

What do you know about black holes? What would happen if you fell into one? Could you escape? Watch this video to find out.

**Do the preparation task first.** Then, watch the video and do the exercises. Remember you can check the transcript at any time.

### Preparation

Match the vocabulary with the correct definition and write a–g next to the number 1–7.

- |                      |   |
|----------------------|---|
| 1..... to flow       | a. space and everything in it, including the Earth, planets and stars |
| 2..... to accelerate | b. a comparison of things that are similar                            |
| 3..... an analogy    | c. the part of a river near the river's origin                        |
| 4..... a waterfall   | d. to move continuously in one direction                              |
| 5..... the universe  | e. a place where a river flows over a cliff                           |
| 6..... the edge      | f. the boundary or limit of something                                 |
| 7..... upstream      | g. to get faster  |

### 1. Check your understanding: multiple choice

Circle the best words to complete these sentences.

- Near a black hole, **people / rivers / space and time** do some very strange things.
- Space and time flowing towards a black hole are just like a river flowing **towards the sea / towards a waterfall / under a bridge** .
- Upstream, the river is flowing **fast / quite quickly / slowly** so I can easily swim faster and escape.
- Downstream, near the waterfall, the river is flowing **faster and faster / at the same speed / slower and slower** .
- If I jumped into the river downstream, I **would be carried over the waterfall / could swim back upstream / could escape** .
- The event horizon is the place where space is flowing **slowly / at the speed of sound / at the speed of light** into the black hole, so not even light can escape.

7. As you cross the event horizon and fall into a black hole, your body would be spaghettified. That means you would be **stretched wide / stretched long and thin / compressed into a ball** .
8. We **don't fully understand / know / can explain** what happens at the centre of black holes.

## 2. Check your understanding: matching – adverbs

Match the two sentence halves and write a–e next to the number 1–5.

- |        |   |                                   |
|--------|---|-----------------------------------|
| 1..... | Upstream, the water is flowing  | a. far faster than I could swim.  |
| 2..... | I can swim faster than the flow and can                                 | b. quite literally spaghettified. |
| 3..... | But downstream, the water is flowing                                    | c. pretty slowly.                 |
| 4..... | As you cross the event horizon, you would be stretched and you would be | d. infinitely curved.             |
| 5..... | Inside a black hole, space and time become                              | e. easily escape.                 |

## 3. Check your grammar: gap fill – comparatives

Complete the gaps with the comparative form of the adjective in brackets.

1. The river is an analogy for what happens to space and time as you get \_\_\_\_\_ and \_\_\_\_\_ to a black hole. (CLOSE, CLOSE)
2. Upstream, I can swim \_\_\_\_\_ than the flow and can easily escape. (FAST)
3. As you go \_\_\_\_\_ downstream towards the waterfall, the river flows \_\_\_\_\_ and \_\_\_\_\_. (FAR, FAST, FAST)
4. Near the edge of the waterfall, it's much \_\_\_\_\_ to escape. (DIFFICULT)
5. The \_\_\_\_\_ you get to a black hole, the \_\_\_\_\_ it is. (CLOSE, DANGEROUS)
6. If you went into a black hole feet first, your feet would accelerate \_\_\_\_\_ than your head so your body would get much \_\_\_\_\_. (FAST, LONG)

#### 4. Check your grammar: gap fill – unreal conditionals

Complete the gaps with words from the box.

tried	would not be	would vanish	did
would be		decided	could

Imagine I <sup>1</sup> \_\_\_\_\_ to jump into the river just there, on the edge of the falls. The water is flowing far faster than I <sup>2</sup> \_\_\_\_\_ swim. So, no matter what I <sup>3</sup> \_\_\_\_\_, no matter how hard I <sup>4</sup> \_\_\_\_\_, I <sup>5</sup> \_\_\_\_\_ able to swim back upstream. I <sup>6</sup> \_\_\_\_\_ carried inexorably towards the edge and I <sup>7</sup> \_\_\_\_\_ over the falls.

#### Are you interested in physics and the universe?

Have you seen any films or TV programmes about black holes? What do you know about them?

What do you imagine is at the centre of a black hole?

Would you like to travel in space?

#### Vocabulary Box

Write any new words you have learnt in this lesson.