

Science 11



Complete Workbook

- ★ Aligned with Alberta curriculum
- ★ Contains Science 20 practice questions and answers

2020 EDITION

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Unit 1: The Changing Earth

1. According to the theory of plate tectonics, at divergent boundaries:
 - A) plates move apart and new lithosphere is created.
 - B) plates move apart and one plate is recycled back into the mantle.
 - C) plates move together and new lithosphere is created.
 - D) plates move together and one plate is recycled back into the mantle.

2. Isotopes are atoms with the same number of:
 - A) protons and neutrons but differing numbers of electrons.
 - B) electrons and neutrons but differing numbers of protons.
 - C) protons and electrons but differing numbers of neutrons.
 - D) protons but differing numbers of electrons and neutrons.

3. Transverse waves travel:
 - A) perpendicular to the direction of energy flow, and cause movement up and down.
 - B) parallel to the direction of energy flow, and cause movement up and down.
 - C) perpendicular to the direction of energy flow, and cause alternate compression and expansion.
 - D) parallel to the direction of energy flow, and cause alternate compression and expansion.

4. Match the geologist listed below with his contribution to our understanding of modern day geology.

Alfred Wagner _____

Arthur Holmes _____

J. Tuzo Wilson _____

1. first described tectonics around the globe in terms of rigid "plates" moving over Earth's surface
2. postulated a super continent which he called Pangaea
3. came close to expressing the modern notions of continental drift and seafloor spreading

Enter your response as three numbers separated by commas.

- 5.

A sample of spruce wood from the Two Creeks forest bed near Milwaukee was found to contain 1/4 the amount of carbon-14 found in modern spruce trees.

The estimated age of the spruce wood is

- A) 5.73×10^3 years
- B) 1.15×10^4 years
- C) 1.72×10^4 years
- D) 2.19×10^4 years

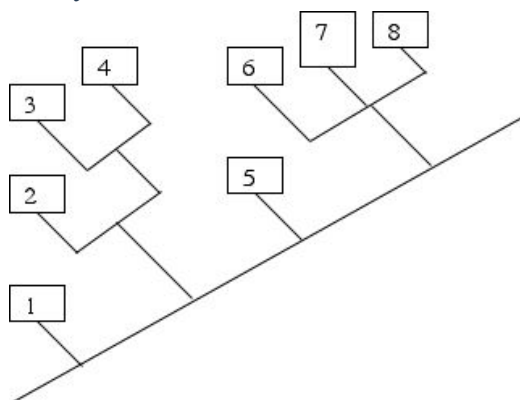
6. Variations among individuals and populations may or may not be inherited. An example of a non inherited trait is the:
 - A) red color of a rose.
 - B) long neck on a giraffe.

- C) large muscles of a weight lifter.
D) resistance to an infectious disease in humans.

7. Homologous structures are:

- A) structures in the same species that are different because of a non-common ancestry.
B) structures in different species that are different because of a non-common ancestry.
C) structures in the same species that are different because of a common ancestry.
D) structures in different species that are similar because of a common ancestry.

8. Refer to the phylogenetic tree below. Identify the two species which are most closely related.



- A) 2 and 4
B) 1 and 5
C) 6 and 8
D) 5 and 7

9. Longitudinal waves travel:

- A) perpendicular to the direction of energy flow, and cause movement up and down.
B) parallel to the direction of energy flow, and cause movement up and down.
C) perpendicular to the direction of energy flow, and cause alternate

compression and expansion.

D) parallel to the direction of energy flow, and cause alternate compression and expansion.

10. Fossils are found mainly in:

- A) igneous rock formations.
B) sedimentary rock formations.
C) metamorphic rock formations.
D) Any of the above

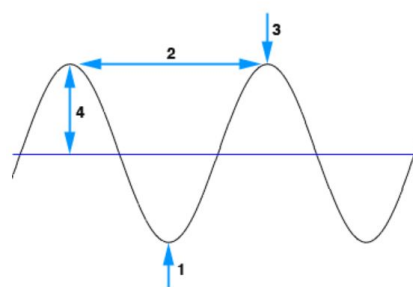
Match the terms below with the numbers on the figure of the wave.

wavelength _____

amplitude _____

crest _____

trough _____



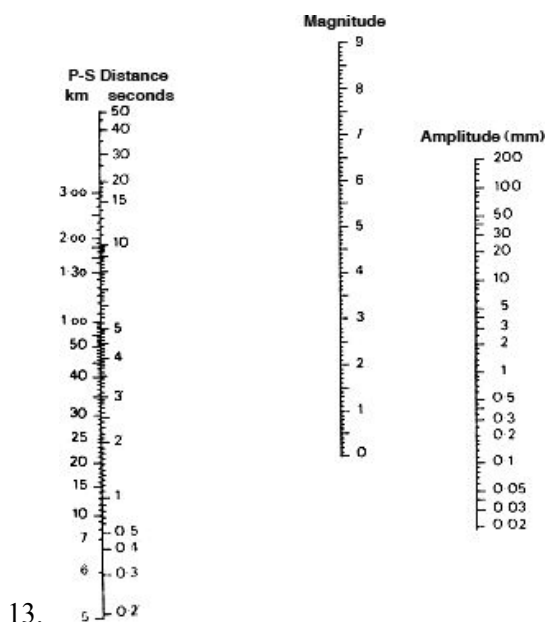
11. Enter your response as four numbers separated by commas.

12. Radioactive dating using carbon-14 of four samples is found in the following table.

Sample	Ratio of decay product to parent
1	1:1
2	5:1
3	3:1
4	7:1

The samples from oldest to youngest are _____, _____, _____, and _____.

Enter your response as four numbers separated by commas.



Earthquake	P-S Distance (km)	Magnitude	Amplitude
A	40	?	20
B	200	3	?

The amplitude of the seismograph for earthquake B (to the nearest 0.5 mm) is

_____.

14. An earthquake's focus is:
- where the waves reach the surface of the earth.
 - the point of origin of the waves.
 - another name for the epicenter.
 - another name for magnitude.
15. Match the geologist listed below with his contribution to our understanding of modern day geology.

Alfred Wagner _____

Arthur Holmes _____

J. Tuzo Wilson _____

first described tectonics around the

globe in terms of rigid "plates" moving over Earth's surface

- postulated a super continent which he called Pangaea
- came close to expressing the modern notions of continental drift and seafloor spreading

Enter your response as three numbers separated by commas.

16. According to historical records, a pyramid in Dashus, Egypt dates to 3000 BC. Cloth wrappings from a mummified bull taken from the pyramid would be expected to have a nitrogen-14 to carbon-14 ratio of approximately:
- 1:1
 - 3:1
 - 5:1
 - 7:1
17. How did Lamarck explain the diversity of organisms?
- Individuals change due to environmental influences.
 - Acquired changes are passed on to offspring.
 - Diversity is a result of organisms adapting to the environment because of individual needs.
 - All of the above

18.

A sample of spruce wood from the Two Creeks forest bed near Milwaukee was found to contain $\frac{1}{4}$ the amount of carbon-14 found in modern spruce trees.

Determine the number of half-lives that have passed.

- A) 1
- B) 2
- C) 3
- D) 4

19. People noticed the buoys at a lake moving up and down when there appeared to be no waves on the surface of the water. If the cause was an earthquake, the motion was most likely due to:

- A) P-waves.
- B) L-waves.
- C) S-waves.
- D) M-waves.

20. According to the theory of plate tectonics, at divergent boundaries:

- A) plates move apart and new lithosphere is created.
- B) plates move apart and one plate is recycled back into the mantle.
- C) plates move together and new lithosphere is created.
- D) plates move together and one plate is recycled back into the mantle.

Unit 2: Changes in Living Systems

1. The greatest amount of energy is found in the
 - A) producers
 - B) primary consumers
 - C) secondary consumers
 - D) tertiary consumers
2. The Sun has contributed to the development of life on Earth by providing energy for
 - A) plate tectonics
 - B) volcanos
 - C) photosynthesis
 - D) ocean currents
3. As you move up a food pyramid, there are fewer organisms. This is because
 - A) of the biomagnification of toxins
 - B) of DDT accumulation in the environment
 - C) more organisms die as they get larger
 - D) energy is lost as heat when food is consumed
4. The difference between grasslands and deserts could primarily be the result of
 - A) altitude
 - B) temperature
 - C) seasons
 - D) precipitation
5. The maximum rate of population growth in an area under perfect conditions is called
 - A) unlimited
 - B) biotic potential
 - C) linear adaptation
 - D) exponential biotic adaptation
6. The increase in toxins in animals at higher levels in a food chain is called
 - A) toxinmagnification
 - B) biomagnification
 - C) toxicity maximizing
 - D) distributed intoxication
7. Development of oxygen in the early atmosphere around the Earth was driven by
 - A) photosynthesis in cyanobacteria
 - B) photosynthesis in seaweed
 - C) photosynthesis in land based plants
 - D) the eruption of volcanos
8. Which of the following is arranged from most to least complex?
 - A) species, population, community, biosphere
 - B) species, ecosystem, community, population
 - C) biosphere, ecosystem, community, population
 - D) population, community, ecosystem, biosphere
9. The process where traits in organisms are selected for their desirability by humans is
 - A) natural selection
 - B) artificial selection
 - C) gradual selection
 - D) survivability
10. A population will decrease if the mortality rate remains the same and the natality rate
 - A) increases
 - B) decreases
 - C) remains unchanged
 - D) is the same as the natality rate

11. The maximum rate of population growth in an area under perfect conditions is called

A) unlimited
B) biotic potential
C) linear adaptation
D) exponential biotic adaptation

12. Which of the following correctly represents a decrease in complexity of organization within organisms?

A) organelle, cell, tissue, organ
B) organ, tissue, cell, organelle
C) cell, organ, tissue, organelle
D) tissue, cell, organ, organelle

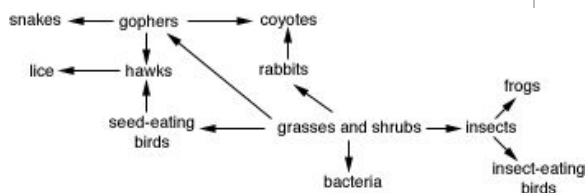
13. The process whereby organisms survive and reproduce based on how well they are adapted to their environment is called

A) natural selection
B) artificial selection
C) gradual selection
D) survivability

14. A population is represented by

A) two kinds of trees
B) a family of rodents in a burrow
C) a large field of canola
D) several species of worms

15.



Which of the following organisms would be at the first trophic level?

A) grasses

B) bacteria
C) coyotes
D) insects

16. The major limiting factor to the increase in the human population in the future is most likely to be

A) insufficient jobs to provide full employment.
B) insufficient housing to provide shelter.
C) insufficient food to feed more people.
D) insufficient energy for heating and transportation.

17. An example of parasitism is the relationship between

A) krill and blue whales
B) birds and water buffalo
C) bees and flowers
D) ticks and moose

18. The process which turns gaseous nitrogen into useful nitrogen compounds is called

A) photosynthesis
B) respiration
C) fixation
D) decomposition

19. Which of the following correctly represents an increase in complexity of organization within organisms?

A) organelle, cell, tissue, organ
B) organ, tissue, cell, organelle
C) cell, organ, tissue, organelle
D) tissue, cell, organ, organelle

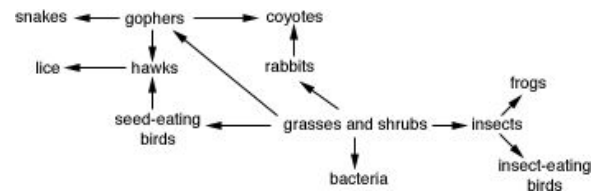
20. A population will increase if the mortality rate remains the same and the natality rate

A) increases
B) decreases
C) remains unchanged
D) is the same as the natality rate

21. Which of the following processes increases the amount of oxygen in the atmosphere?
A) photosynthesis
B) respiration
C) fixation
D) decomposition
22. Which of the following is arranged from least to most complex?
A) species, population, community, biosphere
B) species, ecosystem, community, population
C) biosphere, ecosystem, community, population
D) population, community, ecosystem, biosphere
23. The Sun has contributed to the development of life on Earth by providing energy for
A) plate tectonics
B) volcanos
C) photosynthesis
D) ocean currents
24. A population will decrease if the mortality rate remains the same and the natality rate
A) increases
B) decreases
C) remains unchanged
D) is the same as the natality rate
25. The fact that some dogs can run faster than other dogs would lead us to the inference that
A) there is a genetic variation in dogs
B) natural selection has increased the speed of dogs
C) many slow dogs will soon be killed by predators

D) the slow dogs will die off as they won't be able to get enough food

26.



The trophic level represented by lice in the diagram is

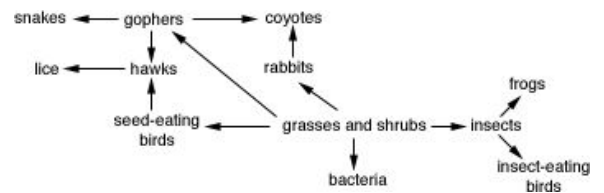
- A) producer
 - B) primary consumer
 - C) secondary consumer
 - D) tertiary consumer
27. Refer to the information in question 6. The trophic level represented by rabbits and insects in the diagram is
- A) producer
 - B) primary consumer
 - C) secondary consumer
 - D) tertiary consumer
28. Refer to the information in question 6. The trophic level represented by grasses and shrubs in the diagram is
- A) producer
 - B) primary consumer
 - C) secondary consumer
 - D) tertiary consumer
29. Refer to the information in question 6. Which of the following organisms would best be described as decomposers?
- A) lice
 - B) frogs
 - C) gophers
 - D) bacteria

30. Ticks attach themselves to animals and feed off of their blood for nourishment. This is an example of
- parasitism
 - symbiosis
 - commensalism
 - mutualism
31. The greatest amount of energy is found in the
- producers
 - primary consumers
 - secondary consumers
 - tertiary consumers
32. Bacteria in the intestines of humans help to synthesize vitamins that humans cannot make themselves. The bacteria population remains constant in healthy humans. This is an example of
- parasitism
 - symbiosis
 - commensalism
 - mutualism
33. The major limiting factor to the increase in the human population in the future is most likely to be
- insufficient jobs to provide full employment.
 - insufficient housing to provide shelter.
 - insufficient food to feed more people.
 - insufficient energy for heating and transportation.
34. A community is best illustrated by
- elephants living in Asia and Africa
 - organisms living in a stream
 - a herd of buffalo

D) an ant colony

35. Sexual reproduction has advantages over asexual reproduction in that it
- allows populations to increase faster
 - uses a lot of the mother's energy
 - assures genetic variation
 - produces exactly the same offspring

36.



The trophic level represented by grasses and shrubs in the diagram is

- producer
 - primary consumer
 - secondary consumer
 - tertiary consumer
37. On a global scale, the growth of the human population in recent history can best be described as
- unchanging
 - stable
 - linear
 - exponential
38. The term which best describes a change in the base sequence of DNA due to radiation or chemicals is
- adaptation
 - genetics
 - mutation
 - Linnaeus transformation

39. A population will increase if the mortality rate remains the same and the natality rate
- A) increases
 - B) decreases
 - C) remains unchanged
 - D) is the same as the natality rate
40. The function of decomposers in a food web is to
- A) return energy to the soil for use by producers
 - B) return nutrients and minerals to the soil for use by producers
 - C) increase the energy supply in an ecosystem
 - D) increase the trophic level of an ecosystem

Unit 3: Chemical Changes

- In a voltaic cell, reduction occurs at the
 - anode
 - cathode
 - wire
 - salt bridge
- $C_{28}H_{58} + O_2$ is an example of which type of reaction?
 - alkane reforming
 - alkane cracking
 - alkane combustion
 - alkene combustion
- Which of the following represents the general formulas, respectively, for alkanes, alkenes and alkynes?
 - C_nH_{2n+2} , C_nH_{2n-2} , C_nH_{2n-4}
 - C_nH_{2n+2} , C_nH_{2n} , C_nH_{2n-2}
 - C_nH_{2n+2} , C_nH_{2n-2} , C_nH_{2n}
 - C_nH_{2n} , C_nH_{2n-2} , C_nH_{2n+2}

4.



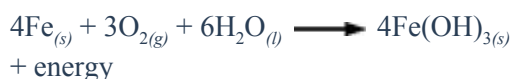
The half-reaction for the reduction that occurs in this reaction is

- $Na_{(g)} \longrightarrow Na^+_{(g)} + e^-$
 - $Na_{(g)} + e^- \longrightarrow Na^+_{(g)}$
 - $Cl_{2(g)} + 2e^- \longrightarrow 2Cl^-_{(g)}$
 - $Cl_{2(g)} \longrightarrow 2Cl^-_{(g)} + 2e^-$
- Rubbing alcohol is a 70% by volume solution of isopropyl alcohol. What volume of isopropyl alcohol is needed to make 1.5 L of rubbing alcohol?

- 1050 mL
- 700 mL
- 450 mL
- 850 mL

6.

Corrosion of iron metal is a multi-billion dollar infrastructure cost every year. The reaction that occurs during corrosion is



The oxidizing agent in this reaction is

- $Fe(OH)_{3(s)}$
- $H_2O_{(l)}$
- $O_{2(g)}$
- $Fe_{(s)}$

- One of the main reasons that copper pipes are used in household plumbing (rather than iron pipes) is that
 - copper is a better conductor of heat
 - iron will react with dissolved hard water minerals such as calcium ions
 - iron has a greater tendency to act as a reducing agent than copper
 - drain cleaners and soaps containing sodium hydroxide will react with iron
- The sulfuric acid that is in a car battery is a(n)
 - solvent
 - anode
 - electrolyte
 - mixture

9. Which of the following is a saturated hydrocarbon?
- C_6H_{10}
 - C_6H_6
 - C_2H_4
 - C_5H_{12}
10. Which of the following generalizations is true of the Table of Selected Standard Electrode Potentials?
- Metal ions and non-metallic elements are generally oxidizing agents.
 - Metal ions and non-metallic ions are generally oxidized.
 - Metals and non-metal elements are generally oxidized.
 - Metals and non-metal ions are generally reduced.
- 11.



The above symbol would best be described as

- Oxidizing Agent
- Corrosive
- Poisonous and Infectious
- Flammable

12. Which of the following generalizations is true of the Table of Selected Standard Electrode Potentials?
- Metal ions and non-metallic elements are generally oxidizing agents.
 - Metal ions and non-metallic ions are generally oxidized.
 - Metals and non-metal elements are generally oxidized.
 - Metals and non-metal ions are generally reduced.

13. Buried iron fuel tanks can be protected by having blocks of magnesium

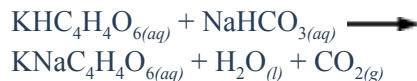
attached. The magnesium protects the iron because

- the iron is more easily oxidized than magnesium
- the iron is more easily reduced than magnesium
- the magnesium is more easily reduced than iron
- magnesium is more easily oxidized than iron

14. A reducing agent can be described as a chemical that
- loses electrons and becomes oxidized.
 - loses electrons and causes oxidation.
 - gains electrons and causes reduction.
 - gains electrons and becomes reduced.

15. Proteins are polymers in which the monomer units are composed of
- fructose
 - starch
 - cellulose
 - amino acids

16. Baking soda ($NaHCO_3$) and cream of tartar ($KHC_4H_4O_6$) undergo the following reaction at baking temperatures:

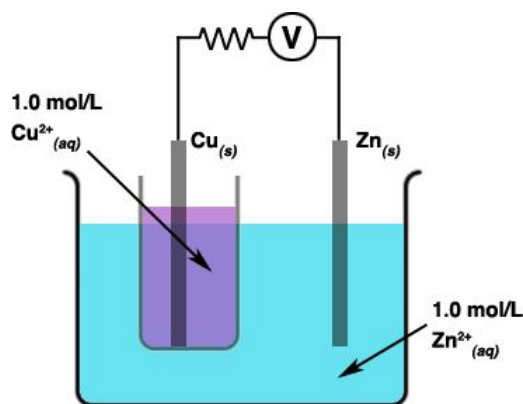


A recipe calls for 12.0 g of cream of tartar. How much baking soda must be added for a complete reaction?

- 2.68 g
- 26.9 g
- 10.7 g
- 5.36 g

17. When the following equation is balanced, the coefficients are:
 lead (IV) sulfide + calcium hydroxide
 \longrightarrow lead (IV) hydroxide + calcium sulfide
- A) 1, 1, 1, 1
 B) 1, 2, 1, 1
 C) 1, 2, 2, 1
 D) 1, 2, 1, 2

18.



Which of the following is true of the above electrochemical cell?

- A) There will be no reaction as it is an electrolytic cell.
 B) During the reaction of the cell, electrons will move towards the zinc electrode.
 C) During the reaction of the cell, cations will move towards the copper electrode.
 D) A current will not pass through the voltmeter.
19. The molar concentration of a solution made by diluting 10.0 mL of 0.685 mol/L NaBr to 300 mL is
- A) 0.00228 mol/L
 B) 20.6 mol/L
 C) 0.0228 mol/L

D) 0.0457 mol/L

20. In the process of refining aluminum from its ore (bauxite), the aluminum ion is converted to aluminum metal. During this process, the aluminum ions are
- A) oxidized
 B) reduced
 C) electrolyzed
 D) dissociated
21. A concentration of 2 ppm is equivalent to _____ mg/L.
- A) 0.02
 B) 0.2
 C) 2
 D) 20
22. After painting with an oil-based paint, brushes cannot simply be cleaned with soap as it does not work well. The best method to wash the paint out of the brush is to use turpentine. Turpentine would best be described as a
- A) solution
 B) mixture
 C) solute
 D) solvent
23. In testing for mercury contamination, it was found that a 10 kg animal had accumulated 5 mg of mercury in its body. What is this concentration in parts per million?
- A) 0.05
 B) 0.5
 C) 5
 D) 50
24. The metals listed in order of their tendency to lose electrons are
- A) Na, Au, Fe, Pb
 B) Na, Fe, Pb, Au
 C) Au, Pb, Fe, Na
 D) Pb, Fe, Au, Na

25. $\text{C}_{28}\text{H}_{58} + \text{O}_2$ is an example of which type of reaction?

- A) alkane reforming
- B) alkane cracking
- C) alkane combustion
- D) alkene combustion

26. In an experiment, the total mass of all reactants was 5.30 g. There were three products formed. Two of the products' masses added up to 4.15 g. What was the mass of the third product?

- A) 1.15 g
- B) 5.30 g
- C) 4.15 g
- D) 9.45 g

27. A mixture of paint dissolved into turpentine would best be described as a

- A) solution
- B) compound
- C) solute
- D) solvent

28. Petroleum companies produce gasoline from oil primarily by using

- A) fractional distillation
- B) catalytic reforming
- C) catalytic cracking
- D) esterfercation

29. What mass of carbon dioxide forms when 8.00 g of coal (assume pure C) burns?

- A) 3.66 g
- B) 29.3 g
- C) 58.6 g
- D) 14.7 g

30. In an electrolytic cell, reduction occurs at the

- A) anode
- B) cathode

C) wire

D) salt bridge

31. A mixture of sand and water would best be classified as

- A) a solution
- B) a compound
- C) heterogeneous
- D) homogeneous

32.



The half-reaction for the reduction that occurs in this reaction is

- A) $\text{Na}_{(g)} \longrightarrow \text{Na}_{(g)}^{+} + \text{e}^{-}$
- B) $\text{Na}_{(g)} + \text{e}^{-} \longrightarrow \text{Na}_{(g)}^{+}$
- C) $\text{Cl}_{2(g)} + 2\text{e}^{-} \longrightarrow 2\text{Cl}_{(g)}^{-}$
- D) $\text{Cl}_{2(g)} \longrightarrow 2\text{Cl}_{(g)}^{-} + 2\text{e}^{-}$

33. The molarity of a solution is defined as the

- A) moles of solute per kilogram of solvent.
- B) moles of solute per liter of solution.
- C) moles of solute per liter of solvent.
- D) grams of solute per liter of solution.

34. In a voltaic cell, oxidation occurs at the

- A) anode
- B) cathode
- C) wire
- D) salt bridge

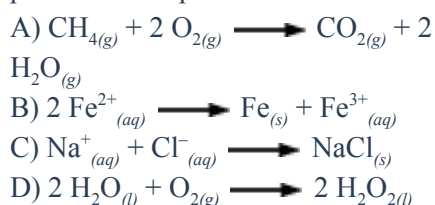
35. In order to dilute 10.0 mL of 8.00 mol/L HCl to a concentration of 0.150 mol/L, how much water should be added?

- A) 533 mL
- B) 523 mL
- C) 120 mL
- D) 200 mL

36. In a voltaic cell, reduction occurs at the
 A) anode
 B) cathode
 C) wire
 D) salt bridge

37. In an electrolytic cell, oxidation occurs at the
 A) anode
 B) cathode
 C) wire
 D) salt bridge

38. Which of the following equations is not predicted to represent a redox reaction?



39. When a teaspoon of salt is put into water, the salt acts as the
 A) solution
 B) compound
 C) solute
 D) solvent

40. In the half-reaction $\text{Zn}^{2+}_{(\text{aq})} + 2\text{e}^{-} \longrightarrow \text{Zn}_{(\text{s})}$, the zinc ion is undergoing
 A) oxidation
 B) reduction
 C) combustion
 D) electrolysis

41. A reducing agent can be described as a chemical that
 A) loses electrons and becomes oxidized.
 B) loses electrons and causes oxidation.
 C) gains electrons and causes reduction.
 D) gains electrons and becomes reduced.

42. What mass of carbon dioxide forms when 8.00 g of coal (assume pure C) burns?

A) 3.66 g
 B) 29.3 g
 C) 58.6 g
 D) 14.7 g

43. In an electrolytic cell, reduction occurs at the

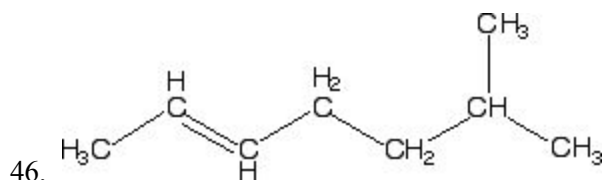
A) anode
 B) cathode
 C) wire
 D) salt bridge

44. Proteins are polymers in which the monomer units are composed of

A) fructose
 B) starch
 C) cellulose
 D) amino acids

45. What volume of ethanol is consumed if a person drinks 5 bottles of beer that is 4.60 % by volume ethanol? The volume of a bottle of beer is 330 mL.

A) 89.1 mL
 B) 75.9 mL
 C) 26.0 mL
 D) 23.0 mL



The correct name for the diagram is

A) 6-methyl-hept-2-ene
 B) 2-methylheptane
 C) 6-ethyl-hept-2-ene
 D) 2-methyl-hept-5-ene

47. An aqueous solution is a solution where
- A) an acid is present.
 - B) the solute is water.
 - C) the solvent is water.
 - D) you can see the separate water phase.

48.



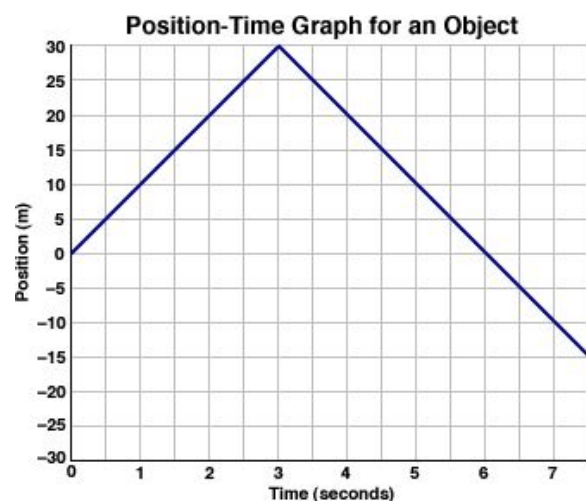
The above WHMIS symbol would describe a substance which is

- A) infectious materials
 - B) radioactive
 - C) dangerously reactive
 - D) oxidizing agent
49. The best example of a homogeneous mixture is
- A) sugar
 - B) water
 - C) granola
 - D) milk
50. A homogeneous mixture has
- A) only one component.
 - B) at least two visible components.
 - C) a non-uniform distribution of multiple phases.
 - D) at least two components which look like one substance.

Unit 4: Changes in Motion

1. During a collision,
 - A) the forces on each object are different
 - B) the total momentum before the collision is larger than the total momentum after
 - C) the total momentum before the collision is smaller than the total momentum after
 - D) the total momentum before the collision is equal to the total momentum after
2. Which of the following quantities is a scalar quantity?
 - A) velocity
 - B) force
 - C) power
 - D) acceleration

3.



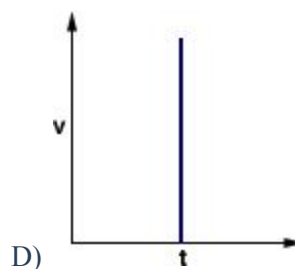
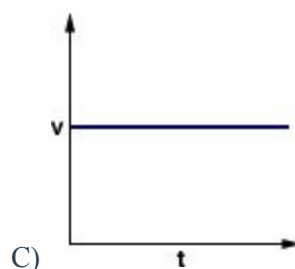
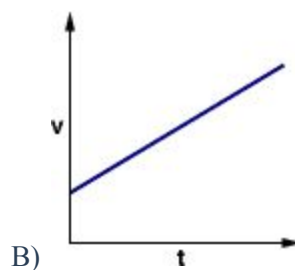
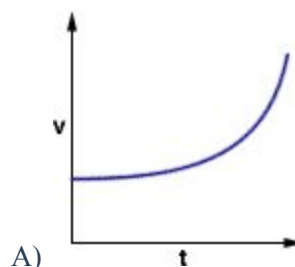
According to the graph, the average velocity during the time interval of 1.0 s to 2.0 s is

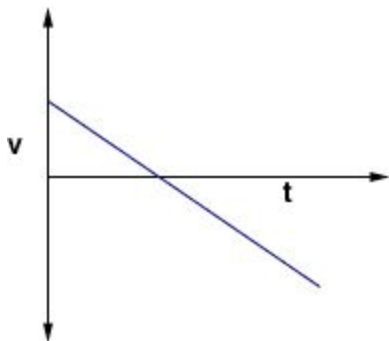
- A) 0 m/s
- B) 5 m/s
- C) 10 m/s
- D) 20 m/s

4. The area under a force vs. time graph is

- A) force
- B) time
- C) velocity
- D) impulse

5. Which graph represents constant speed motion?





6.

According to the graph, the object

- A) slows down then speeds up.
- B) speeds up then slows down.
- C) travels east, changes direction and travels west farther than the starting point.
- D) travels north, changes direction then doesn't make it back to its starting point.

7. Momentum is defined as

- A) one half the mass times the velocity of an object squared
- B) the force times the mass of an object
- C) the mass times the velocity of an object
- D) the change in velocity of an object times the force

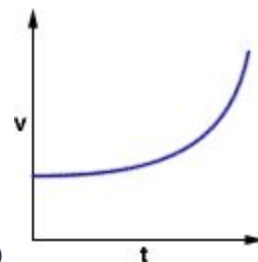
8. What is the acceleration of a truck travelling at $+26.0 \text{ m/s}$ that is slowed down to $+8.0 \text{ m/s}$ in 4.75 s ?

- A) -3.79 m/s^2
- B) $+3.79 \text{ m/s}^2$
- C) -7.16 m/s^2
- D) $+7.16 \text{ m/s}^2$

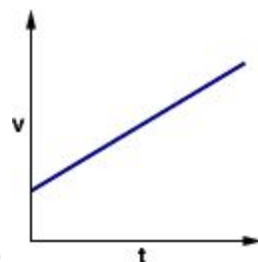
9. When an object is dropped from a cliff, it will experience

- A) uniform motion
- B) uniform velocity
- C) uniform accelerated motion
- D) non-uniform accelerated motion

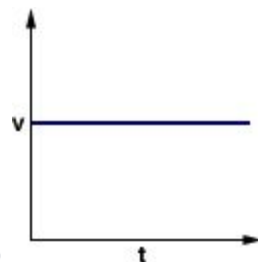
10. Which graph presents an impossible real-life situation?



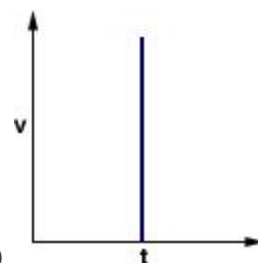
A)



B)

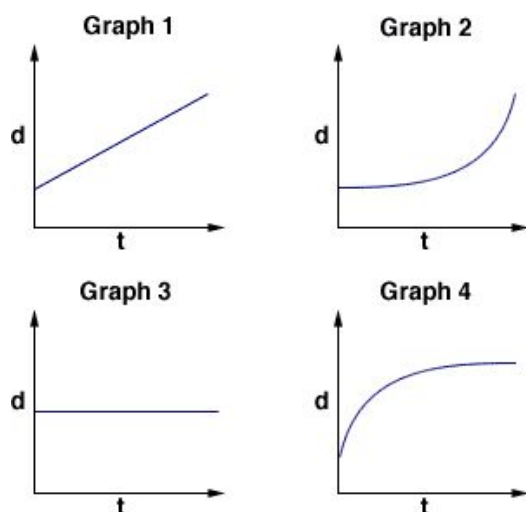


C)



D)

11.

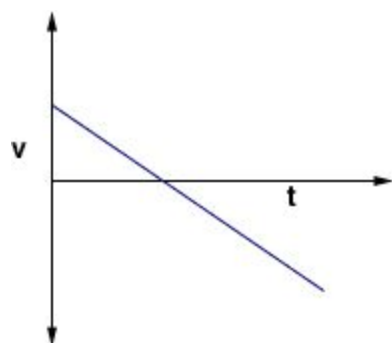


Which graph represents an object at rest?

- A) 1
- B) 2
- C) 3
- D) 4

12. An example of a derived SI unit is one which measures

- A) mass
- B) length
- C) time
- D) energy



13.

According to the graph, the object

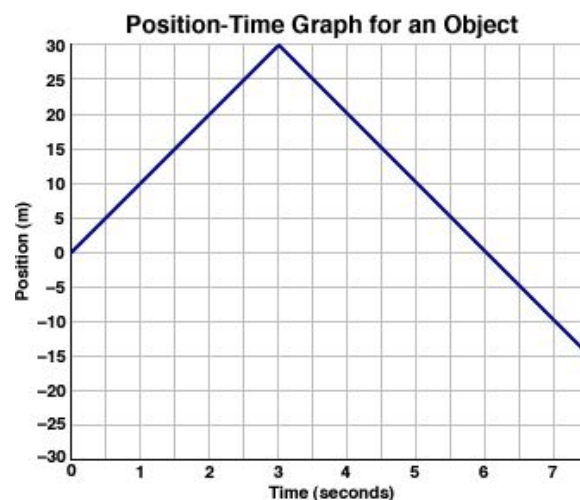
- A) slows down then speeds up.
- B) speeds up then slows down.
- C) travels east, changes direction and travels west farther than the starting point.

D) travels north, changes direction then doesn't make it back to its starting point.

14. A ball is thrown straight up into the air with a velocity of $+18.5 \text{ m/s}$. After 4.0 s , the velocity of the ball is

- A) -44.4 m/s
- B) -20.7 m/s
- C) $+44.4 \text{ m/s}$
- D) $+20.7 \text{ m/s}$

15.



According to the graph, the average velocity during the time interval of 3.0 s to 7.0 s is

- A) 0 m/s
- B) -4 m/s
- C) -11 m/s
- D) 11 m/s

16. A baseball pitcher throws a fast ball at 38.0 m/s . While the ball is in his hand, the pitcher moves the ball through a distance of 2.20 m before letting go. What is the acceleration of the ball just before release?

- A) 8.64 m/s^2
- B) 17.3 m/s^2
- C) 164 m/s^2
- D) 328 m/s^2

17. Which of the following quantities is a scalar quantity?

- A) velocity
- B) force
- C) power
- D) acceleration

18. Speed is known as a/an

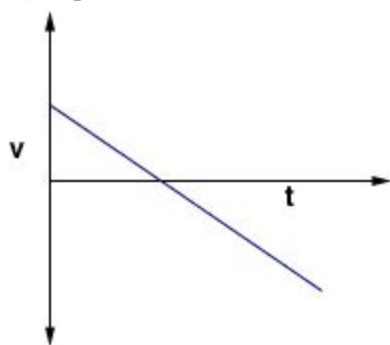
- A) vector quantity
- B) scalar quantity
- C) change in motion
- D) accelerated motion

19. Uniformly accelerated motion occurs when an object

- A) speeds up at a constant rate
- B) speeds up at a decreasing rate
- C) speeds up at an increasing rate
- D) speeds up at a changing rate

20. The area under a force vs. time graph is

- A) force
- B) time
- C) velocity
- D) impulse

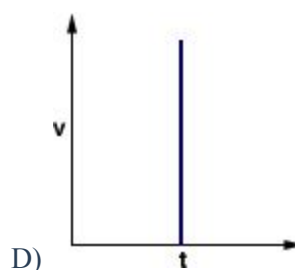
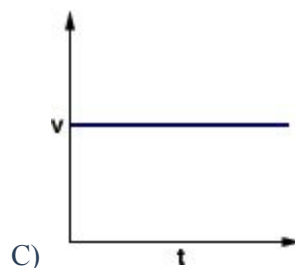
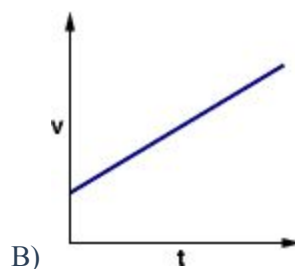
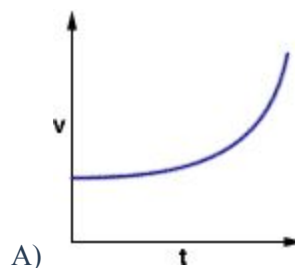


21.

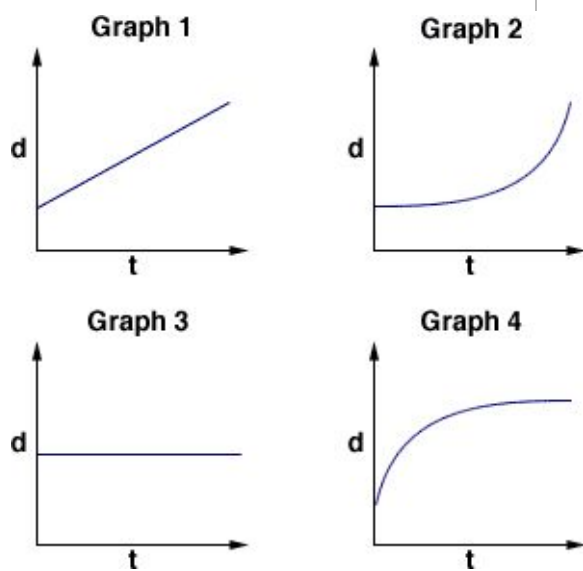
According to the graph, the object

- A) slows down then speeds up.
- B) speeds up then slows down.
- C) travels east, changes direction and travels west farther than the starting point.
- D) travels north, changes direction then doesn't make it back to its starting point.

22. Which graph represents constant speed motion?



23.



Which graph represents an object at rest?

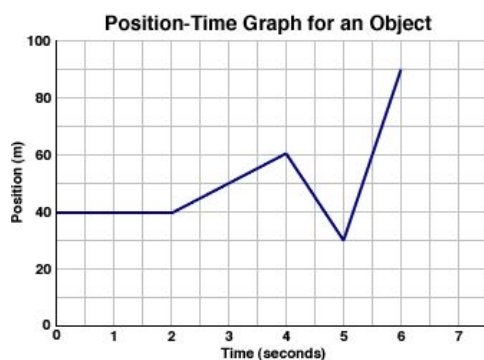
- A) 1
B) 2
C) 3
D) 4
24. A 2.0 kg object moving to the right at 3.00 m/s collides with a stationary 5.00 kg object. After the collision, the 2.0 kg object is moving to the right at 0.500 m/s. What is the velocity of the 5.00 kg object after the collision?
- A) 1.00 m/s right
B) 1.00 m/s left
C) 5.00 m/s right
D) 5.00 m/s left
25. Which of the following quantities is a scalar quantity?
- A) acceleration
B) velocity
C) distance
D) displacement
26. Which of the following quantities is a scalar quantity?

- A) velocity
B) force
C) power
D) acceleration

27. For a freely falling brick, an acceleration of 9.8 m/s^2 means that it falls
- A) 9.8 m each second
B) 9.8 m/s faster each second
C) 9.8 m/s^2 more each second
D) 9.8 m/s each second
28. Speed is known as a/an
- A) vector quantity
B) scalar quantity
C) change in motion
D) accelerated motion
29. Acceleration occurs when
- A) an object's mass is increased
B) an object's mass is decreased
C) an object travels in a straight line
D) object changes direction
30. Convert 18.0 m/s to km/h.
- A) 5.00 km/h
B) 24.3 km/h
C) 36.0 km/h
D) 64.8 km/h
31. A baseball pitcher throws a fast ball at 38.0 m/s. While the ball is in his hand, the pitcher moves the ball through a distance of 2.20 m before letting go. What is the acceleration of the ball just before release?
- A) 8.64 m/s^2
B) 17.3 m/s^2
C) 164 m/s^2
D) 328 m/s^2
32. Convert 30.0 km/h to m/s.
- A) 8.33 m/s
B) 108 m/s
C) 18.8 m/s
D) 15.0 m/s

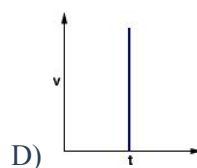
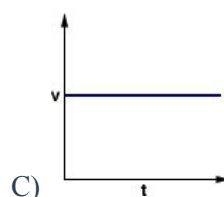
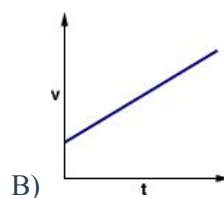
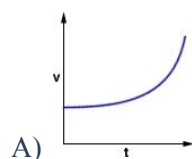
33. Which of the following has the greatest inertia?
 A) 0.50 kg frying pan
 B) 0.80 kg pillow full of feathers
 C) 0.60 kg rock
 D) None of the above have any inertia
34. A mass undergoes a change in momentum of $50 \text{ kg}\cdot\text{m/s}$ from a force of 12.5 N . The time of interaction is
 A) 12.5 s
 B) $6.3 \times 10^2 \text{ s}$
 C) 4.0 s
 D) 0.25 s
35. Uniformly accelerated motion occurs when an object
 A) speeds up at a constant rate
 B) speeds up at a decreasing rate
 C) speeds up at an increasing rate
 D) speeds up at a changing rate
36. Which of the following quantities is a scalar quantity?
 A) velocity
 B) force
 C) power
 D) acceleration
37. A 12.0 kg object experiences a 50.0 N force for 3.00 s . What is its change in velocity?
 A) 12.5 m/s
 B) 1.39 m/s
 C) 0.720 m/s
 D) 150 m/s

38.



According to the graph, the object is moving slowest through which one of the following time intervals?

- A) 0 s to 1 s
 B) 2 s to 3 s
 C) 4 s to 5 s
 D) 5 s to 6 s
39. Speed is known as a/an
 A) vector quantity
 B) scalar quantity
 C) change in motion
 D) accelerated motion
40. Which graph represents constant speed motion?



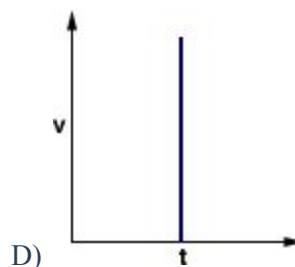
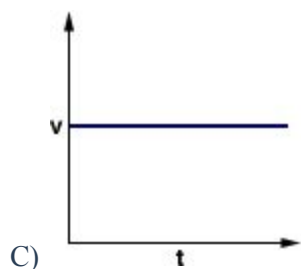
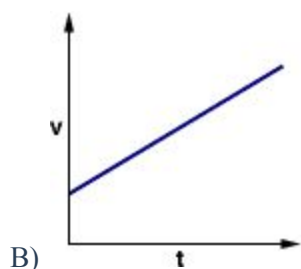
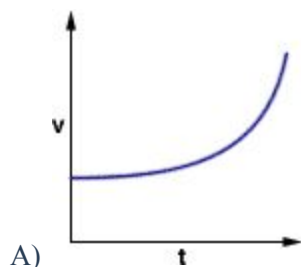
41. The area under a force vs. time graph is

- A) force
- B) time
- C) velocity
- D) impulse

42. A 12.0 kg object experiences a 50.0 N force for 3.00 s. What is its change in velocity?

- A) 12.5 m/s
- B) 1.39 m/s
- C) 0.720 m/s
- D) 150 m/s

43. Which graph represents constant speed motion?



44. What is the acceleration of a truck travelling at +33.5 m/s that is slowed down to +9.0 m/s in 7.00 s?

- A) -3.50 m/s^2
- B) $+3.50 \text{ m/s}^2$
- C) -6.07 m/s^2
- D) $+6.07 \text{ m/s}^2$

45. Impulse is defined as

- A) the mass times the velocity of an object
- B) the momentum of an object
- C) the change in mass times the velocity of an object
- D) the change in momentum of an object

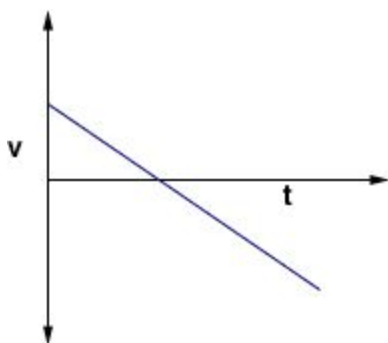
46. Uniformly accelerated motion occurs when an object

- A) speeds up at a constant rate
- B) speeds up at a decreasing rate
- C) speeds up at an increasing rate
- D) speeds up at a changing rate

47. Convert 30.0 km/h to m/s.

- A) 8.33 m/s
- B) 108 m/s
- C) 18.8 m/s
- D) 15.0 m/s

48. A 2.0 kg object moving to the right at 3.00 m/s collides with a stationary 5.00 kg object. After the collision, the 2.0 kg object is moving to the right at 0.500 m/s. What is the velocity of the 5.00 kg object after the collision?
- A) 1.00 m/s right
 - B) 1.00 m/s left
 - C) 5.00 m/s right
 - D) 5.00 m/s left
49. Speed is known as a/an
- A) vector quantity
 - B) scalar quantity
 - C) change in motion
 - D) accelerated motion



50. According to the graph, the object
- A) slows down then speeds up.
 - B) speeds up then slows down.
 - C) travels east, changes direction and travels west farther than the starting point.
 - D) travels north, changes direction then doesn't make it back to its starting point.

Answers

Unit 1: The Changing Earth

1. A
2. C
3. A
4. 2,3,1
5. B
6. C
7. D
8. C
9. D
10. B
11. 2,4,3,1
12. 4,2,3,1
13. 1.5
14. B
15. 2,3,1
16. A
17. D
18. B
19. C
20. A

Unit 2: Changes in Living Systems

1. A
2. C
3. D
4. D
5. B
6. B
7. A
8. C
9. B
10. B
11. B

12. B
13. A
14. C
15. A
16. C
17. D
18. C
19. A
20. A
21. A
22. D
23. C
24. B
25. A
26. D
27. B
28. A
29. D
30. A
31. A
32. D
33. C
34. B
35. C
36. A
37. D
38. C
39. A
40. B

Unit 3: Chemical Changes

1. B
2. C
3. B
4. C
5. A
6. C

7. C
8. C
9. D
10. A
11. A
12. A
13. D
14. A
15. D
16. D
17. D
18. C
19. C
20. B
21. C
22. D
23. B
24. B
25. C
26. A
27. A
28. A
29. B
30. B
31. C
32. C
33. B
34. A
35. B
36. B
37. A
38. C
39. C
40. B
41. A
42. B
43. B
44. D
45. B
46. A
47. C
48. C
49. D

50. D

Unit 4: Changes in Motion

1. D
2. C
3. C
4. D
5. C
6. C
7. C
8. A
9. C
10. D
11. C
12. D
13. C
14. B
15. C
16. D
17. C
18. B
19. A
20. D
21. C
22. C
23. C
24. A
25. C
26. C
27. B
28. B
29. D
30. D
31. D
32. A
33. B
34. C
35. A
36. C
37. A
38. A

- 39. B
- 40. C
- 41. D
- 42. A
- 43. C
- 44. A
- 45. D
- 46. A
- 47. A
- 48. A
- 49. B
- 50. C