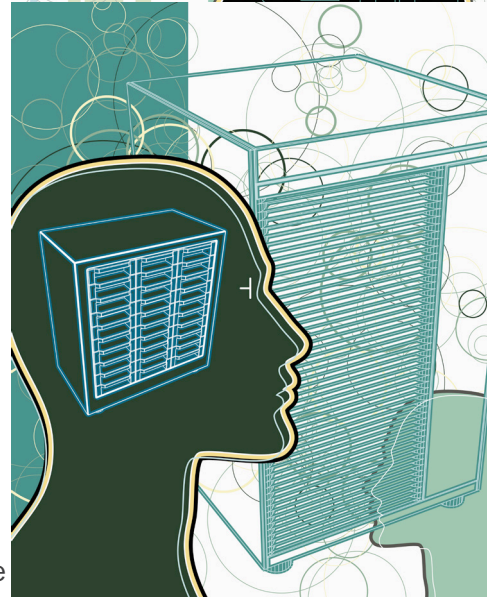
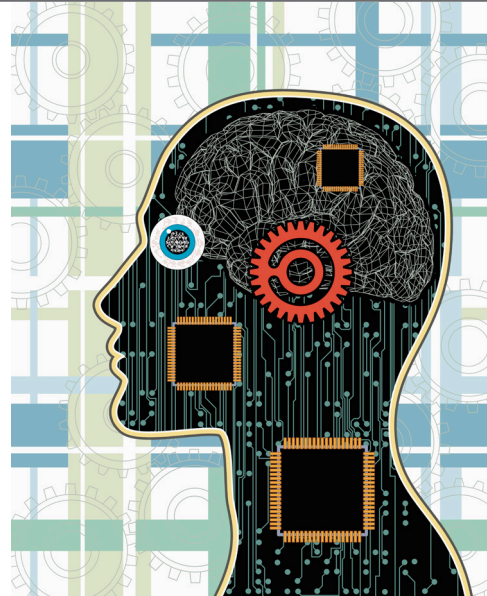
They must make some notes, including famous quotations, and print out some images, if they can. Next lesson, they can present what they found out to other students, either in groups or as a whole class.



## USE YOUR BRAIN

**Answer the questions and discover how much you know about the most complex object in the known universe!**

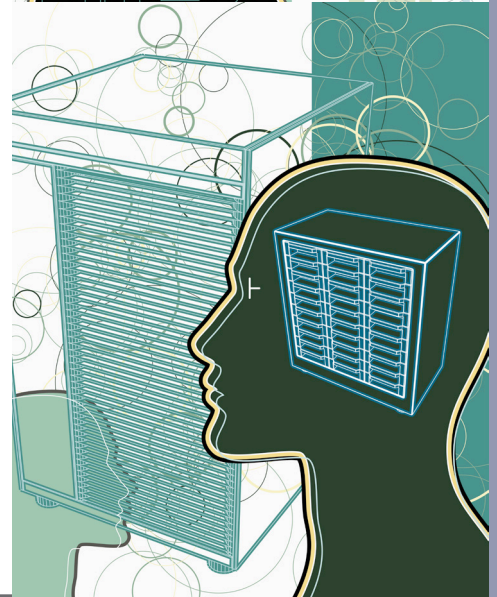
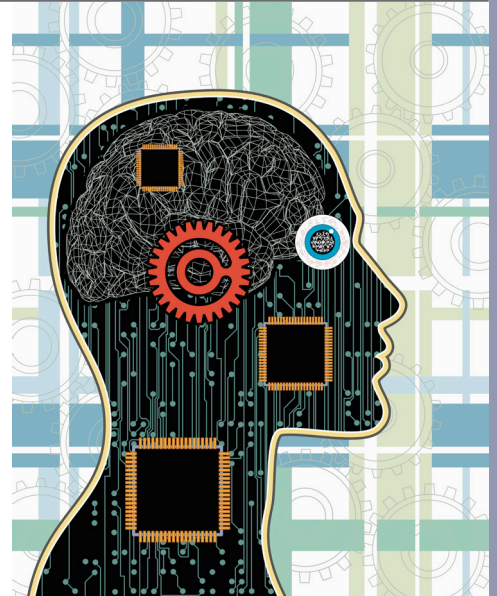
- The brain uses energy when you think. This energy comes from the food you eat. So, you can lose weight if you study! What proportion of the calories you eat does your brain use?
  - 10%
  - 20%
  - 50%
- The brain is full of neurons, cells that process and send information. How many are there?
  - 1,000,000 (1 million)
  - 1,000,000,000 (1 billion)
  - 100,000,000,000 (100 billion)
- We know that dolphins are intelligent animals and some experts believe that dolphins are as intelligent as we are. A typical human brain weighs about 1.4 kilos. How much does a dolphin brain weigh?
  - 0.5 kilos
  - 1 kilo
  - 1.5 kilos
- Proportionally, humans have a bigger brain than any other animal but we don't have the biggest brain in the animal world. Which animal has the biggest brain?
  - the sperm whale
  - the elephant
  - the shark
- Different parts of the brain do different jobs. Twenty-five percent of our brain capacity is dedicated to one job. What is it?
  - hearing
  - seeing
  - smelling





## USE YOUR BRAIN

6. Men's and women's brains are very similar but there are some differences. Who has better language abilities?
- men
  - women
  - There is no difference.
7. The largest part of the brain is the cerebrum. What does this part of the brain control?
- your body's temperature
  - breathing, digesting food and circulating blood
  - thought, imagination, judgement and decision
8. Humans are the result of hundreds of thousands of years of evolution but the human brain has hardly changed for a long time. How long have our brains remained largely unchanged?
- 30,000 years
  - 10,000 years
  - 3,000 years



## BRAIN ACTIVITIES

Which hemisphere of your brain is dominant?

**To find out if the left or right side of your brain is dominant, decide if the statements below are true or false for you. But don't take the results too seriously; the brain is very complex and scientists are not sure how it works!**

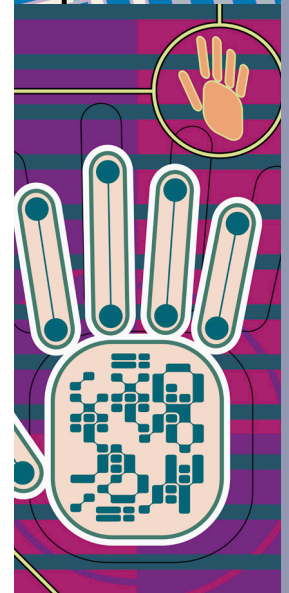
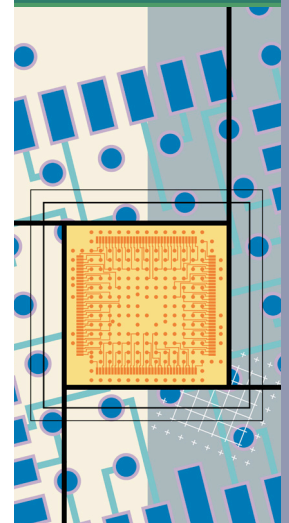
1. I don't normally arrive late.  
TRUE | FALSE
2. I write a diary.  
TRUE | FALSE
3. I'd like to be a lawyer, journalist or doctor.  
TRUE | FALSE
4. I'm good with numbers.  
TRUE | FALSE
5. I can express myself well in words.  
TRUE | FALSE
6. If someone asks me a question, I turn my head to the right.  
TRUE | FALSE
7. I want to know the facts before I give my opinion.  
TRUE | FALSE
8. I make lists of things to do.  
TRUE | FALSE
9. I read the instructions before I make something.  
TRUE | FALSE
10. I'm not very musical.  
TRUE | FALSE
11. When I talk, I don't move my hands much.  
TRUE | FALSE
12. I'd prefer to give someone directions than draw a map.  
TRUE | FALSE

**Results**

**Mostly true** – The left side of your brain is probably dominant. Are you a logical person? Can you express your ideas well?

**Mostly false** – The right side of your brain is probably dominant. Are you an intuitive person? Are you artistic or musical?

**Six true, six false** – You use both sides of your brain equally.



**PHRASEBOOK**



**Discussing the results of a survey**

**Asking your partner about their results**

- So, did you come out as more right-brained or more left-brained?
- Would you say the results were accurate?
- What makes you say that?
- Are the results what you expected?
- Are you pleased with your results?

**Commenting on your results**

- I came out as right- / left-brained.
- Apparently, I use both sides of my brain equally.
- Yes, I think that sounds about right. I agree with the results.
- I don't buy that. I would say I'm more right- / -left brained.

**Brain expressions**

Match the brain expressions in bold (1–5) with the definitions (a–h) below.

- |  |  |
|--|--|
| <p>1. She's really <b>brainy</b>, isn't she? She always gets the best marks in the class.</p> <p>2. You've got money <b>on the brain</b>. You never stop talking about it!</p> <p>3. I've just had <b>a brainwave</b>! Why don't we save money this year and <i>make</i> Christmas presents for everyone?</p> <p>4. Don't listen to them, they're trying to <b>brainwash</b> you. All they really want is your money.</p> <p>5. You should <b>pick</b> Evie's <b>brain</b>. She's been to America, so she knows the best places to go.</p> | <p>a. get help or advice from a person who knows more than you</p> <p>b. intelligent</p> <p>c. You're always thinking about it.</p> <p>d. force someone to accept a particular set of beliefs by repeating the same idea many times so that the person cannot think in an independent way</p> <p>e. a sudden, very good idea</p> |
|--|--|

**COMPARATIVES**

Complete the sentences to make them true.

<b>as intelligent as</b>	<b>less than</b>	<b>much more</b>	<b>as long as</b>
<b>better at</b>	<b>smaller than</b>	<b>less</b>	<b>the biggest</b>

1. A human brain weighs \_\_\_\_\_ a dolphin brain.
2. Proportionally, humans have \_\_\_\_\_ brains of any animal.
3. An elephant's brain is \_\_\_\_\_ a sperm whale's brain.
4. Sharks aren't \_\_\_\_\_ humans.
5. Women are generally \_\_\_\_\_ languages than men.
6. Our brain hasn't really changed for \_\_\_\_\_ 30,000 years.
7. The less you study, the \_\_\_\_\_ energy you use.
8. Seeing uses \_\_\_\_\_ brain capacity than the other senses.





## EINSTEIN'S LIFE

Who is the most famous scientist of all time? Who is the greatest genius? For many people, the answer is **Albert Einstein**, the physicist who invented the world's most famous scientific formula:  **$E = mc^2$** . In 1905, Albert Einstein published **three scientific papers**. These papers contained **revolutionary** ideas that changed the way we see the world.

### Genius or slacker?

**Are you the next Einstein? Einstein was not a typical genius. He was not exceptional when he was a boy and he was not an exceptional student. Read the facts below.**

1. When he was a baby, Einstein was very slow to talk. When he was nine years old, he didn't speak well and his parents were worried. Was he less intelligent than normal?
2. Einstein left high school at 15. He didn't like classes. Students just repeated and memorized information. He preferred to study at home with books on mathematics, physics and philosophy.
3. When he was 17, Einstein wanted to study at the Federal Institute of Technology in Zürich, Switzerland but he didn't pass the entrance examination.
4. Einstein was not a good student at university. He didn't go to classes and he worked in the library and laboratory. He studied a friend's class notes to pass exams.
5. He finished university in 1900. He didn't have good results and couldn't find a permanent job. He did small jobs for the next two years.
6. Einstein published three revolutionary scientific papers in 1905. He was not a professional physicist and he did his scientific investigation in his free time.
7. Einstein became a celebrity after he won the Nobel Prize in 1921. One of his biggest fans was Marilyn Monroe. Marilyn thought they could have the perfect child – beautiful and intelligent.
8. Einstein's other passion was music. His mother encouraged him to play the violin, an instrument that he played all through his life.
9. Einstein's famous formula,  $E = mc^2$ , demonstrated that the atomic bomb was possible. But, in the last years of his life, Einstein actively protested against the atomic bomb.
10. Einstein was not only a theoretical scientist, he was also an inventor. In 1926, he invented a fridge that worked with alcohol.
11. Einstein was also famous for his ability to make very intelligent comments about life. One example is: "You don't really understand something unless you can explain it to your grandmother." Another is: "Not everything that counts can be counted and not everything that can be counted counts."
12. Einstein's brain was smaller than normal because he was a small person. After he died, a doctor stole his brain to discover the secrets of his intelligence.

## PHRASEBOOK

**Discussing interesting / surprising facts**

- For me, the most surprising thing was ...
- The fact I found most interesting was ...
- I was astonished to learn that ...
- I can't believe that ...!
- Can it really be true that ...?
- I had no idea that ...

**Agreeing with someone**

- Yes, for me too.
- I was too.
- I can't either.
- I know. Surprising, isn't it?
- I didn't, either.

**Politely disagreeing someone**

- I knew that already, so, for me, that wasn't surprising.
- Yes, that's quite interesting but I don't think it's the most interesting fact.
- I have to say, I found *this* fact a lot more interesting.

