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Exam : Integrated Physical Sciences

**Title : WGU Integrated Physical
Sciences (MTC1)**

Version : DEMO

1.A scientist measures the change in temperature from a chemical reaction over a three-day period in a single experiment. When the scientist analyzes the data, the results are five degrees Celsius higher than reported by other scientists after studying the same reaction.

How can the scientist appropriately resolve this problem?

- A. Only include data that matches the results from previous studies
- B. Publish the results as a contradiction to the previous studies
- C. Perform the experiment again
- D. Discard all of the data and report that the results should have matched previous studies

Answer: C

Explanation:

When a scientist's results differ significantly from those reported by others, the appropriate action is to perform the experiment again. Repeating the experiment helps to ensure that the results are accurate and reliable. It allows the scientist to verify their findings and check for any possible errors in the experimental process.

References: Integrated Physical Sciences, Chapter 2: Methods of Scientific Investigation

2.A water molecule consists of two hydrogen atoms bonded to an oxygen atom.

Which type of substance is water?

- A. Mixture
- B. Element
- C. Isotope
- D. Compound

Answer: D

Explanation:

Understanding Molecular Structure:

Water Molecule: Consists of two hydrogen atoms and one oxygen atom chemically bonded together.

Classification of Substances:

Element (B): A pure substance of one type of atom.

Compound (D): A substance made of two or more different elements chemically bonded.

Isotope (C): Variants of a particular chemical element with different neutron numbers.

Mixture (A): A combination of substances not chemically bonded.

Chemical Bonding in Water: The hydrogen and oxygen atoms in a water molecule are chemically bonded, forming a compound.

Conclusion: Water is a compound.

References: Chemical Compounds: Definitions and examples of chemical compounds.

3.Which process is responsible for the formation of V-shaped valleys?

- A. Erosion caused by flowing water
- B. Erosion caused by ocean waves
- C. Erosion caused by ground water
- D. Erosion caused by wind

Answer: A

Explanation:

V-shaped valleys are typically formed by the erosive action of rivers and streams over a long period. The

flowing water cuts down into the bedrock, creating a valley with a characteristic V-shape. This process of vertical erosion is most effective in the upper course of a river, where the gradient is steep and the water flow is fast.

References:

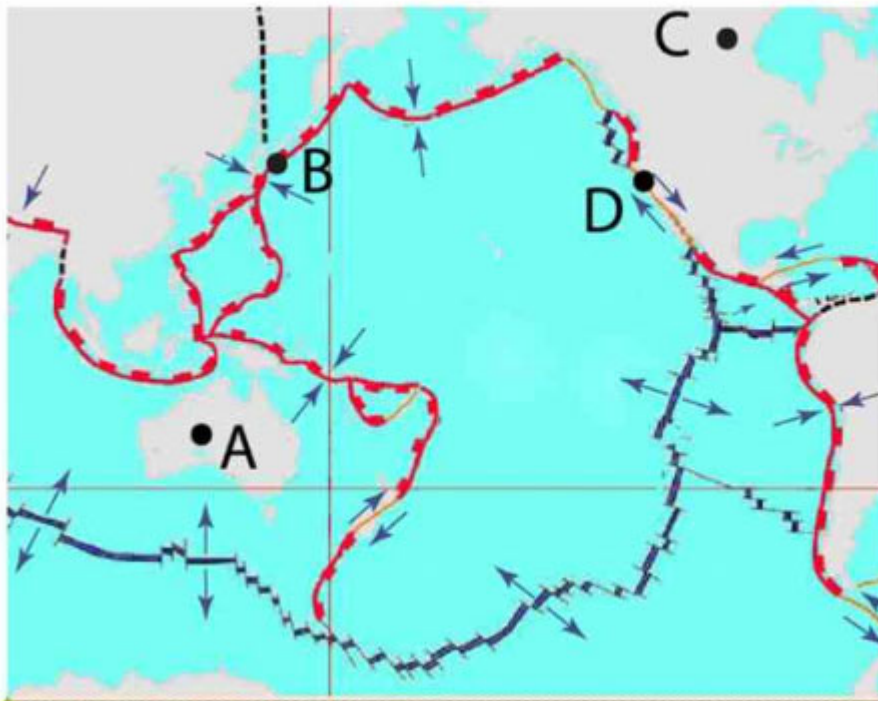
Integrated Physical Sciences materials on erosion and landform development.

Geomorphological studies on river valley formation.

4.Which location has high risk of earthquakes but low risk of volcanic activity?

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The map shows some of Earth's tectonic plate boundaries with the directions of plate motion indicated by arrows.



- A. B
- B. C
- C. D
- D. A

Answer: B

Explanation:

Location B on the map corresponds to a region along the San Andreas Fault in California, which is a transform plate boundary. At transform boundaries, plates slide past each other horizontally. This movement can cause significant stress accumulation and release in the form of earthquakes. However, this type of boundary does not typically produce volcanic activity, which is more common at divergent and convergent boundaries. Therefore, location B has a high risk of earthquakes but a low risk of volcanic activity.

References:

Integrated Physical Sciences resources on tectonic plate boundaries.

Studies on the San Andreas Fault and seismic activity.

5.What energy conversion takes place when a ball rolls up a ramp?

- A. Kinetic energy is converted into gravitational potential energy.
- B. Gravitational potential energy is converted into kinetic energy.
- C. Chemical potential energy is converted into gravitational potential energy.
- D. Elastic potential energy is converted into thermal energy.

Answer: A

Explanation:

Energy types: When a ball is in motion, it possesses kinetic energy. As the ball rolls up a ramp, it slows down and gains height.

Energy conversion: As the ball ascends the ramp, its kinetic energy decreases because the ball is slowing down. Simultaneously, its gravitational potential energy increases because it is gaining height.

Conservation of energy: The total mechanical energy (kinetic + potential) remains constant if we neglect friction. The decrease in kinetic energy is exactly balanced by the increase in gravitational potential energy.

Conclusion: The appropriate energy conversion in this scenario is the transformation of kinetic energy into gravitational potential energy.

References: Integrated Physical Sciences textbooks on mechanics and energy conservation, principles of kinetic and potential energy.