6th Grade Blizzard Bag

Day 1-Numbers 1-20

Day 2- Numbers 21-40

Day 3- Numbers 41-60

Due On or Before May 6th

Name:_____

Science Teacher:_____

Period:_____

Directions:

Make sure you circle the correct answer on your papers.

You may use your book or any other resources you have to complete the Blizzard Bag.

Take your time and research any and all answers you are not sure of.

Make sure you turn the Blizzard Bag back into your Science Teacher.

Day 1- Scientific Ways of Knowing and Rocks and Minerals

1. Sand on a beach is covered by other layers of sand over time. The extra layers compress the first layer, packing it tighter and tighter. Over time, the bottom layers of sand have formed into sandstone, with colored bands showing the different layers.
What kind of rock can sandstone be classified as?

- **A.** volcanic rock
- **B.** igneous rock
- **C.** sedimentary rock
- **D.** metamorphic rock

Mineral	Hardness	Shape	Crystal System	Color	Luster	Streak
Graphite [C]	1	lamellar veins to earthy masses	hexagonal	steel gray	metallic	black
Talc [$Mg_3Si_4O_{10}(OH)_2$]	1	flattened or tabular	monoclinic	white to green	non-metallic	white
Gypsum [$CaSO_4 \cdot 2H_2O$]	2	tabular, bladed or blocky	monoclinic	white to colorless to gray	non-metallic	white
Galena [PbS]	2	cube, octahedron	isometric	silver gray	metallic	grey-black
Gold [Au]	2.5	nuggets, grains	isometric	golden yellow	metallic	golden yellow
Lazurite [$Na_8Al_6Si_6O_{24}S$]	5	dodecahedral	isometric	brilliant blue	non-metallic	bright blue
Hematite [Fe_2O_3]	6	tabular	hexagonal	steel gray	metallic	reddish-brown
Pyrite [FeS_2]	6	cube, octahedron and pyritohedron	isometric	golden yellow	metallic	greenish black
Quartz [SiO_2]	7	two rhombohedrons	hexagonal	colorless to several other shades	non-metallic	white

2. Penny was holding a sample of an unknown mineral from the table above. It looked yellow, and she could tell by using a magnifying glass that the crystal system was isometric. It also had a metallic luster. If the teacher told her that the mineral's hardness was rated 6, what mineral was Penny holding?

- **A.** gold
- **B.** hematite
- **C.** quartz
- **D.** pyrite

3. Which of the following questions would be answered by performing a scientific experiment?

- **A.** What type of food is the most enjoyable?
- **B.** What type of food looks the best?
- **C.** How many types of food are available?
- **D.** What type of food is the most nutritious?

4. Cheryl recently moved across the state, and began really missing the native trees she had at her old house. So, she bought some of the same type of tree and planted them at her new house. At her old house, it rained fairly often, but the rocky, grey soil dried out quickly after it rained. At her new house, it rains the same amount as at her old house, but the black, clay-rich soil stays wet for a long time after it rains.
Several weeks after planting the trees, the trees died. Which of the following is the best explanation for this?

○ **A.** The trees needed to be planted in soil that was different from both locations.

○ **B.** The trees can grow only in soils that are grey in color.

○ **C.** The soil at the new house does not drain water quickly enough for these trees.

○ **D.** The soil at the old house should have been wetter.

5. Which layer of soil is high in organic material but relatively low in minerals?

○ **A.** bedrock

○ **B.** subsoil

○ **C.** topsoil

○ **D.** mantle

6. Tropical rainforests generally have a higher density of organisms compared with other biomes. Based on this information, which of the following is likely true about soils in tropical rainforests?

○ **A.** Tropical rainforests generally have no subsoil.

○ **B.** Tropical rainforests generally have no topsoil.

○ **C.** The soils in tropical rainforests generally have a lower percentage of humus than soils in other biomes.

○ **D.** The soils in tropical rainforests generally have a higher percentage of humus than soils in other biomes.

7. Granite is a type of igneous rock. What determines the size of the crystals that form in a sample of granite?

○ **A.** how many impurities are in the granite

○ **B.** how many times those minerals have been in granite before

○ **C.** how quickly the rock cooled

○ **D.** how large the sample is

8. A good question to use for a scientific investigation should be testable, and it should be connected to science concepts.
Casey wants to do a scientific investigation about light. Which of the following questions would be **best** to use to guide his scientific investigation?

- **A.** Which type of light bulb is easiest to catch?
- **B.** What color of light is the prettiest?
- **C.** Which type of light bulb burns the longest?
- **D.** Which type of light bulb is preferred by moms?

9. A scientist wants to determine which fertilizer is more effective—Fertilizer X or Fertilizer Y. The best way for her to proceed would be to design an experiment with

- **A.** two groups of plants—a group fertilized by Y and a control group with no fertilizer.
- **B.** three groups of plants—a group fertilized by X, a group fertilized by Y, and a control group with no fertilizer.
- **C.** two groups of plants—a group fertilized by X and a control group with no fertilizer.
- **D.** three groups of plants—a group fertilized by X, a group fertilized by both X and Y, and a control group with no fertilizer.

10. Anna is conducting an experiment to determine how weather affects cell phone reception. She is trying to decide the best way to conduct her experiment in order to collect meaningful data.

Which of the following experiments would help Anna collect the best data?

- **A.** Test a cell phone's reception in one location with clear weather and in another location with rainy weather.
- **B.** Test different cell phones in different locations on days with clear weather.
- **C.** Test a cell phone's reception in the exact same location under various atmospheric conditions.
- **D.** Test different cell phones in different locations on days with rainy weather.

11. Which of the following are true statements about minerals?

I. Minerals are naturally occurring substances.
II. Each mineral has a specific chemical makeup.
III. Minerals can be solids, liquids, or gases.
IV. Rocks are made of minerals.

- **A.** II and IV only
- **B.** I, II, and IV only
- **C.** I and II only
- **D.** I, II, III, and IV

12. Tim is given a rock sample by his teacher. He is also given the rock identification table below and told that his rock is either quartzite, granite, limestone, or gneiss.

Rock Type	Texture	Mineral Composition	Grain Size
Quartzite	nonfoliated	quartz	medium
Granite	interlocking	feldspar and quartz	coarse
Limestone	clastic	calcite or dolomite	fine
Gneiss	foliated	feldspar and quartz	coarse

If Tim determines that his rock's composition is pure quartz, which rock does he have?

- **A.** quartzite
- **B.** granite
- **C.** gneiss
- **D.** limestone

13. Which of the following is the raw material from which sedimentary rocks are formed?

- **A.** lava from volcanic eruptions
- **B.** weathered remains of other rocks
- **C.** none of these
- **D.** magma from the mantle

Mineral	Hardness	Shape	Crystal System	Luster	Cleavage	Fracture	Specific Gravity
Graphite [C]	1	lamellar veins to earthy masses	hexagonal	metallic	Yes	Yes-flaky	2.2
Talc $[Mg_3Si_4O_{10}(OH)_2]$	1	flattened or tabular	monoclinic	non-metallic	Yes-basal	Yes-uneven	2.7-2.8
Galena [PbS]	2	cube, octahedron	isometric	metallic	Yes-cubes	No	7.5
Gold [Au]	2.5	nuggets, grains	isometric	metallic	No	Yes-jagged	19.3
Hematite $[Fe_2O_3]$	6	tabular	hexagonal	metallic	No	Yes-uneven	5.1
Diamond [C]	10	cube and octahedron	isometric	non-metallic	Yes-octahedron	Yes-conchoidal	3.5

14. Which of the following minerals' fracture has a smooth, curved surface?

- **A.** galena
- **B.** diamond
- **C.** gold
- **D.** graphite

15.

"Water seeps into rock cracks and dissolves minerals there. The solution travels through cracks in the rocks, eventually concentrating into large crystals."

The process above is a description of _____.

- **A.** mineral metamorphosis
- **B.** mineral crystal mining
- **C.** mineral crystal formation
- **D.** mineral rock formation

16. Annabelle loves to learn about plants. For a class project, she thought of the following question:Do plants enjoy it when people sing to them?
This question is

- **A.** not a valid scientific question because it is not testable.
- **B.** a valid scientific question because it is testable.
- **C.** not a valid scientific question because it is about plants.
- **D.** a valid scientific question because it is about plants.

17. The soil of an ecosystem determines the kinds of organisms that are able to live there.

Which of the following soil characteristics can have an effect on the ecosystem of an area?

- **A.** the composition of the soil
- **B.** the texture of the soil
- **C.** the particle size of the soil
- **D.** all of the above

18. A science teacher who was teaching a unit on minerals modeled mineral formation for the class. She heated granular sugar and a very small amount of water in a pan until the sugar melted and boiled. After a few minutes, she poured the mixture out into a pan, and the mixture took the shape of the pan and hardened. As it hardened, the sugar molecules in the mixture formed crystals.

Minerals that might form in the igneous environment the teacher modeled include

- **A.** magnetite and quartz.
- **B.** halite and feldspar.
- **C.** gypsum and feldspar.
- **D.** calcite and epidote.

19. Farmers must monitor the quality of their soil because

- **A.** it shows which pollutants are in the air.
- **B.** the state requires them to.
- **C.** the health of the soil determines the health of their crops.
- **D.** it helps determine how high the crops will grow.

20. Which type of rock is created when lava cools and hardens?

- **A.** cement
- **B.** metamorphic
- **C.** igneous
- **D.** sedimentary

Day 2- Scientific Ways of Knowing and Life Science

21. In a cell, what is the function of the cell membrane?

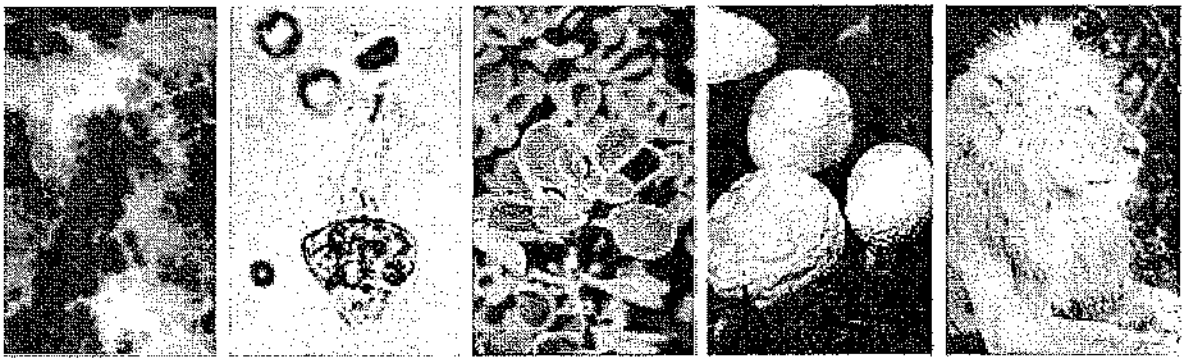
◌ **A.** It generates energy for the cell.

◌ **B.** It controls the entry and exit of substances.

◌ **C.** It removes waste and stores ingested food.

◌ **D.** It only maintains the cell shape.

22. The pictures below show some of the organisms that live on Earth.



Which of the following statements is true based on these pictures?

◌ **A.** The organisms on Earth are similar in size.

◌ **B.** There is a wide diversity of organisms that live on Earth.

◌ **C.** There is only one way in which organisms are able to get nutrients.

◌ **D.** All organisms on Earth have the same structures and functions.

23. The genetic information of a cell is duplicated and split to form two daughter cells during which of the following processes?

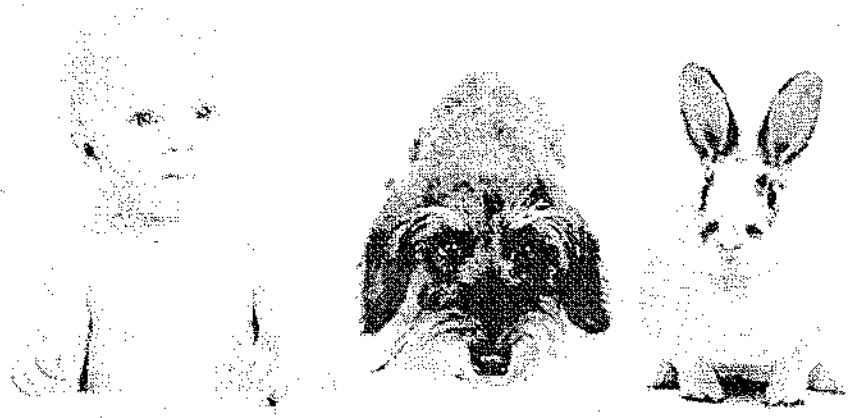
◌ **A.** cell division

◌ **B.** cell metabolism

◌ **C.** cell growth

◌ **D.** cell respiration

24. Only one plane divides the bodies of humans, dogs, and rabbits into roughly symmetrical "left" and "right" halves.



What type of symmetry to these organisms have?

- **A.** radial
- **B.** bilateral
- **C.** orbital
- **D.** rotational

25. Which of the following statements is part of the cell theory?

- **A.** Cells are the basic units of living things.
- **B.** All living things are made up of one or more cells.
- **C.** All cells come from pre-existing cells.
- **D.** all of these

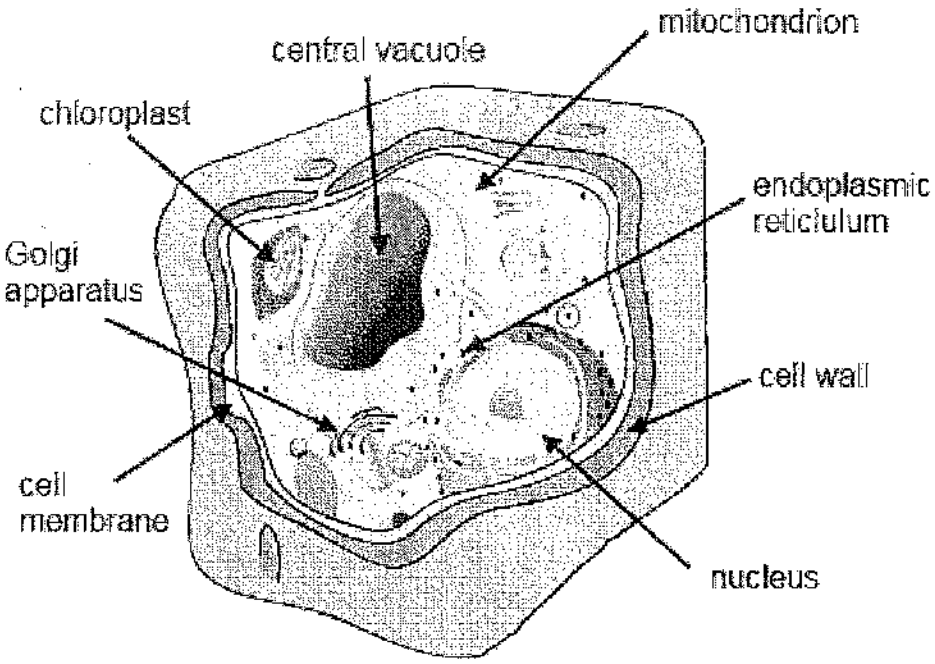
26. If an organism's cells are reproducing, then the organism *must* be

- **A.** reproducing.
- **B.** growing.
- **C.** alive.
- **D.** all of these

27. Which of the following laboratory tools would be most appropriate for measuring the approximate volume of a liquid?

- **A.** balance
- **B.** beaker
- **C.** thermometer
- **D.** tweezers

28. Examine the diagram of the cell below.

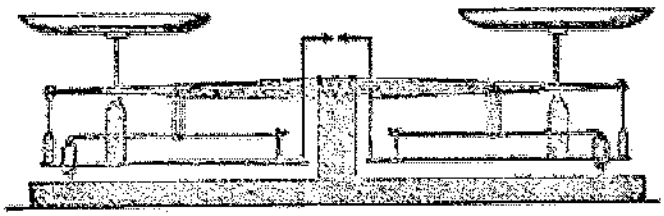


Adapted from image courtesy of Wikipedia

What can you conclude about this cell?

- **A.** The cell is most likely a bacterium cell.
- **B.** The cell is most likely a plant cell.
- **C.** The cell is most likely a human cell.
- **D.** The cell is most likely an animal cell.

29. Emily sees the following tool in her science lab.



What is this tool used to measure?

- **A.** an object's length
- **B.** an object's mass
- **C.** an object's volume
- **D.** an object's density

30. Which cellular process most directly ensures the formation, growth, and repair of specialized tissues in multicellular organisms?

- **A.** exchange of gases in cells
- **B.** division and growth of cells
- **C.** storing of wastes in cells
- **D.** making energy in cells

31. Every cell contains certain structures that perform specialized functions for the cell. What are these structures called?

- **A.** cells
- **B.** organs
- **C.** organelles
- **D.** tissues

32. Some plants have specialized tube-like structures that transport nutrients, minerals, and water. Water and dissolved ions are transported by xylum tubes. Phloem tubes transport nutrients.

The picture below is a cross section of a plant stem, with the xylem and phloem bundles labeled.

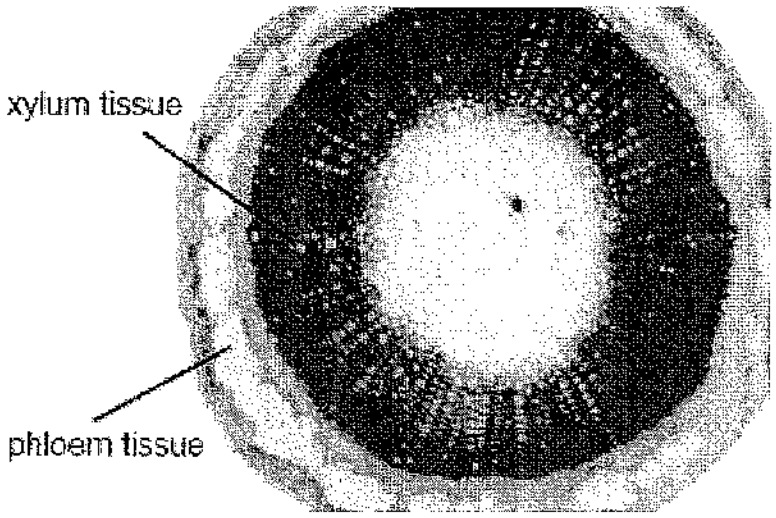


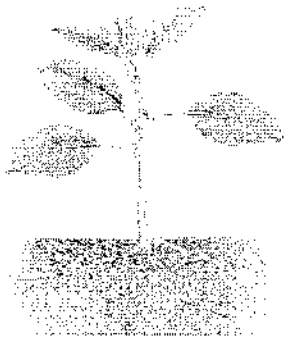
Image courtesy of Wikipedia.

Which structures in animals are similar to xylem and phloem in plants?

- **A.** blood vessels
- **B.** skin cells
- **C.** muscles
- **D.** gills or lungs

33. All living organisms must be able to acquire and release energy in order to survive.

Plants take in energy from the Sun and use that energy to make sugar and oxygen from carbon dioxide and water. Euglena, a type of protist, can also take in energy from the Sun and make sugar and oxygen.



plant

euglena

Which of the following statements is true given the above information?

○ **A.** Different organisms can carry out their life functions in similar ways.

○ **B.** All organisms carry out their life functions in different ways.

○ **C.** Protists are not similar to plants in any way.

○ **D.** Only plants and euglena can use light energy from the Sun.

34. Rebecca has samples of different types of metal, and she wants to find the density of each. First, she measures the volume of each sample. Now she needs to measure the samples' masses.

Which of the following tools should Rebecca use to measure the mass of each sample?

○ **A.** graduated cylinder

○ **B.** measuring tape

○ **C.** balance

○ **D.** calipers

35. Radial symmetry is a type of symmetry in which several planes divide an organism into roughly identical pieces from the top down. These organisms have no "left" or "right" sides, but they do have a "top" and a "bottom".
Which of the following has radial symmetry?

W.

X.

Y.

Z.

- **A.** Z
- **B.** X
- **C.** W
- **D.** Y

36. The main purpose of cell division is

- **A.** to remove cellular waste.
- **B.** to produce more cells.
- **C.** to absorb nutrients.
- **D.** to produce cellular energy.

37. Cells perform many functions in living organisms. Which of the following processes occur in cells?

- **A.** excretion of wastes
- **B.** nutrient acquisition
- **C.** energy extraction
- **D.** all of these

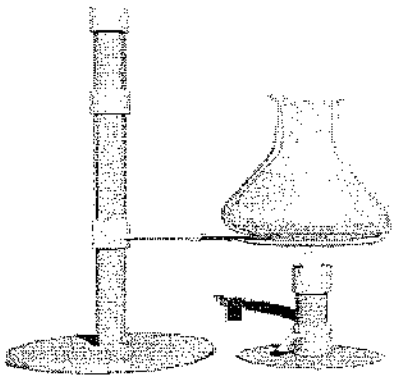
38. All living organisms are composed of

- **A.** at least 100 cells.
- **B.** only one cell.
- **C.** one or more cells.
- **D.** at least three cells.

39. Different plant and animal species have a great variety of body structures that help them survive and reproduce. Which of the following is also true?

- **A.** The individual cells of plants and animals function in very similar ways.
- **B.** The individual cells of plants and animals cannot perform specialized functions.
- **C.** The individual cells of plants and animals do not contain genetic information.
- **D.** The individual cells of plants and animals do not share any similarities.

40. Tamora is heating a liquid to find the temperature at which the liquid boils.



Which piece of laboratory equipment should Tamora use to measure the temperature of the liquid once the boiling has begun?

- **A.** thermometer
- **B.** timer
- **C.** balance
- **D.** microscope

Day 3=Scientific Ways of Knowing and Physical Science

41. Which of the following measures the amount of matter in a given object?

- **A.** density
- **B.** mass
- **C.** weight
- **D.** volume

42. It is 10:00 in the morning, and Wendy is late for school. She is currently running north at a speed of 5 meters per second and is 2 miles south of her school.
Which of the following best describes Wendy's current position?

- **A.** 2 miles south of her school
- **B.** 10:00 in the morning
- **C.** running at a speed of 5 meters per second
- **D.** running north

43. Potential energy that is related to an object's height above the ground is known as _____ potential energy.

- **A.** chemical
- **B.** electrical
- **C.** gravitational
- **D.** elastic

44. Beth wanted to find out whether or not salt affects how quickly ice melts. She used an ice cube tray to make 10 ice cubes of the same shape and size. Then, she placed the ice cubes on the same windowsill. She sprinkled each ice cube with one teaspoon of salt, and timed how long it took for the cubes to melt. She recorded all of the data.

If someone else read the data, would he or she be able to make an accurate conclusion about the effect of salt on ice?

- **A.** No, because the data does not show how quickly the ice would have melted without the salt.
- **B.** Yes, because using 10 ice cubes gives enough trials for the results to be accurate.
- **C.** No, because Beth should have used a different amount of salt on each of the ice cubes.
- **D.** Yes, because Beth used only one independent variable and everything else was the same.

45. Leigh is preparing popcorn for her friends. She removes a stick of butter from the refrigerator and cuts a fourth of it from the rest.
Leigh remembers her lesson in school today about the conservation of mass that occurs during state changes. She wants to test what she learned, so she measures the mass of the butter she will melt. Its mass is 35 g. Then, she places the butter in the microwave and melts it.
What should the mass of the liquid butter be once it is melted?

- **A.** 15 g
- **B.** 35 g
- **C.** 40 g
- **D.** 70 g

Nutrient	Nutrient Value per Serving (in %)	Nutrient Value per Serving with 200 mL of Milk (in %)
Iron	30	30
Vitamin A	30	40
Vitamin D	10	25
Calcium	0	30
Niacin	25	25
Protein	4	10

46. Which of the nutrients in the chart was provided by milk only?

- **A.** Iron
- **B.** Vitamin A
- **C.** Calcium
- **D.** Vitamin D

47. Volume is a measurable property of matter. Volume measures

- **A.** the amount of space an object takes up.
- **B.** the shape of the object.
- **C.** the distance around an object.
- **D.** the gravitational force exerted on the object.

48. _____ energy is the energy that results by the movement of charged particles through a conducting material.

- **A.** Potential
- **B.** Chemical
- **C.** Gravitational
- **D.** Electrical

49. Fran wanted to find out how adding salt changes the boiling point of water. She placed 100 ml of water in each of 4 beakers. She then added a different amount of salt to each beaker. Finally, using a hot plate, Fran heated the beakers of water.

When the water began to boil, she measured the temperature using a thermometer. Her results are in the table below.

Solution #	Dissolved Salt (g)	Boiling Point (°C)
1	0	100.0
2	5.6	100.5
3	11.2	101.0
4	16.8	101.5
5	22.4	102.0

How much salt does it take to raise the boiling point of water by two degrees?

- **A.** 22.4 g
- **B.** 11.2 g
- **C.** 16.8 g
- **D.** 5.6 g

50. An equation is a mathematical statement that describes a relationship between variables. Variables are letters or symbols that represent specific quantities.
Equations can be used to describe how the quantity of something changes over time. For example, the speed of an object can be calculated using the following equation:

$$s = \frac{d}{t}$$

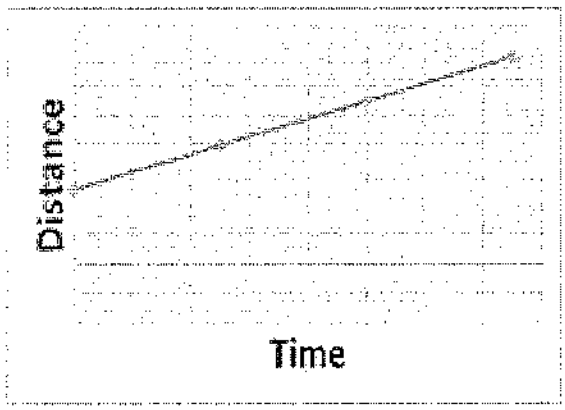
In this equation, s represents the speed of the object, d represents the distance that the object traveled, and t represents the time it took the object to travel the distance.
Now, assume that two cars are traveling on a highway. Car 1 travels 120 miles in 2 hours. If Car 2 travels 80 miles in the same amount of time, which car, according to the formula, is traveling at a faster speed?

- **A.** Car 1 and car 2 are standing still.
- **B.** Car 1 is traveling at a faster speed than car 2.
- **C.** Car 1 and car 2 are traveling at the same speed.
- **D.** Car 2 is traveling at a faster speed than car 1.

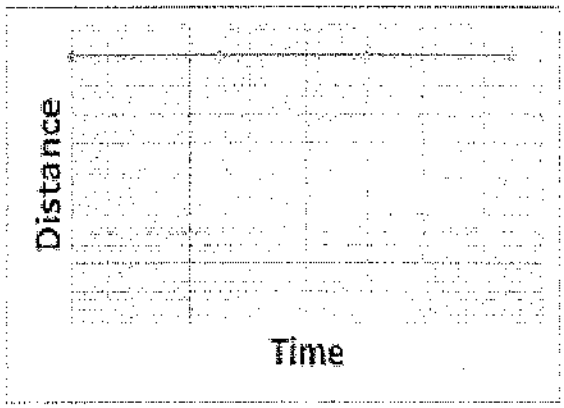
51. Dr. Kibble is monitoring the position of a meteoroid as it approaches planet Earth. He observes it through a telescope every 5.0 minutes and records its position in the table below.

Time (min)	Distance from Earth (km)
0.0	18,000
5.0	15,000
10.0	12,000
15.0	9,000

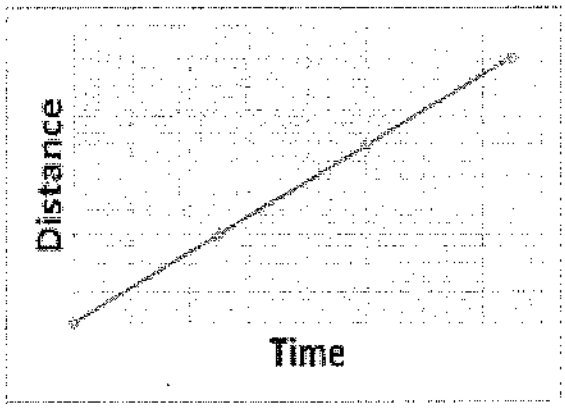
Which of the following could be the graph of the meteoroid's distance from Earth through time?



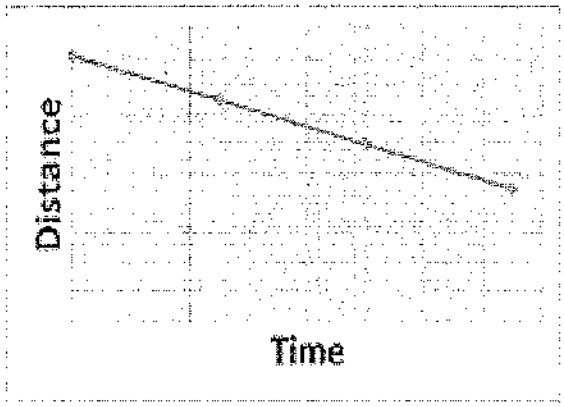
W.



X.



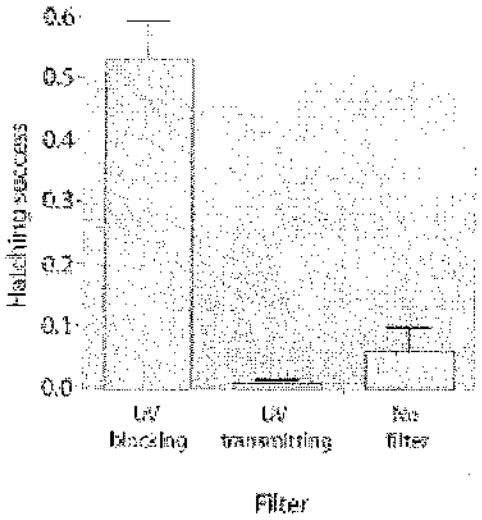
Y.



Z.

- ○ **A.** Z
- ○ **B.** X
- ○ **C.** W
- ○ **D.** Y

52. Mrs. Smith's sixth grade science class conducted a class project on the effects of UV-B radiation on salamanders. The class designed and performed an experiment testing the effects of UV-B on salamander egg hatching success. The results of their experiment are shown in the graph.



What was the effect of UV blocking on hatching success?

- **A.** There was no effect on hatching success when UV was blocked.
- **B.** Hatching success increased when UV was blocked.
- **C.** Hatching success increased when UV was transmitted.
- **D.** Hatching success decreased when UV was blocked.

53. Which of the following changes take(s) place when a substances goes through a phase change?

I. The atoms or molecules in the substance stay the same, but their attachment to other atoms or molecules changes.

II. The atoms that make up the substance change into atoms of different elements.

III. The molecules break apart and recombine to form molecules of a new substance.

- **A.** I only
- **B.** II and III
- **C.** II only
- **D.** III only

54. If the average movement of the particles in a sweater increases, what will happen to the sweater's temperature?

- **A.** It will decrease.
- **B.** It will change after a long delay.
- **C.** It will increase.
- **D.** It will not change.

55. What is the term for the amount of space occupied by an object?

- **A.** weight
- **B.** volume
- **C.** mass
- **D.** density

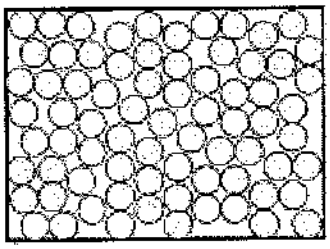
56. Objects that have potential energy

- **A.** can lose it if it is not used quickly.
- **B.** do not use their energy until they move.
- **C.** cannot have any kinetic energy.
- **D.** are not affected by the force of gravity.

57. In all states of matter, atoms of all elements

- **A.** are in constant motion.
- **B.** bind together the same way.
- **C.** are the same size.
- **D.** all of these

58. What state of matter is best represented by the diagram below?



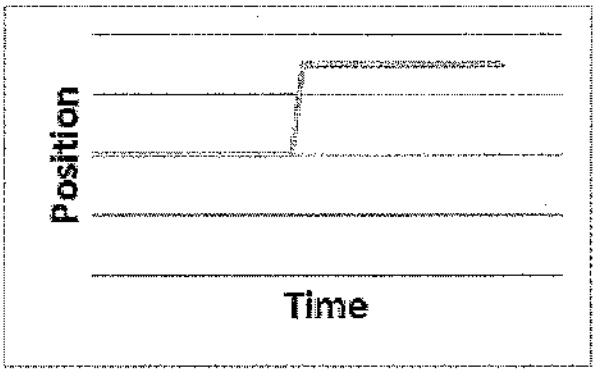
- **A.** liquid
- **B.** solid
- **C.** gas
- **D.** all of these

59. When an object is lifted 12 feet off the ground, it gains a certain amount of potential energy. If the same object is lifted 36 feet off the ground, its potential energy is _____.

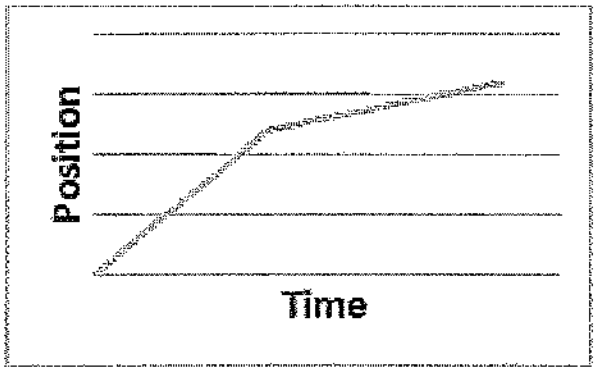
- **A.** the same
- **B.** three times as much
- **C.** six times as much
- **D.** twice as much

60. Randy is sledding down a hill away from his sister, Leslie, who is standing at the top of the hill. At first, Randy moves at a constant speed down a nearly flat part of the hill. Then, suddenly, the hill becomes much steeper, and Randy almost immediately starts moving at a much faster speed.

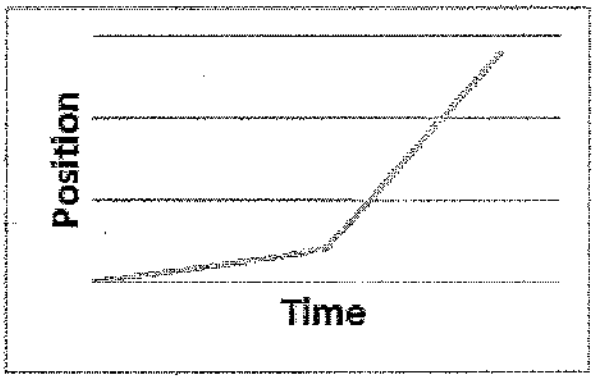
Which graph shows Randy's position as he moves away from his sister?



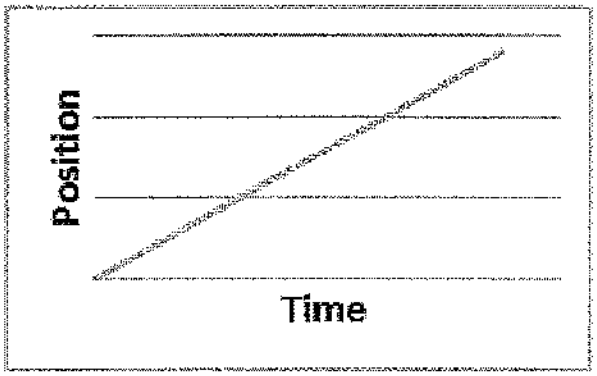
W.



X.



Y.



Z.

- **A.** Y
- **B.** W
- **C.** Z
- **D.** X