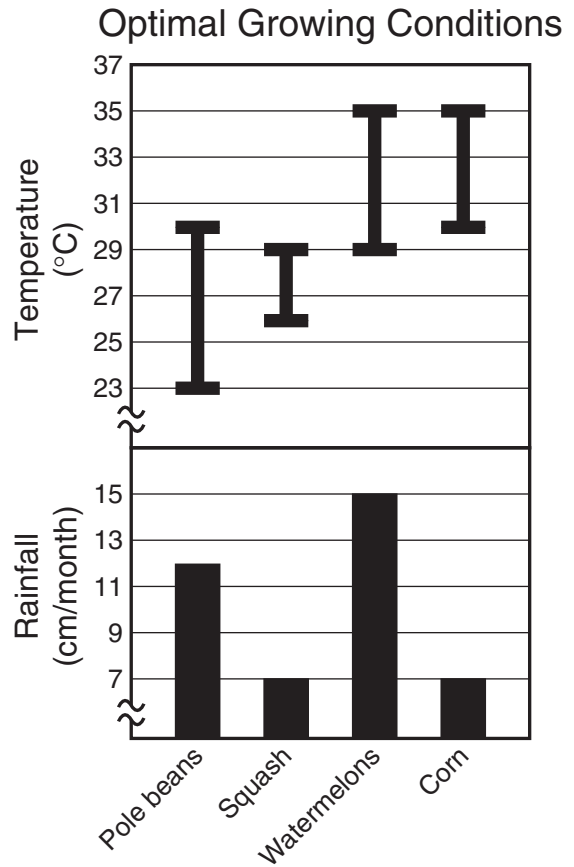


SCIENCE
Grade 10

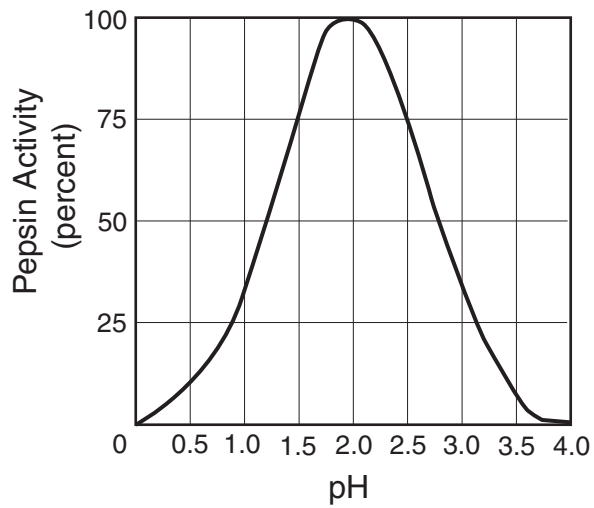
2010 Released Items

- 1 Some students are designing an investigation to observe how the speed of a falling object is related to the distance it falls. Which set of equipment should the students use to make appropriate measurements during this investigation?
- A Stopwatch, metric ruler, calculator
 - B Compass, graduated cylinder, metric ruler
 - C Rubber ball, calculator, balance
 - D Metric ruler, pH meter, thermometer



- 2 The graph shows the optimal temperature ranges and rainfall for four crops. Long-range weather forecasts predict temperatures averaging between 30°C and 40°C and less than 10 cm of rain per month. Under these predicted conditions, which of the following crops is most likely to grow best?
- A Pole beans
 - B Squash
 - C Watermelons
 - D Corn

Effect of pH on Pepsin Activity

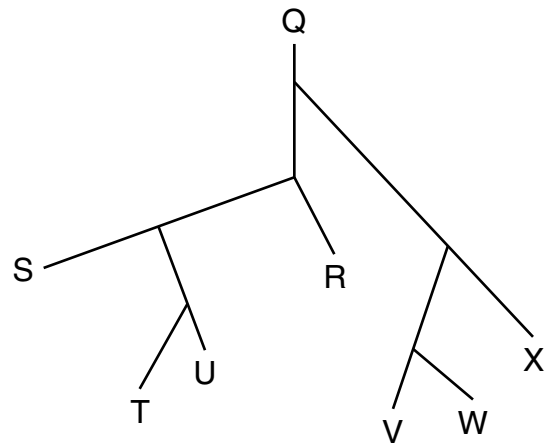


- 3 Pepsin is a stomach enzyme that helps organisms digest proteins. An experiment was conducted to determine at which pH pepsin is most active. A valid conclusion based on the graphed data would be that pepsin —
- A is most effective within a specific pH range
 - B causes the pH of the solution to become lower
 - C changes blue litmus paper to red
 - D stimulates the production of OH^- ions

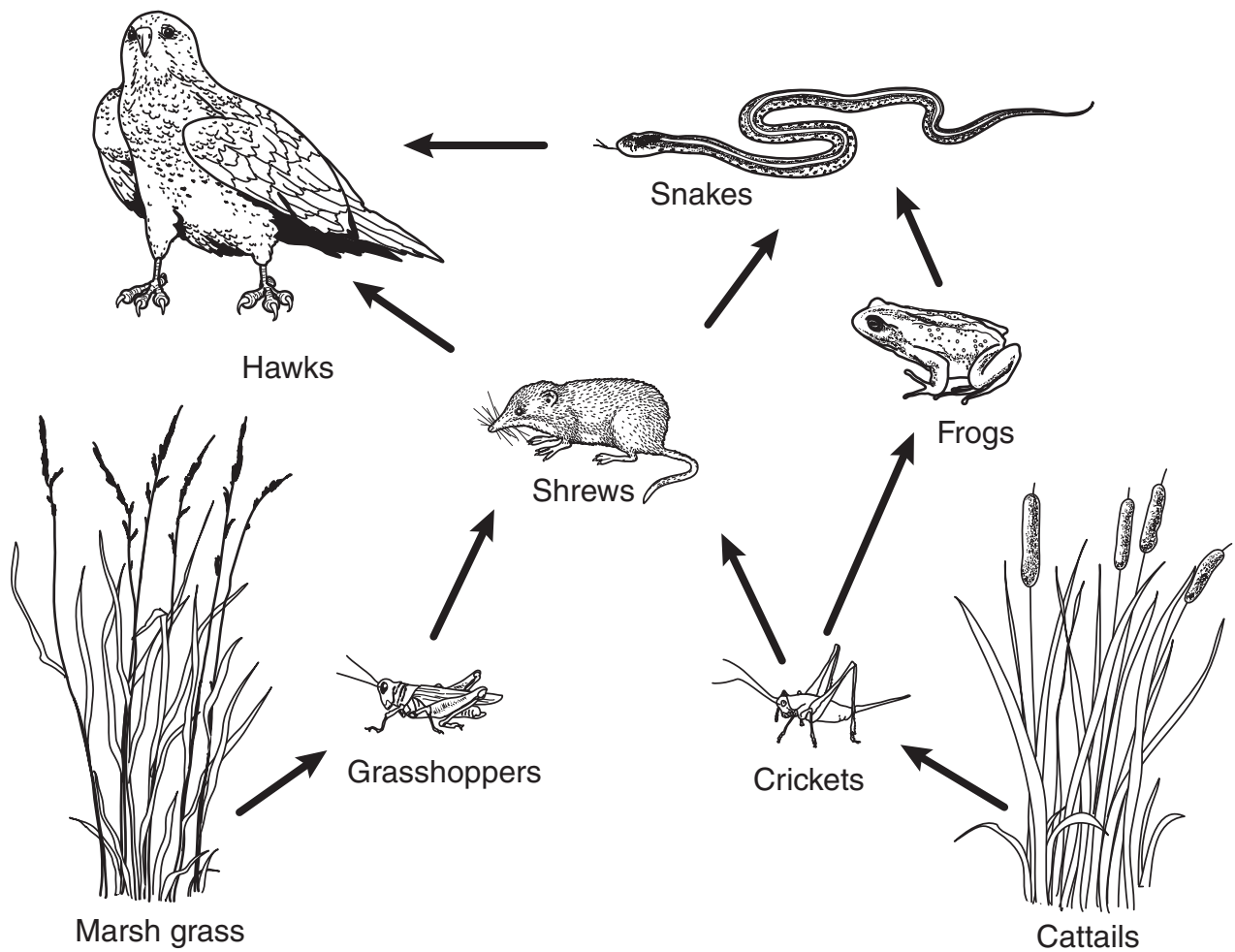
- 1** Which of the following describes the primary energy conversion that occurs when plants produce sugar?
- A** Chemical energy is converted to light energy.
 - B** Chemical energy is converted to mechanical energy.
 - C** Light energy is converted to mechanical energy.
 - D** Light energy is converted to chemical energy.
- 2** Which of the following provides the best opportunity for a single cell in a bacterial colony to be the source of a new variety of bacteria?
- A** Mutation during cell division
 - B** Reproduction at a predictable rate
 - C** Production of chemical energy
 - D** Digestion of available nutrients
- 3** Which of these lists all the possible allele combinations that would be expected in gametes produced by a parent with the genotype AaBb?
- A** Aa, Bb, BB, AA
 - B** AB, aB, Ab, ab
 - C** Aa, Bb, AB, ab
 - D** Ab, aB, Ab, aB

- 1 A lichen results from an interaction between two organisms, a fungus and an alga. The alga supplies food, while the fungus traps water and keeps the alga moist. This is an example of which of the following?
- A Mutualism
 - B Predation
 - C Biomagnification
 - D Parasitism

Phylogenetic Tree



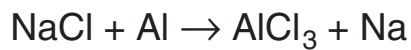
- 2 According to this phylogenetic tree, which organism is most closely related to Organism V?
- A Q
 - B U
 - C W
 - D X



- 3 The diagram above shows relationships between organisms in an ecosystem. What would be the most likely result if the number of shrews in the ecosystem were reduced?
- A The grasshopper population would decrease.
 - B The cattail population would increase.
 - C Snakes would eat more grasshoppers.
 - D Hawks would eat more snakes.

1 Seawater is classified as a mixture because seawater —

- A can exist as a gas or as a crystalline solid
- B contains salts and other dissolved materials
- C can support both plant and animal life
- D contains both hydrogen and oxygen

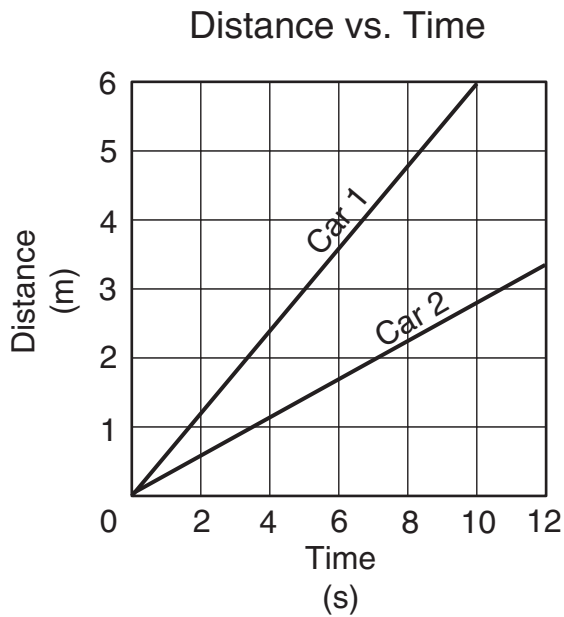


2 Which of these equations is the balanced form of the equation shown above?

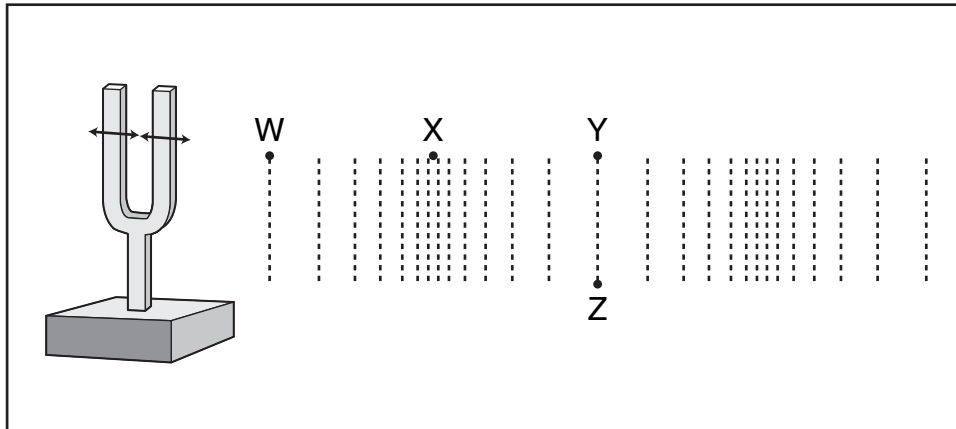
- A $\text{NaCl}_3 + \text{Al} \rightarrow \text{AlCl}_3 + \text{Na}$
- B $3\text{NaCl} + \text{Al} \rightarrow \text{AlCl}_3 + 3\text{Na}$
- C $3\text{NaCl} + \text{Al} \rightarrow \text{AlCl}_3 + \text{Na}$
- D $3\text{NaCl} + 3\text{Al} \rightarrow \text{AlCl}_3 + 3\text{Na}$

3 One step in the production of homemade rock candy is to dissolve as much sugar as possible in water. To increase the amount of sugar that can be dissolved, the water should be —

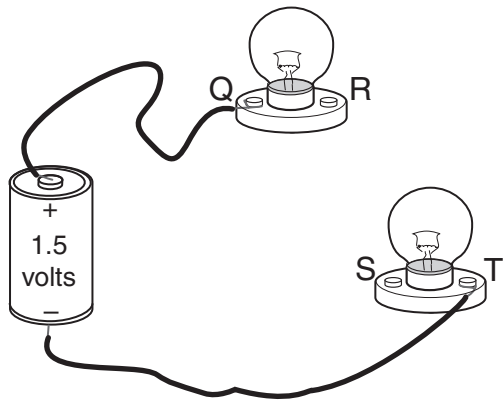
- A salty
- B motionless
- C carbonated
- D heated



- 1 The graph shows distance versus time for two toy cars moving in straight lines along a level floor. Which of the following statements concerning the cars is best supported by these data?
- A Car 2 has the same weight as Car 1.
 - B Car 1 has greater speed than Car 2.
 - C Car 1 has greater momentum than Car 2.
 - D Car 2 has greater acceleration than Car 1.



- 2 Which of the following indicates one wavelength of the wave shown above?
- A W to X
 - B X to Y
 - C W to Y
 - D Y to Z



- 3 The picture shows an incomplete circuit. To complete this as a series circuit in which both lightbulbs will glow, a wire must connect points —
- A Q and S
 - B Q and T
 - C R and S
 - D R and T

Item Number	Student Expectation	Correct Answer
OBJECTIVE 1		
1	B.2 (A)	A
2	B.2 (C)	D
3	B.2 (D)	A
OBJECTIVE 2		
1	B.4 (B)	D
2	B.6 (C)	A
3	B.6 (D)	B
OBJECTIVE 3		
1	B.12 (B)	A
2	B.7 (B)	C
3	B.12 (E)	D
OBJECTIVE 4		
1	I.7 (E)	B
2	I.8 (C)	B
3	I.9 (D)	D
OBJECTIVE 5		
1	I.4 (A)	B
2	I.5 (A)	C
3	I.6 (F)	C