

Name: _____

Date: _____

7th Grade Term 2 Review

- 1) Models are used to represent atoms. The model used today is not the same as the model used 200 years ago. Which statement is the most accurate explanation for the change in the atomic model?
 - A. Scientists conducted further experiments on atomic structure and science conclusions may change as new evidence is found.
 - B. Scientists in the past did not have modern equipment used to study atoms; therefore, the conclusions were all flawed.
 - C. Scientists conducted further experiments and were then able to make the modern, completely correct model.
 - D. Scientists in the past could not see atoms, but now that scientists have seen the atom, they have been able to develop the correct, final model.
- 2) Which answer below best describes the future of models of the structure of atoms?
 - A. Models will probably change because scientists like to change things.
 - B. Models will probably change because new technology will provide better information about the structure of atoms.
 - C. Models will probably stay the same because scientists have learned all there is to know about the structure of atoms.
 - D. Models will probably stay the same because scientists don't like to create new models.
- 3) Which of the following physical states has particles that vibrate in place and do not move past their neighbors?
 - A. gas
 - B. liquid
 - C. molecule
 - D. solid
- 4) In 1808, a man named Dalton proposed that matter is made of atoms. About 90 years later, Thompson created the "plum pudding" model of the atom, which was later abandoned. In the early 1900's, Rutherford performed an experiment that gave evidence that atoms have a nucleus. Later, Bohr proposed a model that explains how electrons may orbit the nucleus. What does this show about current knowledge of atoms?
 - A. These scientists built upon previous knowledge and ideas about atoms.
 - B. These scientists each had their own ideas about atoms that were unrelated to previous information.
 - C. These scientists could only contribute scientific knowledge if they got the model of the atom completely right.
 - D. It takes more than 100 years to make major discoveries in science.
- 5) Which is too small to view with a microscope?
 - A. an atom
 - B. a cell
 - C. one bacteria
 - D. a single virus
- 6) What happens if new evidence is discovered about atoms that current theories about atoms do not explain?
 - A. Nothing. Current theories about atoms are hypotheses and don't need to be supported by new evidence.
 - B. Nothing. Current theories about atoms are scientists' best ideas, so those theories remain valid.
 - C. Current theories about atoms will be modified in light of the new evidence.
 - D. Current theories about atoms will be abandoned for a new theory.
- 7) Which of the following physical states has particles that move very fast and travel as far apart as they can?
 - A. gas
 - B. liquid
 - C. molecule
 - D. solid
- 8) What happens to particles of liquid water when the water is heated?
 - A. No change takes place
 - B. They speed up and the space between them increases
 - C. They speed up and the space between them decreases
 - D. They slow down and the space between them increases
 - E. They slow down and the space between them decreases
- 9) The particles that are bound together the tightest are found in a
 - A. gas
 - B. liquid
 - C. solid
 - D. mixture
- 10) Which of the following physical states has particles that move to take the shape of whatever container they are in?
 - A. gas
 - B. liquid
 - C. molecule
 - D. solid
- 11) Which of the following ways are solids and gases alike?
 - A. Both have particles that move very fast
 - B. Both have particles that move very slow
 - C. Both are made of particles
 - D. Both have particles that are very close together

- 12) Which is the smallest particle?
A. atom
B. molecule
C. compound
D. solid
- 13) Your teacher gives you a small, jagged stone and asks you to calculate its mass and volume. Which instruments would you use in order to make the measurements?
A. microscope and graduated cylinder
B. graduated cylinder and triple beam balance
C. triple beam balance and ruler
D. ruler and microscope
- 14) A student has two objects. Object 1 has a mass of 10 g and a volume of 5 cm³. Object 2 has a mass of 100 g and a volume of 200 cm³. If both objects are placed in water, which will float and why?
A. Object 2 will float because it is less dense than water
B. Object 2 will float because it has more mass than object 1
C. Object 1 will float because it is less dense than object 2
D. Object 1 will float because it has less mass than object 2
- 15) You have two rocks, rock A and rock B. Rock A is bigger but has the same mass as B. How will the density of the two rocks compare?
A. The density of rock B is greater because its volume is greater.
B. The density of rock B is greater because its volume is less.
C. The density of rock B is less because its volume is greater.
D. The density of rock B is less because its volume is less.
- 16) A student placed an irregularly shaped rock in 100 ml of water in a graduated cylinder. The rock displaced the water by 50 ml. The student then weighed the rock and determined that its mass is 150 g. Using the equation "density = mass/volume," what is the density of this irregularly shaped rock?
A. 2.0 g/mL
B. 0.3 g/mL
C. 3.0 g/mL
D. 1.5 g/mL
- 17) Which formula is correctly used to measure density?
A. width x length x height
B. weight x cubic centimeters
C. mass divided by volume
D. height x radius squared
- 18) How does the density of ice compare to the density of liquid water?
A. Ice is more dense than liquid water.
B. Ice and water are the same density.
C. Ice is more dense; liquids do not have density.
D. Ice is less dense than liquid water.
- 19) If you went to a medical clinic to find out your body volume, how would they do this?
A. With a tape measure, they would measure your arms, stomach and thighs.
B. They would have you stand on scales and read your weight.
C. They would put you in a tank to determine how much water you displace.
D. Have you keep a monthly record of increase or decrease in your clothes sizes.
- 20) What is the density of a rock with a volume of 5 cubic centimeters and a mass of 3 grams?
A. 0.60 g/cm³
B. 1.50 g/cm³
C. 15 cm/g³
D. 41.67 cm/g³
- 21) Which statement best explains why a solid block of wood floats in water while a solid block of iron does not?
A. Iron sinks because it is less dense than wood.
B. Iron sinks because it is less dense than water.
C. Wood floats because water is less dense than wood.
D. Wood floats because it is less dense than water.
- 22) Why does oil float on water?
A. Oil is less dense than water
B. Water is less dense than oil
C. Oil and water don't mix
D. Oil is more dense than water
- 23) If antifreeze is less dense than water, how could you use this fact to find out if your family car had any antifreeze in the radiator?
A. Drain some radiator liquid and record its temperature to see if it is cooler than water.
B. Drain some radiator liquid and pour it on iron to see if the iron rusts faster than without the liquid.
C. Drain some radiator liquid, smell it, and compare the smell to oil.
D. Drain some radiator liquid and compare its weight to the weight of the same amount of water.

24) Density can be calculated by dividing the mass of an object by its volume. Water has a density of 1 g/ml. If an object's density is greater than 1 g/ml it will sink and if its density is less than 1 g/ml it will float. Object A has a mass of 40 g and a volume of 30 ml and object B has a mass of 15 g and a volume of 20 ml. What will happen when both objects are placed in water?

- A. Object A will float because its density is less than water
- B. Object B will sink because its density is greater than water
- C. Object A will sink because its density is greater than water
- D. Objects A and B will both float because their density is the same as water

25) Pretend that you are expected to measure the mass of a glass cube. You are given the following equipment: metric ruler, triple beam balance, magnifying lens, microscope, water and beaker. What equipment should you use to measure the mass?

- A. beaker, magnifying lens and ruler
- B. magnifying lens and ruler
- C. triple beam balance
- D. beaker and water

26) One of the best ways to weaken the bonds holding particles together is by

- A. heat
- B. grinding
- C. movement
- D. pressure

27) Who would most benefit from the study of the motion of particles and how it affects the expansion and contraction of materials?

- A. an engineer designing a bridge
- B. a botanist studying trees in a rainforest
- C. a doctor studying cancer cells
- D. a tailor sewing a man's suit

28) Which answer below best describes the future of building materials for roads and other structures?

- A. Building materials will probably change because new technology will provide better information and new materials.
- B. Building materials will probably change because scientists like to change things.
- C. Building materials will probably stay the same because scientists have learned all there is to know about the materials.
- D. Building materials will probably stay the same because there are no new materials to discover.

29) A metal lid was very tightly screwed onto a glass jar. To get the jar open, Kelly held the lid under hot water. Why was Kelly able to remove the lid?

- A. Metal particles move more rapidly when heated so the particles moved further apart, and the lid became looser
- B. Metal particles move less rapidly when heated so the particles moved closer together, and the lid became looser
- C. The metal particles did not move. The water loosened the lid
- D. The metal particles melted because the water was so hot

30) The theory that explains the movement of particles suggests that

- A. particles do not move
- B. only particles of a gas move
- C. only particles of a liquid move
- D. particles of solids, liquids, and gases move

31) Students conducted an experiment testing the time it takes food coloring to mix with water. The results of the experiment are summarized in the table. Which of the following best explains the results:

Beaker	Temperature in Celsius	Time until mixed
A	3 degrees	3 minutes 45 seconds
B	20 degrees	2 minutes 10 seconds
C	90 degrees	1 minute 15 seconds

- A. The coloring mixed faster in A because the molecules in cold water move faster
- B. The coloring mixed faster in C because the molecules in hot water move faster
- C. The coloring mixed slower in A because the molecules in cold water move faster
- D. The coloring mixed slower in C because the molecules in cold water move slower

32) A student measured an inflated balloon and then put it into a freezer. After 30 minutes, the student took the balloon out of the freezer and measured again. The student found the balloon was smaller. The student concludes that volume is affected by temperature. Which answer best describes the conclusion made by the student?

- A. This is a good conclusion because it is based on observable evidence
- B. This is a good conclusion because it can't be proven
- C. This is a bad conclusion because it could not be observed in this experiment
- D. This is a bad conclusion because results can vary depending on what the student wants his answer to be

33) Kim opened a bottle of flowery perfume in the back of the classroom. After a minute, Pat, in the front of the classroom, remarked that she smelled flowers. Which of the following statements best explains Pat's observations?

- A. Particles move through diffusion so Pat smelled the perfume
- B. The particles of perfume did not move because not everyone could smell the perfume when Pat did
- C. Pat smelled the perfume because she was told she should be able to
- D. Pat was mistaken. There could not have been a perfume smell

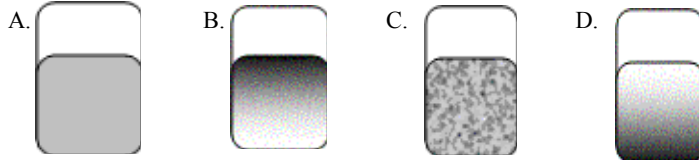
- 34) Why would a bridge builder construct a large steel bridge with 1-inch cracks or spaces every 50 feet along the roadway of the bridge?
- To save steel and paving material.
 - So that when the wind blows the bridge will not crack.
 - So that in the winter as the ice melts it can easily drain off the bridge's surface.
 - To allow for the expansion and contraction of the structure of the bridge.
- 35) If you were to carefully measure the width of cracks in the sidewalk at many different times during a two-year period, which would you expect to find
- The cracks would remain the same size throughout the time
 - The cracks would be wider during winter than during the summer
 - The cracks would continue to get narrower as time passes
 - The cracks would continue to widen as time passes
- 36) A railroad track was built with all of the rails fitting tightly together, touching each other end-to-end. Six months later, the track was ruined when the rails expanded and buckled. What may have caused the rails to expand?
- As the weather got warmer, the particles in the rails moved more slowly
 - As the weather got colder, the particles in the rails moved more slowly
 - As the weather got warmer, the particles in the rails moved faster
 - As the weather got colder, the iron in the rails froze
- 37) Why does a balloon full of air pop when it is left by a heater?
- The rubber material of the balloon itself melts with a loud bang.
 - The molecules of air inside move faster and further apart as they gain heat, causing the air to expand, which pops the balloon.
 - The air inside takes on heat energy, which pops the balloon like a bolt of lightning.
 - When the balloon is heated, molecules of oxygen greatly increase in number. When there are too many the balloon pops.
- 38) A student was given an assignment to calculate the density of a rock. Which of the following would best describe one of the needed steps to calculating the rock's density?
- The student puts the rock in an empty graduated cylinder and records the measurement in milliliters
 - The student puts the rock in a graduated cylinder filled with water and records the volume of the rock
 - The student uses a thermometer to measure the temperature of the rock in Celsius degrees
 - The student measures the length of the rock in centimeters with a metric ruler
- 39) A road cut reveals layers in the soil. Why does soil have layers?
- It has been sorted by particle size and density
 - It is made from rock and other particles
 - It was placed in layers by humans
 - The layers have always been there
- 40) Salad dressing separates into two layers. Oil is on the top and vinegar is on the bottom. When will the vinegar be on the top layer?
- When there is more oil than vinegar
 - When there is more vinegar than oil
 - When they are added in different order
 - Never, under normal conditions
- 41) When you pour oil and vinegar into a container, you notice the oil sits on top of the vinegar. Which of the following explains why?
- Oil is less dense than vinegar.
 - Oil and vinegar are different temperatures.
 - Oil and vinegar are not made of particles.
 - Oil and vinegar cannot turn into a gas.
- 42) A square chunk of plastic has a length of 5 cm, width of 5 cm and height of 5 cm. It has a mass of 200 g. What is its density?
- .12 g/cm³
 - 1.0 g/cm³
 - 1.6 g/cm³
 - 2.3 g/cm³
- 43) A balloon filled with helium rises into the air. Why?
- The balloon is larger than air
 - The balloon is heavier than air
 - The helium is less dense than air
 - The helium is more dense than air
- 44) Which question would help a student learn more about the behavior of materials in a mixture?
- Does lake water rise in warm winters?
 - How do rocks and minerals form?
 - Why are grains of beach sand alike?
 - How is a living thing organized?
- 45) Melinda works at a water treatment plant. She wants to find out whether particle size affects the way particles settle in water. Can Melinda use scientific methods to answer her question?
- No. It is not possible to know why particles settle in water the way they do.
 - No. Only scientists can use real scientific methods.
 - Yes. Any time someone asks a question they are doing science.
 - Yes. Science is a way of knowing that many people use, not just scientists.

- 46) A beach is composed of particles of sand of the same size. Why doesn't the beach have materials of all sizes? The particles have
- come from the same place
 - come to the beach at the same time
 - been found in underwater canyons
 - been sorted by size and density

47) Put the following items into a test tube, shake it up, and predict the outcome of your investigation. Earth materials: air, gravel, water, sand and gold dust.

- From bottom to top: gravel, gold dust, sand, water, air
- From bottom to top: gold dust, gravel, sand, water, air
- From top to bottom: air, water, gold dust, sand, gravel
- From bottom to top: water mixed in with layered gravel, sand, and gold dust, with air above the mixture

48) Water is added to a jar with soil in it and the jar is shaken. Which drawing shows what will happen after it sits for a few minutes?



49) Gold panning separates gold flakes from stream gravel by shaking the mixture in a pan and scraping the gravel layers off. Why are the tiny gold particles found on the bottom on the pan?

- They are larger than the gravel
- They are denser than the gravel
- They are brighter in color than the gravel
- They are harder to find than the gravel

50) A student shakes a jar with a mixture of sand types. Instead of mixing, the sand grains separate into layers. Why?

- The grains are different colors
- The grains have different shapes
- The grains have different densities
- The jar has a round shape

51) A liquid is found to have a volume of 75 mL in a graduated cylinder. When placed on a balance, the liquid and graduated cylinder has a mass of 125 g. The empty graduated cylinder has a mass of 50 g. What is the density of the liquid?

- .1 g/mL
- 1 g/mL
- 2.2 g/mL
- 22 g/mL

52) In an experiment, students shook jars of water with soil and rock in them. What does the shaking model in nature?

- A lake environment
- A stream environment
- Living things in an environment
- A rainstorm

53) During a flash flood, large boulders can be moved downstream. Why don't large boulders usually move?

- They are made from very dense materials
- They are too heavy
- They are attached to the stream bottom
- They are weathered and eroded in place

54) A student collected data about the density of air. She found that .1 g of air had a volume of 100 cm³. What is the density of the air?

- .001 g/cm³
- .01 g/cm³
- .1 g/cm³
- 1.0 g/cm³

55) An egg sinks in water but floats in salt water. What do you know about the density of the egg?

- It is more dense than water but less dense than salt water
- It is less dense than water and less dense than salt water
- It is denser than water and denser than salt water
- It is less dense than water but more dense than salt water

56) A liquid has a density of 1g/mL. If you have 50 mL of the liquid, what would its mass be?

- 25 g
- 50 g
- 75 g
- 100 g

- 57) Water has a density of 1 g/mL. What density might a typical rock be?
 A. .005 g/cm³
 B. .5 g/cm³
 C. 5 g/cm³
 D. 50 g/cm³
- 58) Sand with particles of the same size was gently shaken in a jar to see if layers would form. What variable was being tested?
 A. particle size
 B. particle density
 C. particle color
 D. particle type
- 59) Water has a density of 1 gram/milliliter. There are four rocks that all have the same volume of 5 cubic centimeters. The mass for each of these rocks is given below. Which one of the four rocks will float when placed in water?
 A. 15 grams
 B. 10 grams
 C. 6 grams
 D. 4 grams
- 60) A lake study reveals larger particles near the mouth of an incoming stream and smaller ones in the center of the lake. What inference can be made from these observations?
 A. The particles are being sorted by size
 B. The particles are made of different materials
 C. The particles are different densities
 D. The particles are traveling at different speeds
- 61) A rock dropped in a graduated cylinder raises the level of water from 20 to 35 mL. The rock has a mass of 45 g. What is the density of the rock?
 A. 1.3 g/cm³
 B. 2.3 g/cm³
 C. 3.0 g/cm³
 D. 4.5 g/cm³

62) Use data to answer the question. When mixed, shaken, and left to settle, what would be the order of the substances from the bottom and going up?

- A. rock, aluminum, plastic, water, oil
 B. rock, aluminum, water, plastic, oil
 C. rock, plastic, oil, water, aluminum
 D. rock, oil, aluminum, plastic, water

63) Where would a substance with a mass of 14 g and a volume of 20 mL float?

- A. At the bottom
 B. In the middle
 C. At the top
 D. Below the water

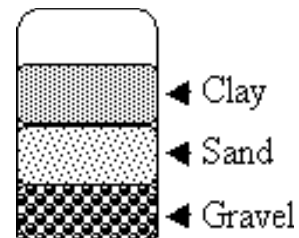
Substance	Density
Oil	.8 g/mL
Water	1.0 g/mL
Plastic	.9 g/cm ³
Rock	4.2 g/cm ³
Aluminum	2.3 g/cm ³

64) A group of students designed an experiment to test the effect of density on the sorting of Earth materials. They added particles of various sizes: sand, gravel and clay. They were mixed in a jar and water was added. They shook the mixture and then let it settle. The jar looked like this when they were done: Their conclusion was "Gravel is the most dense because it sank to the bottom first. Sand is less dense than gravel and clay is least dense." What variable should the experiment have controlled?

- A. color of particles
 B. size of particles
 C. density of particles
 D. amount of particles

65) How good is the group's conclusion?

- A. very good, it is supported by their data
 B. good, it is supported by some of their data
 C. fair, it is a possibility
 D. poor, they did not measure density



66) In winter, a layer of cold air settles in the valleys and warmer air is often found higher in the mountains. What might account for this condition?

- A. There is more warm air than cold air
 B. There is more cold air than warm air
 C. Cold air is less dense than warm air
 D. Cold air is denser than warm air