

# 8th Grade Science Quiz

Fifteen questions about atoms, waves, evolution, and Earth's history. Can you pass 8th grade science?

Name / Team: \_\_\_\_\_

Score: \_\_\_\_\_

**1** What are the three subatomic particles that make up an atom?

- A. Electrons, photons, and neutrons
- B. Protons, neutrons, and electrons
- C. Quarks, leptons, and bosons
- D. Atoms, molecules, and ions

**2** What determines what element an atom is?

- A. The number of electrons
- B. The number of neutrons
- C. The number of protons
- D. The total number of particles

**3** What is a wave?

- A. A type of matter
- B. A disturbance that transfers energy without trans...
- C. Moving water
- D. A type of force

**4** What is natural selection?

- A. When humans choose which animals to breed
- B. When organisms with traits best suited to their en...
- C. When nature destroys weak organisms
- D. When animals choose their mates

**5** What are the rows on the periodic table called?

- A. Groups
- B. Families
- C. Periods
- D. Blocks

**6** What type of wave requires a medium (like air or water) to travel?

- A. Electromagnetic wave
- B. Light wave
- C. Mechanical wave
- D. Radio wave

**7** What evidence supports the theory of plate tectonics?

- A. The moon's gravity
- B. Matching fossils and coastlines on different conti...
- C. The rotation of the Earth
- D. Volcanic eruptions alone

**8** What is the difference between speed and velocity?

- A. There is no difference
- B. Velocity includes direction; speed does not
- C. Speed is faster than velocity
- D. Velocity is measured in different units

**9** What do fossils tell us about Earth's history?

- A. How old the sun is
- B. What organisms lived in the past and how life ha...
- C. What the weather was like yesterday
- D. How fast the Earth rotates

**10** What is an ion?

- A. A molecule with no charge
- B. An atom that has gained or lost electrons
- C. A type of chemical bond
- D. A subatomic particle

**11** What is the electromagnetic spectrum?

- A. A tool for measuring electricity
- B. The range of all types of electromagnetic radiation
- C. A type of magnet
- D. The path electricity follows

**12** What is a mutation in genetics?

- A. A disease
- B. A change in DNA sequence
- C. A type of cell division
- D. A growth abnormality

## 8th Grade Science Quiz

(continued)

**13** What is the law of conservation of energy?

- A. Energy always decreases over time
- B. Energy can be created by machines
- C. Energy cannot be created or destroyed, only tran...
- D. Energy is only conserved in closed systems

**14** How old is the Earth (approximately)?

- A. 1 million years
- B. 100 million years
- C. 4.5 billion years
- D. 13.8 billion years

**15** What is the frequency of a wave?

- A. How tall the wave is
- B. How fast the wave moves
- C. How many complete waves pass a point per sec...
- D. How far the wave travels

## 8th Grade Science Quiz — Answer Key

**1. B Protons, neutrons, and electrons**

An atom consists of protons (positive charge) and neutrons (no charge) in the nucleus, with electrons (negative charge) orbiting around it.

**2. C The number of protons**

The atomic number (number of protons) defines the element. Hydrogen has 1 proton, helium has 2, carbon has 6, and so on.

**3. B A disturbance that transfers energy w...**

Waves transfer energy from one place to another without moving matter along with it. Sound waves, light waves, and ocean waves all follow this principle.

**4. B When organisms with traits best suite...**

Natural selection is the process where organisms with advantageous traits are more likely to survive and pass those traits to offspring. Over many generations, this drives evolution.

**5. C Periods**

Rows are called periods (1-7). Columns are called groups or families. Elements in the same group share similar chemical properties.

**6. C Mechanical wave**

Mechanical waves (like sound) need a medium to travel through. Electromagnetic waves (like light) can travel through empty space.

**7. B Matching fossils and coastlines on di...**

Matching fossils, rock formations, and coastlines on different continents (like South America and Africa fitting together) provide evidence that continents were once joined.

**8. B Velocity includes direction; speed does not**

Speed is how fast something moves (50 mph). Velocity includes both speed and direction (50 mph north). Velocity is a vector quantity.

**9. B What organisms lived in the past and ...**

Fossils are preserved remains of ancient organisms. They show how life has evolved over billions of years and help scientists date rock layers.

**10. B An atom that has gained or lost electrons**

An ion forms when an atom gains electrons (becoming negatively charged) or loses electrons (becoming positively charged). Ions are important in chemistry and biology.

**11. B The range of all types of electromagn...**

The electromagnetic spectrum includes radio waves, microwaves, infrared, visible light, ultraviolet, X-rays, and gamma rays, ordered by wavelength and frequency.

**12. B A change in DNA sequence**

A mutation is any change in the DNA sequence. Most mutations are harmless, some are harmful, and rarely, some provide an advantage that natural selection can act upon.

**13. C Energy cannot be created or destroyed...**

Energy cannot be created or destroyed. It can only change form: kinetic to potential, chemical to thermal, electrical to light, etc. The total energy in a closed system stays constant.

**14. C 4.5 billion years**

Earth formed about 4.5 billion years ago. The universe is about 13.8 billion years old. Scientists determine Earth's age using radiometric dating of rocks and meteorites.

**15. C How many complete waves pass a point ...**

Frequency is measured in hertz (Hz). One hertz means one complete wave cycle per second. Higher frequency means more waves per second, which means higher pitch for sound