



# THE UNIVERSE

***“We are the Cosmos made conscious and life is the means by which the Universe understands itself.”***

Brian Cox, British physicist

## 1. The Universe Discussion

1. Are you interested in the Universe? Why or why not?
2. Which planet in the solar system interests you the most? Why?
3. Why are scientists so interested in finding out about the Universe? Is it really that important? What is more important than finding out about the Universe?
4. Do you agree with governments spending billions on space exploration and research? What would be a better use of that money?
5. How has space exploration and our knowledge of space helped humans? What technology do we have thanks to space exploration?
6. Why did the USA send a man to the moon? Why do some people believe this didn't happen?
7. Have you ever been to an observatory? If so, what did you see? Where are the best places in your country to see the stars? Why are they the best?
8. What is gravity? How does it work and what effect does it have on space and time?

## 2. The Universe Vocabulary

- **solar** (adjective) – *used to describe something relating to the sun.*
- **lunar** (adjective) – *used to describe something relating to the moon.*
- **the Cosmos** (noun) – *the Universe viewed as an interconnected whole.*
- **asteroid** (noun) – *a body of rock in the solar system that orbits the Sun but are not planets, also called 'minor planets'.*
- **shooting star** (noun) – *a small, rapidly moving meteor burning up on entering the Earth's atmosphere.*
- **black hole** (noun) – *a place in space where gravity is so strong that nothing can escape, formed by a collapsing star.*

**Using the vocabulary words above, complete the following sentences (remember to use the correct form of the word, e.g. verb conjugation or plural noun):**

1. Dinosaurs became extinct after an **asteroid** hit the Earth.
2. If you see a **shooting star**, you should make a wish.
3. NASA plans to establish a permanent **lunar** outpost on the Moon by 2028.
4. One of the greatest mysteries of **the Cosmos** is what happened before the Big Bang.
5. People across Europe and Asia will be able to see the **solar** eclipse when the Moon passes in front of the Sun.
6. Supermassive **blackholes** lie at the centre of every galaxy.

### **The Universe vocabulary comprehension questions**

1. Have you ever seen a solar eclipse? If so, what did you use to view it?
2. Have you ever seen a lunar eclipse? If so, what happened?
3. What are some of the mysteries of the Cosmos that you want to know more about?
4. What would you do if you found out an asteroid was going to hit the Earth?
5. Have you ever seen a shooting star? Did you make a wish? Did it come true?
6. If the centre of a black hole has infinite density and warps time and space, is it possible that our universe was actually created inside a black hole in another universe?

### 3. Video: The End Of The Universe

You are going to watch a video by Kurzgesagt – In a Nutshell called “Three Ways to Destroy the Universe”

Watch the video here: <https://yourenglishpal.com/blog/esl-conversation-lesson-plan-the-universe/>

While you watch the video, answer the following questions:

#### Multiple choice

1. What is happening to the Universe?  
a) *it is contracting*                      b) *it is exploding*                      **c) *it is expanding***
2. Dark energy is...?  
a) *proven*                                      **b) *unknown***                                      c) *dangerous in the wrong hands*
3. What keeps objects together inside galaxies?  
a) *dark energy*                              b) *quantum fluctuations*                      **c) *gravity***
4. During the Big Rip, space will expand faster than what?  
**a) *the speed of light***                      b) *the speed of sound*                      c) *the speed of gravity*

#### Sentence completion

5. At the end of the Big Rip, the Universe would consist only of **particles** that won't interact with anything else.
6. Every system tends towards the **state** of highest entropy.
7. When there are no more gas clouds to create new stars, the Universe will turn **dark**.
8. Quantum tunnelling may lead to a new **Big Bang**.

#### Short answer

9. If dark energy decreases over time, which force will become dominant? **Gravity**
10. In a smaller universe, temperatures...? **Rise**
11. Just before the end of the Big Crunch, what would merge into each other? **Black holes**
12. Which universe-ending scenario is most likely? **Heat death**

## 4. The Universe Conversation Questions

1. How do you think the Universe started? What do you know about the Big Bang?
2. Will the Universe ever end? How might this happen?
3. Will we ever understand everything about the Universe?
4. Do you think there could be other universes or alternate realities? Does every choice we make result in a different universe?
5. How might alternative universes or realities be different from our own?
6. Does the size of the Universe make personal or national differences seem insignificant and irrelevant? Why or why not?
7. When you see the stars, you are seeing billions of years into the past. How does that make you feel?
8. Could the Universe just be an experiment and we are subjects? Could it be someone's dream or a computer simulation?

## 5. The Universe Writing Task

Write about the Universe. Try to use some of the vocabulary you learned earlier in this lesson. In your answer, you could include some of the following topics:

- The origins of the Universe.
- How it might end.
- Whether this is the only universe.

### **Alternative exam practice question:**

Some people say that governments spend too much money on researching the Universe when there are so many other problems in society that money could be used to solve. Do you agree or disagree with this?