MTC1 Integrated Physical Sciences Version 1

Section: Science & Statistics • **Total Questions:** 10 • **Format:** Verified Q&A

1. How can the students appropriately resolve this situation?

> *A group of students perform a laboratory activity in which they determine the acceleration of gravity. The value they obtain for the acceleration of gravity differs significantly from the accepted value.*

(A) They should take a vote to determine which value to report.
(B) They should change their data so that it matches the accepted value.
(C) They should conclude that their value for the acceleration of gravity is correct.
(D) They should repeat the activity, looking for possible sources of measurement error.

2. What does the graph indicate about the relationship between the speed of the sound and frequency?

(A) The speed is directly proportional to frequency.
(B) The speed is not correlated to frequency.
(C) The speed is inversely proportional to frequency.
(D) The speed is quadratically related to frequency.

3. An electric golf cart is powered by batteries. Which type of energy conversion takes place as the golf cart is driven on a flat road?

(A) Elastic potential energy is converted into thermal energy.
(B) Gravitational potential energy is converted into thermal energy.
(C) Thermal energy is converted into elastic potential energy.
(D) Chemical potential energy is converted into kinetic energy.

4. What should the student do next?

> *Repeated observation by others has shown that dissolving a substance in water decreases its freezing point. A student performs an experiment to determine how much the freezing point of water is decreased when antifreeze is added to it. The student adds a small amount of antifreeze to water in a beaker, and then measures the freezing point with a thermometer. The student observes that the freezing point of the water increases instead of decreasing.*

(A) Change the results of the experiment to show a decrease in the freezing point of water.
(B) Conclude that antifreeze actually increases the freezing point of water.
(C) Repeat the experiment using a different thermometer to confirm the results.
(D) Include the appearance of the solution but omit the freezing point in the lab report.

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5. Which of these is an example of climate change caused by human activity?

(A) Warming because of farming and fuel use adding nitrous oxide to the atmosphere
(B) Year to year differences in snowfall in a given area from different weather patterns
(C) Weather changes from regularly repeating atmospheric conditions such as El Nino
(D) Worldwide weather changes from changes in the flow of air currents

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6. Why did the Apollo 11 landing craft and astronauts stay on the surface of the Moon without floating off into outer space?

(A) The Moon's thin atmosphere provides enough resistance to impede movement.
(B) The Moon exerts a gravitational pull that keeps objects on its surface.
(C) The surface of the Moon exerts static friction, which keeps objects in place.
(D) The spring force on the Moon causes any object that springs up to spring back down.

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7. Which action demonstrates a physical change?

(A) Milk becoming sour
(B) Iron rusting
(C) Chopping wood
(D) Baking cookies

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8. In 2011, scientists reported on an experiment in which neutrinos appeared to travel faster than light. This result was remarkable because it violates Einstein's theory of special relativity, which has been a cornerstone of our understanding of physics since 1905. What is the appropriate scientific approach for dealing with this contradiction?

(A) Change the new data to show speeds lower than the speed of light
(B) Check the experimental setup and try to replicate the results
(C) Ignore the new data because it contradicts Einstein's idea
(D) Abandon Einstein's theory because it has been proven invalid

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9. Where is metamorphic rock found in the rock cycle?

(A) Point B

(B) Point A

(C) Point D

(D) Point C

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10. Which reservoir does the water become a part of during this runoff process?

> *A heavy rain produces runoff.*

(A) Ground water

(B) Atmosphere

(C) Surface water

(D) Glaciers