

# STAR Test Review 2011

## Multiple Choice

*Identify the choice that best completes the statement or answers the question.*

- \_\_\_\_\_ 1. Which branch of physical science studies the properties of matter and changes in matter?
  - a. photography
  - b. chemistry
  - c. physics
  - d. engineering
- \_\_\_\_\_ 2. The variable that is expected to change because of another variable is known as the
  - a. manipulated variable.
  - b. responding variable.
  - c. controlled variable.
  - d. independent variable.
- \_\_\_\_\_ 3. Which of the following are NOT examples of data?
  - a. quantitative observations
  - b. qualitative observations
  - c. theories
  - d. measurements
- \_\_\_\_\_ 4. A physical representation of an atom is an example of a scientific
  - a. law.
  - b. model.
  - c. observation.
  - d. theory.
- \_\_\_\_\_ 5. The kilogram is the basic metric unit of
  - a. length.
  - b. mass.
  - c. weight.
  - d. volume.
- \_\_\_\_\_ 6. The amount of space an object takes up is its
  - a. volume.
  - b. density.
  - c. mass.
  - d. length.
- \_\_\_\_\_ 7. A line graph shows
  - a. changes in the responding variable only.
  - b. changes in the manipulated variable only.
  - c. how the responding variable changes in response to the manipulated variable.
  - d. how the manipulated variable changes on its own.
- \_\_\_\_\_ 8. What is the slope of the line connecting the points (10, 5) and (20, 25)?
  - a. 0.5
  - b. 1
  - c. 2

d. 4

- \_\_\_\_\_ 9. Table sugar and table salt are examples of
- atoms.
  - elements.
  - mixtures.
  - pure substances.
- \_\_\_\_\_ 10. Anything that has mass and takes up space is called
- matter.
  - energy.
  - heterogeneous.
  - homogeneous.
- \_\_\_\_\_ 11. If you heat a liquid and measure the temperature at which it boils, you are measuring a(n)
- atomic property.
  - physical property.
  - chemical property.
  - molecular property.
- \_\_\_\_\_ 12. All elements are composed of extremely small particles called
- compounds.
  - mixtures.
  - atoms.
  - molecules.
- \_\_\_\_\_ 13.  $\text{H}_2\text{O}$ ,  $\text{CO}_2$ , and  $\text{C}_{12}\text{H}_{22}\text{O}_{11}$  are all examples of chemical
- properties.
  - changes.
  - bonds.
  - formulas.
- \_\_\_\_\_ 14. One example of a physical change is
- burning paper.
  - baking cookies.
  - heating table sugar.
  - dissolving salt in water.
- \_\_\_\_\_ 15. One example of a chemical change is
- filtering.
  - burning wood.
  - boiling water.
  - crushing a can.
- \_\_\_\_\_ 16. Which of the following is NOT an example of a chemical change?
- gas burning on a stove
  - rust forming on an iron fence
  - salt dissolving in a glass of water
  - using electricity to break down water into hydrogen and oxygen
- \_\_\_\_\_ 17. What characteristics listed below do photosynthesis and combustion NOT share?
- Both involve chemical change.
  - Both are endothermic.
  - Both change energy from one form to another.

- d. Both cause changes in matter.
- \_\_\_\_\_ 18. A solid is a state of matter that has a(n)
- indefinite volume and an indefinite shape.
  - definite volume and a definite shape.
  - definite volume and an indefinite shape.
  - indefinite volume and a definite shape.
- \_\_\_\_\_ 19. What is vaporization?
- a gas becoming a liquid
  - a liquid becoming a solid
  - a gas becoming a solid
  - a liquid becoming a gas
- \_\_\_\_\_ 20. The force of a gas's outward push divided by the area of the walls of the container is the gas's
- volume.
  - temperature.
  - pressure.
  - density.
- \_\_\_\_\_ 21. A graph that shows that the pressure of a gas varies inversely with its volume under constant temperature demonstrates
- the Pressure law.
  - the Density law.
  - Charles's law.
  - Boyle's law.
- \_\_\_\_\_ 22. Mendeleev created the first periodic table by arranging elements in order of
- decreasing atomic mass.
  - increasing atomic mass.
  - increasing atomic number.
  - increasing melting points and densities.
- \_\_\_\_\_ 23. How did chemists change Mendeleev's periodic table in the early 1900s?
- They included chemical properties such as bonding power.
  - They included physical properties such as melting point and density.
  - They used atomic mass instead of atomic number to organize the elements.
  - They used atomic number instead of atomic mass to organize the elements.
- \_\_\_\_\_ 24. What prediction did Mendeleev make that came true less than 20 years later?
- He predicted the atomic numbers of unknown elements.
  - He predicted that a total of 112 elements would be discovered.
  - He said that three new elements would be discovered, and he described their properties.
  - He said that the periodic table would be developed into 18 families.
- \_\_\_\_\_ 25. An ionic bond is the attraction between
- similarly charged ions.
  - oppositely charged ions.
  - neutral ions.
  - neutral atoms.
- \_\_\_\_\_ 26.  $\text{CaCO}_3$  represents a chemical
- symbol.

- b. formula.
- c. subscript.
- d. reaction.

- \_\_\_\_\_ 27. Chemicals that act as biological catalysts by speeding up reactions in living things are
- a. inhibitors.
  - b. enzymes.
  - c. fuels.
  - d. reactants.
- \_\_\_\_\_ 28. Which is a characteristic property of acids?
- a. They turn blue litmus paper red.
  - b. They turn red litmus paper blue.
  - c. They taste bitter.
  - d. They do not react with metals.
- \_\_\_\_\_ 29. Carbon is able to bond with atoms of other elements in many different ways because it has
- a. six protons.
  - b. four electrons.
  - c. six valence electrons.
  - d. four valence electrons.
- \_\_\_\_\_ 30. Substances that provide the energy and raw materials the human body needs are
- a. nutrients.
  - b. substituted hydrocarbons.
  - c. esters.
  - d. unsaturated hydrocarbons.
- \_\_\_\_\_ 31. When an object's distance from another object is changing,
- a. it is in motion.
  - b. it is moving at constant speed.
  - c. it has a high velocity.
  - d. it is accelerating.
- \_\_\_\_\_ 32. Speed equals distance divided by
- a. time.
  - b. velocity.
  - c. size.
  - d. motion.
- \_\_\_\_\_ 33. When you know both the speed and direction of an object's motion, you know the
- a. average speed of the object.
  - b. acceleration of the object.
  - c. distance the object has traveled.
  - d. velocity of the object.
- \_\_\_\_\_ 34. If you know the distance an object has traveled in a certain amount of time, you can determine
- a. the size of the object.
  - b. the speed of the object.
  - c. the location of the object.
  - d. the acceleration of the object.
- \_\_\_\_\_ 35. The rate at which velocity changes is called
- a. instantaneous speed.

- b. direction.
- c. acceleration.
- d. motion.

- \_\_\_\_\_ 36. In a graph showing speed versus time, a straight line shows the acceleration is
- a. decreasing.
  - b. increasing.
  - c. changing.
  - d. constant.
- \_\_\_\_\_ 37. The energy associated with motion is called
- a. kinetic energy.
  - b. elastic potential energy.
  - c. gravitational potential energy.
  - d. nuclear energy.
- \_\_\_\_\_ 38. Forces can be added together only if they are
- a. acting on the same object.
  - b. balanced forces.
  - c. unaffected by gravity.
  - d. substantial.
- \_\_\_\_\_ 39. What happens when two forces act in the same direction?
- a. They cancel each other out.
  - b. The stronger one prevails.
  - c. They add together.
  - d. Their sum divided by two is the total force.
- \_\_\_\_\_ 40. Balanced forces acting on an object
- a. always change the object's motion.
  - b. sometimes change the object's motion.
  - c. never change the object's motion.
  - d. are not related to motion.
- \_\_\_\_\_ 41. The force that one surface exerts on another when the two rub against each other is called
- a. friction.
  - b. acceleration.
  - c. inertia.
  - d. gravity.
- \_\_\_\_\_ 42. The force that pulls falling objects toward Earth is called
- a. gravity.
  - b. free fall.
  - c. acceleration.
  - d. air resistance.
- \_\_\_\_\_ 43. The tendency of an object to resist change in its motion is known as
- a. mass.
  - b. inertia.
  - c. force.
  - d. balance.
- \_\_\_\_\_ 44. According to Newton's third law of motion, when a hammer strikes and exerts force on a nail, the nail

- a. creates a friction with the hammer.
  - b. disappears into the wood.
  - c. exerts an equal force back on the hammer.
  - d. moves at a constant speed.
- \_\_\_\_\_ 45. Snowshoes enable a person to walk on deep snow because the snowshoes
- a. decrease the person's weight on the snow.
  - b. increase the area over which the person's weight is distributed.
  - c. increase the pressure on the snow.
  - d. increase the buoyancy of the person.
- \_\_\_\_\_ 46. Which of the following is true of the buoyant force?
- a. It acts in the downward direction.
  - b. It acts with the force of gravity.
  - c. It acts in the upward direction.
  - d. It makes an object feel heavier.
- \_\_\_\_\_ 47. The ancient Greeks knew of all of the following planets EXCEPT
- a. Earth.
  - b. Saturn.
  - c. Uranus.
  - d. Venus.
- \_\_\_\_\_ 48. The sun produces energy by
- a. attracting it with the force of gravity.
  - b. nuclear fission.
  - c. burning fuels such as oil.
  - d. nuclear fusion.
- \_\_\_\_\_ 49. The range of electromagnetic waves placed in a certain order is called the
- a. electromagnetic spectrum.
  - b. electromagnetic wavelength.
  - c. electromagnetic frequency.
  - d. electromagnetic field.
- \_\_\_\_\_ 50. A light-year is
- a. 365 days.
  - b. the distance light travels in a year.
  - c. the distance from Earth to Proxima Centauri.
  - d. the amount of light the sun produces in a year.
- \_\_\_\_\_ 51. More than half of all stars are members of groups of two or more stars called
- a. galaxies.
  - b. eclipsing binaries.
  - c. star systems.
  - d. star clusters.

## STAR Test Review 2011

### Answer Section

#### MULTIPLE CHOICE

1. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.1.1.2 Identify skills that scientists use to learn about the natural world.  
STA: S 8.9 BLM: comprehension
2. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.1.2.1 Describe how scientists investigate the natural world.  
STA: S 8.9.c BLM: comprehension
3. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.1.2.1 Describe how scientists investigate the natural world.  
STA: S 8.9.b BLM: comprehension
4. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.1.2.2 Explain the roles of models, laws, and theories in science.  
STA: S 8.9.a BLM: application
5. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.1.3.2 Identify the SI units of measure for length, mass, volume, density, time, and temperature. STA: S 8.8.a | S 8.8.b BLM: comprehension
6. ANS: A PTS: 1 DIF: L1  
OBJ: CaPS.1.3.2 Identify the SI units of measure for length, mass, volume, density, time, and temperature. STA: S 8.8.a | S 8.8.b BLM: knowledge
7. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.1.5.1 Explain what types of data line graphs can display.  
STA: S 8.9.g BLM: comprehension
8. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.1.5.2 Describe how you determine a line of best fit or the slope of a graph.  
STA: S 8.9.d BLM: application
9. ANS: D PTS: 1 DIF: L2  
OBJ: CaPS.2.1.1 Identify the properties used to describe matter. STA: S 8.3.b  
BLM: application
10. ANS: A PTS: 1 DIF: L1  
OBJ: CaPS.2.1.1 Identify the properties used to describe matter. STA: S 8.3  
BLM: knowledge
11. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.2.1.1 Identify the properties used to describe matter. STA: S 8.7.c  
BLM: application
12. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.2.1.2 Define elements and explain how they relate to compounds.  
STA: S 8.3.a BLM: comprehension
13. ANS: D PTS: 1 DIF: L2  
OBJ: CaPS.2.1.2 Define elements and explain how they relate to compounds.  
STA: S 8.3.f BLM: application

14. ANS: D PTS: 1 DIF: L2  
OBJ: CaPS.2.2.1 Describe what a physical change is. STA: S 8.5.d  
BLM: application
15. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.2.2.2 Describe what a chemical change is. STA: S 8.5.c  
BLM: application
16. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.2.2.2 Describe what a chemical change is. STA: S 8.5.a  
BLM: application
17. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.2.3.2 Describe how chemical energy is related to chemical change.  
STA: S 8.5 BLM: application
18. ANS: B PTS: 1 DIF: L1  
OBJ: CaPS.3.1.1 Describe the motion of particles in a solid. STA: S 8.3.e  
BLM: knowledge
19. ANS: D PTS: 1 DIF: L1  
OBJ: CaPS.3.2.2 Explain what happens to a substance during changes between liquid and gas.  
STA: S 8.3.d | S 8.5.d BLM: knowledge
20. ANS: C PTS: 1 DIF: L1  
OBJ: CaPS.3.3.1 List the types of measurements used when working with gases.  
STA: S 8.3.e | S 8.9.f BLM: knowledge
21. ANS: D PTS: 1 DIF: L1  
OBJ: CaPS.3.3.2 Explain how the volume, temperature, and pressure of a gas are related.  
STA: S 8.9.e | S 8.3.e BLM: knowledge
22. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.4.2.1 Explain how Mendeleev discovered the pattern that led to the periodic table.  
STA: S 8.7 BLM: comprehension
23. ANS: D PTS: 1 DIF: L2  
OBJ: CaPS.4.2.1 Explain how Mendeleev discovered the pattern that led to the periodic table.  
STA: S 8.7.b BLM: comprehension
24. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.4.2.1 Explain how Mendeleev discovered the pattern that led to the periodic table.  
STA: S 8.7.a BLM: comprehension
25. ANS: B PTS: 1 DIF: L1  
OBJ: CaPS.5.2.1 Explain how ions form bonds. STA: S 8.3.c  
BLM: knowledge
26. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.6.2.1 Identify what information a chemical equation contains.  
STA: S 8.5.b BLM: comprehension
27. ANS: B PTS: 1 DIF: L1  
OBJ: CaPS.6.3.2 Identify factors that affect the rate of a chemical reaction.  
STA: S 8.6.c BLM: knowledge
28. ANS: A PTS: 1 DIF: L1  
OBJ: CaPS.7.3.1 Name the properties of acids and bases. STA: S 8.5.e  
BLM: knowledge



29. ANS: D PTS: 1 DIF: L1  
OBJ: CaPS.8.1.1 Describe how carbon is able to form a huge variety of compounds.  
STA: S 8.6.a BLM: knowledge
30. ANS: A PTS: 1 DIF: L1  
OBJ: CaPS.8.4.1 List the four main classes of organic compounds required by living things.  
STA: S 8.6.b BLM: knowledge
31. ANS: A PTS: 1 DIF: L1  
OBJ: CaPS.9.1.1 Determine when an object is in motion. STA: S 8.1.a  
BLM: knowledge
32. ANS: A PTS: 1 DIF: L1  
OBJ: CaPS.9.2.1 Calculate an object's speed and velocity. STA: S 8.1.b  
BLM: knowledge
33. ANS: D PTS: 1 DIF: L2  
OBJ: CaPS.9.2.2 Describe an object's change in velocity. STA: S 8.1.d  
BLM: comprehension
34. ANS: B PTS: 1 DIF: L1  
OBJ: CaPS.9.2.1 Calculate an object's speed and velocity. STA: S 8.1.c  
BLM: knowledge
35. ANS: C PTS: 1 DIF: L1  
OBJ: CaPS.9.3.1 Describe the motion of an object as it accelerates.  
STA: S 8.1.e BLM: knowledge
36. ANS: D PTS: 1 DIF: L2  
OBJ: CaPS.9.3.3 Describe what graphs are used to analyze the motion of an accelerating object.  
STA: S 8.1.f BLM: comprehension
37. ANS: A PTS: 1 DIF: L1  
OBJ: CaPS.9.4.1 Identify factors that affect an object's kinetic and potential energy.  
STA: S 8 Framework BLM: knowledge
38. ANS: A PTS: 1 DIF: L2  
OBJ: CaPS.10.1.1 Describe what a force is. STA: S 8.2.a  
BLM: knowledge
39. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.10.1.2 Explain how balanced and unbalanced forces affect an object's velocity.  
STA: S 8.2.b BLM: comprehension
40. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.10.1.2 Explain how balanced and unbalanced forces affect an object's velocity.  
STA: S 8.2.c BLM: comprehension
41. ANS: A PTS: 1 DIF: L1  
OBJ: CaPS.10.2.1 Identify factors that determine the friction force between two objects.  
STA: S 8.2.d BLM: knowledge
42. ANS: A PTS: 1 DIF: L2  
OBJ: CaPS.10.2.2 Identify the factors that affect the gravitational force between two objects.  
STA: S 8.2.g BLM: comprehension
43. ANS: B PTS: 1 DIF: L1  
OBJ: CaPS.10.3.1 State Newton's first law of motion. STA: S 8.2.f  
BLM: knowledge

44. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.10.4.1 State Newton's third law of motion. STA: S 8.2.e  
BLM: comprehension
45. ANS: B PTS: 1 DIF: L2  
OBJ: CaPS.11.1.1 Explain what pressure depends on. STA: S 8.8.d  
BLM: comprehension
46. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.11.2.2 Describe the effect of the buoyant force. STA: S 8.8.c  
BLM: comprehension
47. ANS: C PTS: 1 DIF: L2  
OBJ: CaPS.14.1.1 Identify the geocentric and heliocentric systems.  
STA: S 8.4.e BLM: comprehension
48. ANS: D PTS: 1 DIF: L1  
OBJ: CaPS.14.2.2 Name the layers of the sun's interior and the sun's atmosphere.  
STA: S 8.4.b BLM: knowledge
49. ANS: A PTS: 1 DIF: L1  
OBJ: CaPS.15.1.1 State the regions of the electromagnetic spectrum.  
STA: S 8.4.d BLM: knowledge
50. ANS: B PTS: 1 DIF: L1  
OBJ: CaPS.15.2.2 Describe how astronomers measure distances to the stars.  
STA: S 8.4.c BLM: knowledge
51. ANS: C PTS: 1 DIF: L1  
OBJ: CaPS.15.4.1 Define a star system. STA: S 8.4.a BLM: knowledge