

Name: _____ Date: _____

Blast into Brilliant Beam Physics: A 4th Grade Quiz

Crack the code of cosmic light speed and tiny particles to prove you have the brainpower of a modern scientist.

1. Imagine you are on a super-fast train traveling near the speed of light. If you look at a clock on the station platform as you zoom by, what would you notice?

- A. The clock seems to be moving slower than yours
- B. The clock has stopped moving entirely
- C. The clock is moving much faster than yours
- D. The clock looks exactly the same as yours

2. Scientists use light-sensitive materials to create _____, which turn sunlight directly into electricity using the photoelectric effect.

- A. Magnetic mirrors
- B. Solar panels
- C. Steam engines
- D. Radio towers

3. True or False: In the world of quantum physics, tiny particles like electrons can sometimes act like solid marbles and sometimes like ripples in a pond.

- A. True
- B. False

4. Think about a heavy bowling ball sitting on a soft trampoline. It creates a dip that makes smaller marbles roll toward it. In modern physics, this is how we describe:

- A. Magnetic attraction
- B. The speed of sound
- C. Gravity warping space
- D. Static electricity

5. Because of the way gravity affects time, the _____ used for maps on your phone must be adjusted or they would give wrong directions.

- A. Telescopes
- B. GPS satellites
- C. Weather balloons
- D. Fiber cables

6. True or False: According to modern physics, it is impossible for anything with mass to travel faster than the speed of light.

- A. True
- B. False

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7. If you could look inside an atom, where would you most likely find an electron?

- A. Sitting perfectly still at the very center
- B. Moving in a perfect, flat circle like a Hula-Hoop
- C. Inside a fuzzy 'cloud' of probability
- D. Attached to the outside of the atom with glue

8. When a very massive star collapses into a tiny point, it creates a _____, where gravity is so strong that even light cannot escape.

- A. Supernova
- B. Black hole
- C. White dwarf
- D. Red giant

9. True or False: Modern physics teaches us that mass (stuff) and energy (the ability to do work) are actually two different forms of the same thing.

- A. True
- B. False

10. Doctors use a special machine called an MRI to see inside the human body without surgery. Which area of physics makes this technology possible?

- A. Classical mechanics
- B. Sound wave theory
- C. Ancient physics
- D. Quantum physics