



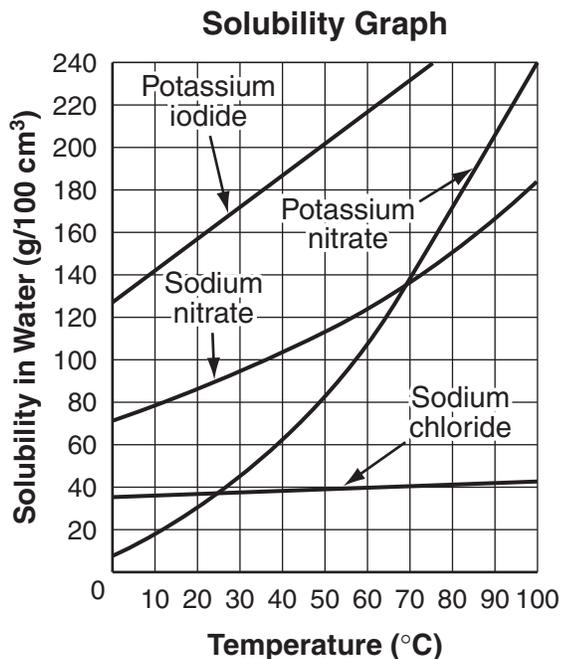
**NEW ENGLAND
COMMON ASSESSMENT PROGRAM**

**Released Items
2014**

**Grade 11
Science**

Science

- 1 The graph below shows the solubility of four compounds.

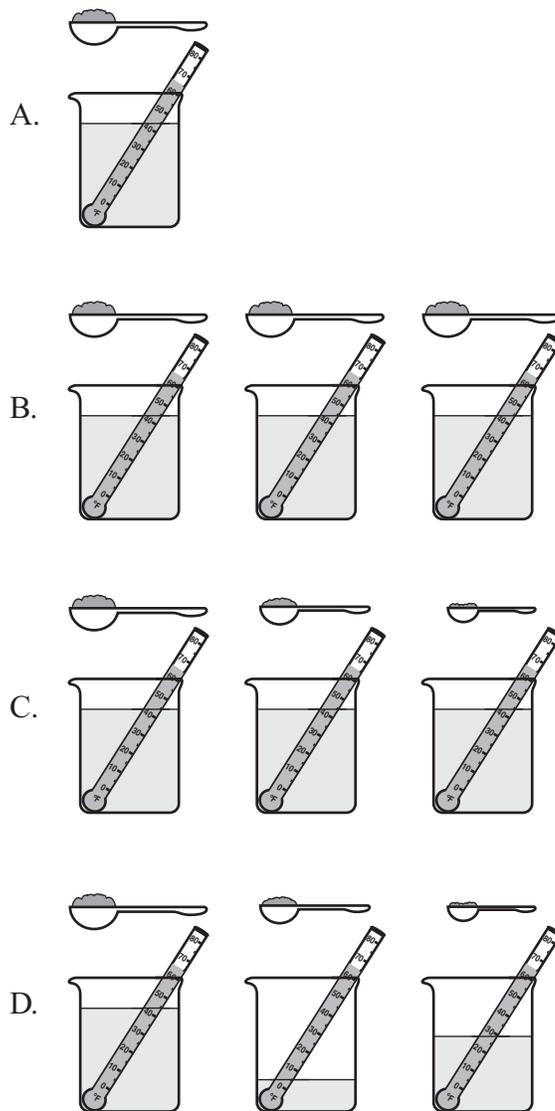


Which compound has almost the same solubility in warm water and cold water?

- A. potassium iodide
- B. potassium nitrate
- C. sodium chloride
- D. sodium nitrate

- 2 A student is investigating reactions that absorb energy. She wonders how the temperature of water changes when different amounts of potassium chloride (KCl) are added to it.

Which experimental setup would **best** answer the student's question?



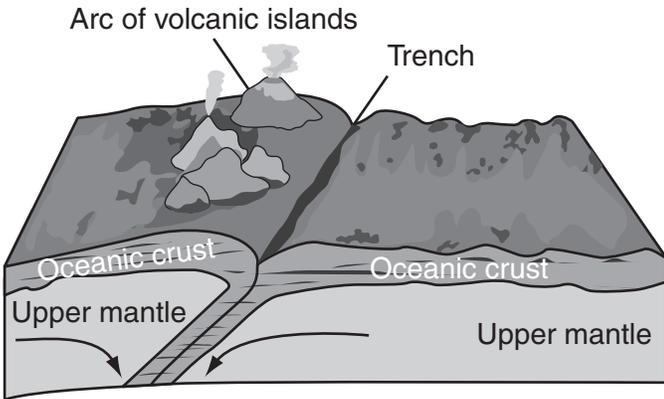
Please use the Electromagnetic Spectrum on the reference sheet to answer the question.

- 3 What is the relationship among the frequency, wavelength, and energy of electromagnetic waves?
- A. Waves with high frequencies have long wavelengths and low energy.
 - B. Waves with high frequencies have short wavelengths and high energy.
 - C. Waves with low frequencies have short wavelengths and low energy.
 - D. Waves with low frequencies have long wavelengths and high energy.

Please use the periodic table on the reference sheet to answer the question.

- 4 In 1869, Dmitri Mendeleev arranged his periodic table of elements based on the properties of the elements known at the time. The modern periodic table, which displays the patterns of properties of the elements, is similar to Mendeleev's arrangement of elements.
- Identify **two** elements that have properties similar to those of helium (He).
 - Identify **two** other patterns of properties shown in the periodic table and describe evidence that supports your response.

- 5 The diagram below shows the motion of Earth's crust.



Based on the diagram, what causes the formation of an arc of volcanic islands?

- A. magma from a subducting plate moving up through oceanic crust
 - B. magma from an oceanic plate and a continental plate colliding
 - C. magma from an earthquake at a transform plate boundary in the ocean
 - D. magma from seafloor-spreading at a divergent plate boundary
- 6 Galaxies farther from Earth are moving faster than galaxies closer to Earth. Which statement does this evidence **best** support?
- A. The universe is becoming more compact.
 - B. The universe is undergoing chaotic motion.
 - C. The universe is expanding in all directions.
 - D. The universe is made of subatomic particles.

- 7 What **must** happen before a protostar becomes a star?

- A. Cosmic background radiation has to increase by 50%.
- B. Gravity has to change gas and dust into planets.
- C. Pressure has to build up and cause a large explosion.
- D. The temperature has to rise enough for nuclear fusion to begin.

- 8 A large ship leaked 3000 gallons of oil while moving through a shallow bay. The oil spill destroyed 50% of the algae in the bay.

How will the oil spill **most likely** affect the amount of energy available to organisms in the bay?

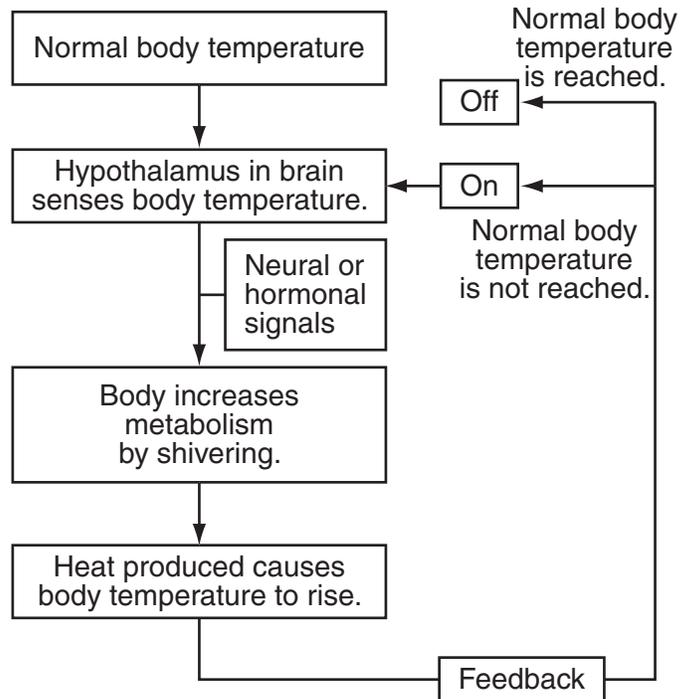
- A. The amount of energy will increase.
- B. The amount of energy will decrease.
- C. The amount of energy will stay the same.
- D. The amount of energy will balance.

- 9 The Ames test uses bacteria to determine if a chemical substance is a mutagen, a substance that changes DNA. Many mutagens cause cancer in humans.

Which characteristic of bacteria makes them useful to test for chemical mutagens?

- A. Bacteria and humans have identical genomes.
- B. Bacterial cell structures are very complex.
- C. The molecules that cause changes in bacterial structure can be found in many environments.
- D. The molecules that make up DNA's structure in bacteria and in humans are the same.

- 10 The diagram below represents the human body temperature regulated around the normal body temperature.



The temperature-regulation system of the human body operates similar to a home furnace.

Which part of the human body temperature-regulation system works like the thermostat in a home?

- A. the normal body temperature
- B. the hypothalamus
- C. the hormonal signal
- D. the neural signal