

## Physical Science Test Questions

Below are sample questions from the Third International Mathematics and Science Study (TIMSS) achievement tests in Science administered to twenty-six countries. TIMSS is a research project sponsored by the International Association for the Evaluation of Educational Achievement (IEA). These questions may be used in the classroom, as a tool for evaluation, or to provide examples of test-question writing.



### Grades 3 and 4

1. Which travels fastest?

- A. A train
- B. An airplane
- C. Sound
- D. Light

Answer: D

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2. Some things were buried in wet ground. Several years later they were dug up. Which things were most likely to have stayed the same?

- A. An egg shell
- B. A plastic cup
- C. A paper plate
- D. An orange peel

Answer: B

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3. Ken put a thermometer in a glass filled with hot water. Why does the liquid inside the thermometer rise?

- A. Gravity pushes it up.
- B. Air bubbles are released.
- C. Heat from the water makes it expand.
- D. Air pressure above the water pulls it up.

Answer: C

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4. Which makes its own light?

- A. A mirror

- B. A candle flame
- C. A diamond ring
- D. A magnifying lens.

Answer: B

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5. One advantage of solar energy is that it
- A. does not pollute
  - B. is not renewable
  - C. is efficient in any climate
  - D. is available at all times

Answer: A

### Grades 7 and 8

1. A metal spoon, a wooden spoon, and a plastic spoon are placed in hot water. After 15 seconds, which spoon will feel the hottest?
- A. The metal spoon
  - B. The wooden spoon
  - C. The plastic spoon
  - D. The three spoons will feel the same.

Answer: A

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2. Which form of solar radiation causes sunburn?
- A. Visible
  - B. Ultraviolet
  - C. Infrared
  - D. X-rays
  - E. Radio waves

Answer: B

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3. Air is colorless, odorless, and tasteless. Describe one way that air can be shown to exist.

Answer: Should include that you can see or feel effects of air movement.

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4. Machine A and Machine B each used to clear a field. The table shows how large an area each cleared in 1 hour and how much gasoline each used.

	Area of field cleared in 1 hour	Gasoline used in 1 hour
Machine A	2 hectares	3/4 liter
Machine B	1 hectare	1/2 liter

Which machine is more efficient in converting the energy in gasoline to work?  
Explain your answer.

Answer: Machine A because it uses less gas per hectare.

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5. The crews of two boats at sea can communicate with each other by shouting. Why is it impossible for the crews of two space ships a similar distance apart in space to do this?

- A. The sound is reflected, more in space.
- B. The pressure is too high inside the spaceships.
- C. The spaceships are traveling faster than sounds.
- D. There is no air in space for sound to travel through.

Answer: D

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6. A flashlight close to a wall produces a small circle of light compared to the circle it makes when the flashlight is far from the wall. Does more light reach the wall when the flashlight is further away?

Yes

No

(Check one)

Explain your answer

Answer: No, the answer should explain that the same amount of light reaches the wall.

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7. A tight metal lid on a jar of pickles may loosen when it has been held in hot water. This is because the hot water causes the

- A. glass jar to contract
- B. metal lid to contract
- C. glass jar to expand more than the metal lid expands
- D. metal lid to expand more than the glass jar expands

Answer: D

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8. A glass of water with ice cubes in it has a mass of 300 grams. What will the mass be immediately after the ice has melted? Explain your answer.

Answer: Should be 300 g and include an explanation.

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9. When white light strikes on Peter's shirt, the shirt looks blue. Why does the shirt look blue?

- A. It absorbs all the white light and turns most of it into blue light.
- B. It reflects the blue part of the light and absorbs most of the rest.
- C. It absorbs only the blue part of the light.
- D. It gives off it's own blue light.

Answer: B

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10. Electric energy is used to power a lamp.

Is the amount of light energy produced more than, or less than, or the same as the amount of electrical energy used?

The amount of light energy produced is

more than

less than

the same as the amount of electrical energy used

(check one)

Give a reason to support your answer.

Answer: Less. Should mention that (much) energy is transformed to heat.

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11. One day when the temperature was just below 0 degrees C, Peter and Ann made snowballs. They put a thermometer into one of the snowballs and it showed 0 degrees C. They tried to make the snowball warmer by holding it in their hands. What do you think the thermometer showed after two minutes? Explain your answer.

Answer: Should include that the same temperature exists because snow cannot get warmer than 0 degrees.