SCIENCE FOUNDATIONS

# Characteristics of living things

### Difficulty level: Intermediate

### Science Foundations

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## *Overview of the concept*

This is how you decide whether something is alive, like telling a real plant apart from a plastic one by how it grows, eats, and responds. A real plant grows, takes in water and nutrients, and turns toward the light, while a plastic plant does none of those things. A fire grows and gives off heat, but it does not eat or reproduce, so it is not alive. Living things share a set of traits, and checking for them is how you tell the living from the lifelike.



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## *Rule*

### Characteristics of living things: a living thing is made of cells, grows, reproduces, uses energy, and responds to its surroundings.

Living things also keep homeostasis, which means keeping a stable internal state, like your body keeping its temperature steady.

Test a thing against the whole set: if it misses key characteristics, such as having no cells, it is not alive. A fire grows, but it has no cells and does not reproduce, so it is not alive.

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## Worked examples

EXAMPLE 1

**Q** Is a fire alive? Test it against the characteristics.



### SOLUTION

Check cells: fire has no cells.

Check reproduction and growth: fire spreads, but it does not reproduce.

Conclude: missing key characteristics, so not alive.

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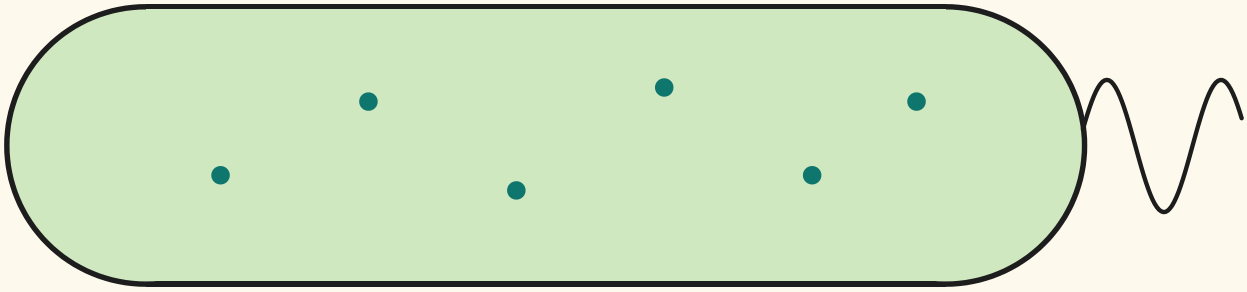
The result is fire is not alive.

EXAMPLE 2

## Q Is a bacterium alive? Test it.



### SOLUTION

Check cells: a bacterium is a single cell.

Check the rest: it grows, reproduces, uses energy, makes waste, and responds.

Conclude: it meets the set, so it is alive.

The result is bacterium is alive.

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## Practice questions

1

### Name one characteristic of living things.

A Made of cells

B Made of metal

C Made of plastic

D Made of glass

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2

### Is a car alive?

A Yes

B No

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## 3 Is a mushroom alive?

A Yes

B No

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## 4 Is a virus alive by the cell rule?

A Yes

B No

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## 5 Do living things need energy?

A Yes

B No

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## 6 Do living things respond to stimuli?

A Yes

B No

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## 7 Do living things reproduce?

A Yes

B No

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## 8 Is a coral alive?

A Yes

B No

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## 9 Is a seed alive?

A Yes

B No

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## 10 What is homeostasis?

A Stable internal state

B Constant growth

C Reproduction

D Response to stimuli

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## ANSWER KEY

**1.** Made of cells

**2.** No

**3.** Yes

**4.** No

**5.** Yes

**6.** Yes

**7.** Yes

**8.** Yes

**9.** Yes

**10.** Stable internal state

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