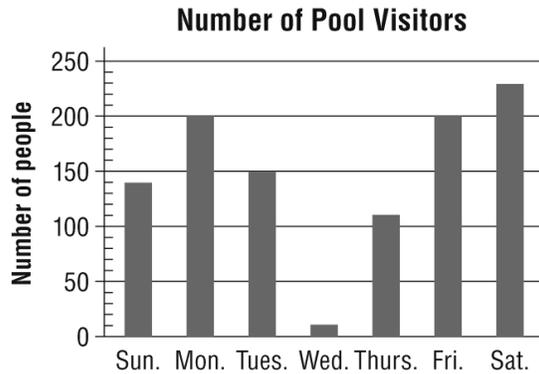


- 1** Scientists always develop a plan when they try to learn something about our natural world. Which sequence correctly shows the steps scientists follow in their plan?
- (A)** make observations → develop an idea → obtain evidence → suggest an explanation
 - (B)** obtain evidence → suggest an explanation → develop an idea → make observations
 - (C)** suggest an explanation → obtain evidence → make observations → develop an idea
 - (D)** develop an idea → suggest an explanation → obtain evidence → make observations
- 2** Ms. Stockton's class makes a ramp. Her students release a toy car and let it roll down the ramp. They measure how long it takes the toy car to travel 1 m past the end of the ramp. Which of the following reasons explains why the students need to have several trials of releasing the car before they analyze the results?
- (A)** They may want to move the ramp each time.
 - (B)** The carpet on the floor may have slowed down the car.
 - (C)** They may want to try pushing the car instead of releasing it.
 - (D)** Someone could have been distracted and might not have stopped the stopwatch right away.

Name _____ Date _____

- 3 Gabrielle counts the number of people who visit the community pool each day for 1 week. She displays her data using a bar graph.



How many more people did Gabrielle observe at the pool on Sunday than on Thursday?

- (A) 25
 (B) 30
 (C) 75
 (D) 100

- 4 Which is one reason that engineers should test their designs?

- (A) to find ways to improve their designs
 (B) to make them smaller and more compact
 (C) to change the design to be more profitable
 (D) to discover solutions to problems that have not yet occurred

- 5 Hydroponics is a technique in which plants are grown by using nutrients and water without the use of soil. This allows for plants to be grown in controlled conditions in places that plants cannot normally be grown, such as a desert. Which of the following statements best explains why this is an example of biotechnology?

- (A) Hydroponics uses math to solve everyday problems.
 (B) It is a technique that improves one of the human senses.
 (C) Biology and engineering are connected to meet human food needs.
 (D) The success of hydroponics is used to measure success in all growing plants.

Name _____ Date _____

- 6 On field day, several coolers are filled with water bottles and ice. It takes time for the water to get cold. Which type of cells will people use to detect the coldest bottles of water?
- (A) rod cells
 - (B) blood cells
 - (C) nerve cells
 - (D) muscle cells
- 7 Willa is studying a cell under a microscope. She observes the cell's outer layer. What is it called?
- (A) cytoplasm
 - (B) cell membrane
 - (C) nucleus
 - (D) chloroplast
- 8 Annabel is tired after playing softball with her friends. She goes home to relax. When Annabel relaxes, she can feel a steady, pulsing rhythm of pressure when she touches her wrist or neck. What is this pulse evidence of?
- (A) bones moving as part of the skeletal system
 - (B) muscles flexing as part of the muscular system
 - (C) the stomach digesting food as part of the digestive system
 - (D) the heart pumping blood as part of the circulatory system

Name _____ Date _____

- 9 David knows that human skin sweats to cool itself. He wonders how evaporation helps this process work. David has five thermometers. He wraps the end of each in a strip of cloth. He dips four of them into different liquids. He leaves the fifth one dry. He sets all of them outside in the shade for five minutes. The following table shows the temperature that he records for each thermometer:

Alcohol	Mineral oil	Salt water	Water	Dry
72 °F	82 °F	78 °F	78 °F	83 °F

Which liquid evaporates fastest?

- (A) alcohol
- (B) mineral oil
- (C) salt water
- (D) water

- 10 Lila has drawings of six different flowers. She is making a dichotomous key for these drawings.

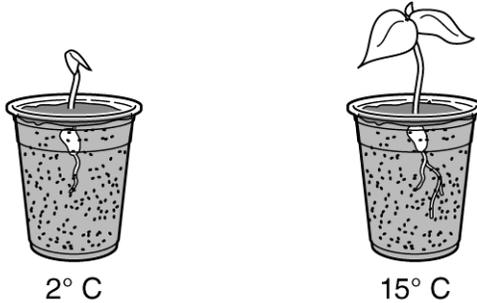


Which of the following are questions she should include in her key?

- (A) Is it called a rose flower? Is it called a daisy?
- (B) Does the flower attract bees? Does the flower have a fragrance?
- (C) Is the flower large? Is the flower small?
- (D) Does the flower have more than 10 petals? Is there only one flower per stem?

Name _____ Date _____

- 11 Tereza did an experiment to find out how temperature affects the rate of germination of a bean seed. She planted two seeds in the same soil but in different pots, gave them the same amount of water and sunlight, but kept the soils at different temperatures. The picture shows the bean seeds after 1 week.



What can Tereza conclude about how soil temperature affects the rate of germination of bean seeds?

- (A) The seeds germinate more quickly at 2 °C.
- (B) The seeds germinate more quickly at 15 °C.
- (C) The seeds germinate more slowly at 15 °C.
- (D) The temperature of the soil does not affect the rate of germination.

- 12 Some insects go through incomplete metamorphosis. Others go through complete metamorphosis. What stage is part of complete metamorphosis, but not incomplete metamorphosis?

- (A) adult
- (B) egg
- (C) nymph
- (D) pupa

Name _____ Date _____

13 Ecosystems are made of biotic and abiotic factors. Which term refers to a factor that is in short supply for the organisms that depend on it for survival?

- (A) abiotic climate
- (B) biotic resource
- (C) climate factor
- (D) limiting factor

14 Different species have different needs. For example, some animals can live close together in communities, but others require a lot of space. The table below shows the number of individuals of four different species that can be supported by 25,000 acres of habitat.

Animal species	Number of individuals per 25,000 acres
Black bear	1
Bobcat	60
Fox	165
Deer	580

Which of these animals would you expect to disappear first from this habitat if the habitat grew smaller due to habitat destruction?

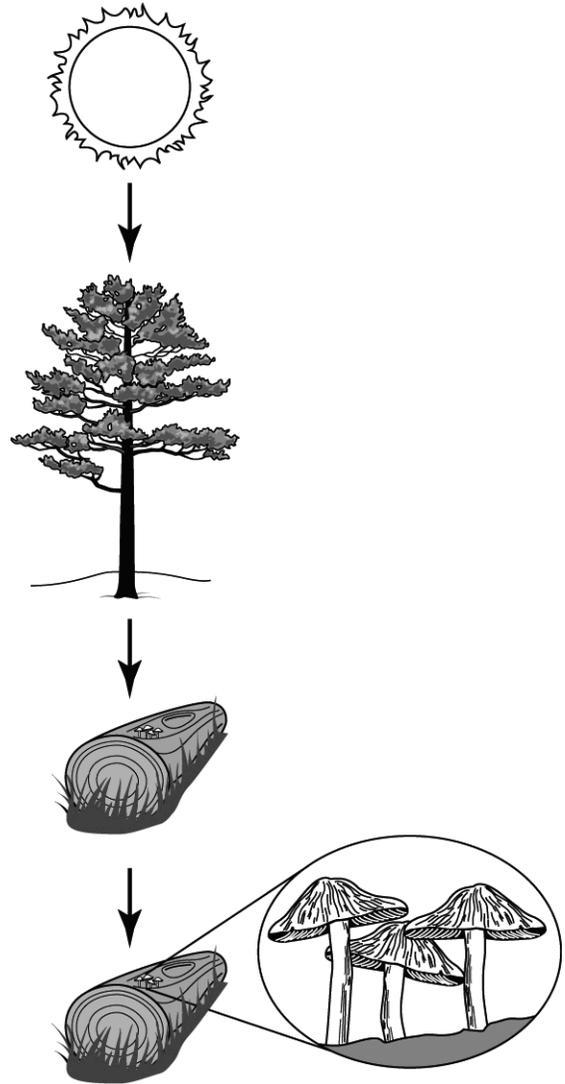
- (A) black bear
- (B) bobcat
- (C) fox
- (D) deer

Name _____ Date _____

15 Jeremy wants to find out how well a rose bush will grow in drought conditions. How often should Jeremy water the rose bush to best model drought conditions?

- (A) hourly
- (B) daily
- (C) weekly
- (D) monthly

16 The picture below shows a forest food chain.



What would have to be added to the picture above to represent a food web?

- (A) tree spiders
- (B) chlorophyll
- (C) carbon dioxide
- (D) more consumers

Name _____ Date _____

- 17 Raj turns off the water faucet while he brushes his teeth. He saves 1 gallon of water per day. Saving a gallon of water per day is an example of which process?
- (A) conserving
 - (B) importing
 - (C) polluting
 - (D) recycling
- 18 Which of the following is a step in the recycling process?
- (A) burning unusable waste
 - (B) burying unusable waste
 - (C) collecting and sorting used products
 - (D) buying goods made with new material

Name _____ Date _____

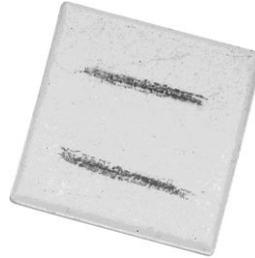
- 19 Joshua spends the day at the beach with his family. He finds some smooth stones in the sand. What process causes such stones to become smooth?
- (A) deposition
 - (B) erosion
 - (C) grooving
 - (D) weathering
- 20 Earth's crust is made up of plates that rest on the mantle. The distance across one of the plates that makes up Earth's crust is approximately how wide?
- (A) 2,500 feet
 - (B) 25 miles
 - (C) 250 miles
 - (D) 2,500 miles

Name _____ Date _____

21 As the mantle moves beneath Earth's crust, the plates move with it. Which of the following is this movement **most** like?

- (A) logs in a river
- (B) clouds in the sky
- (C) sailboats on a lake
- (D) ice cubes in a glass

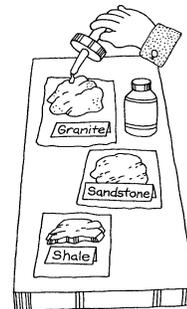
22 Kenji wants to test the streak of some mineral samples. Which of these should he use?



(A)



(B)



(C)



(D)

Name _____ Date _____

- 23 Nahla mixed some gravel and white glue in a paper cup. After the glue completely dried, she peeled the cup away from her model rock. What type of rock did Nahla make, and which process did she model?
- (A) igneous; melting
 - (B) sedimentary; cementation
 - (C) metamorphic; change in pressure
 - (D) metamorphic; change in temperature
- 24 How long does it take oil and natural gas to form?
- (A) 10 years
 - (B) 100s of years
 - (C) 1,000,000s of years
 - (D) 1,000,000,000s of years

Name _____ Date _____

- 25 Irina was given a box of rocks and fossils. She decided to try to determine the relative age of the rocks, based on the fossils in each rock. She identified the following fossils from each rock. They are represented in the boxes below. Which of the following is the correct relative age arrangement, beginning with the oldest?

Rock A: Clam,
Coral

Rock B:
Trilobite,
Crinoid

Rock C:
Brachiopod,
Trilobite

Rock D: Coral,
Brachiopod

- (A) A, B, C, D
(B) D, C, B, A
(C) B, C, D, A
(D) C, A, D, B

- 26 A newspaper article stated that scientists have been able to study the deepest part of the ocean. This area is more than 11,000 m deep. What is this ocean feature called?

- (A) atoll
(B) trench
(C) continental rise
(D) mid-ocean ridge

Name _____ Date _____

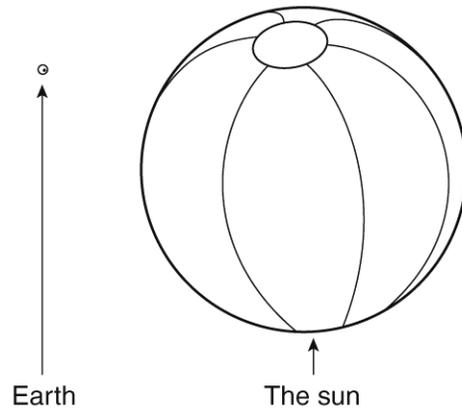
27 Picture the following lab set-up: an aquarium full of warm, fresh water. Holding your thumb over the opening of a bottle filled with colored salt water, you slowly place your hand into the aquarium until the bottle is resting on the bottom of the tank. You move your thumb so the water can flow out of the bottle. What happens?

- (A) The salt water stays in the bottle.
- (B) The salt water flows out of the bottle along the bottom of the tank.
- (C) The salt water flows out of the bottle and up into the water.
- (D) The salt water flows out of the bottle, across the bottom of the tank, and up along the sides.

28 Think of your neighborhood. There are people, animals, homes, stores, and more. Which part of the ocean is like a neighborhood?

- (A) coral reef
- (B) hydrothermal vent
- (C) intertidal zone
- (D) open ocean

29 For a school project, Connor needs to build a model of the solar system. In his model shown below, Connor uses a very tiny bead to represent Earth and a giant beach ball to represent the sun.



Why did Connor pick a tiny bead to represent Earth and a giant beach ball to represent the sun in his model?

- (A) because Earth is brighter than the sun
- (B) because Earth is less solid than the sun
- (C) because Earth is smaller in size and mass than the sun
- (D) because Earth is a terrestrial planet and the sun is a gas giant

Name _____ Date _____

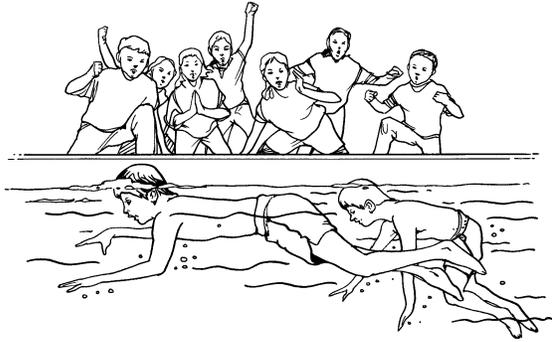
- 30 A student pours a liter of water into a covered container. She first freezes the water and then allows it to melt. Which is a true statement about the mass of the water?
- (A) The mass increases during both freezing and melting.
 - (B) The mass decreases during freezing and is unchanged during melting.
 - (C) The mass is unchanged during freezing and decreases during melting.
 - (D) The mass is unchanged during both freezing and melting.
- 31 A gas mixture contains 3 grams of nitrogen and 7 grams of oxygen. Which mixture would most likely have the same properties?
- (A) a mixture of 7 grams of nitrogen and 7 grams of oxygen
 - (B) a mixture of 12 grams of nitrogen and 28 grams of oxygen
 - (C) a mixture of 21 grams of nitrogen and 21 grams of oxygen
 - (D) a mixture of 28 grams of nitrogen and 49 grams of oxygen

Name _____ Date _____

- 32 Mrs. Lopez is a chemist who is studying salt crystals. She wants to slow the rate at which the crystals dissolve in a solution of water. What could she do to slow the dissolving rate?
- (A) crush the salt
 - (B) stir the solution
 - (C) heat the solution
 - (D) cool the solution
- 33 Which of the following is similar to a stretched section of a spring?
- (A) a vibration in a transverse wave
 - (B) the part of a transverse wave called a trough
 - (C) a part of a compression wave where molecules spread apart
 - (D) an area in a compression wave where molecules are tightly compressed

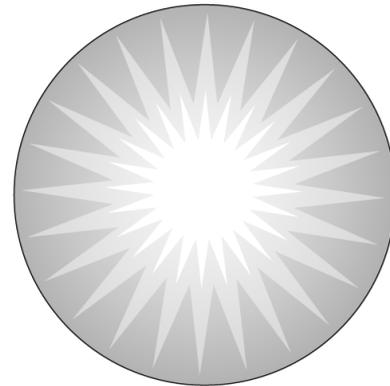
Name _____ Date _____

- 34 Which sentence accurately describes what happens before the voices of the people outside the pool are heard by the two people underwater?

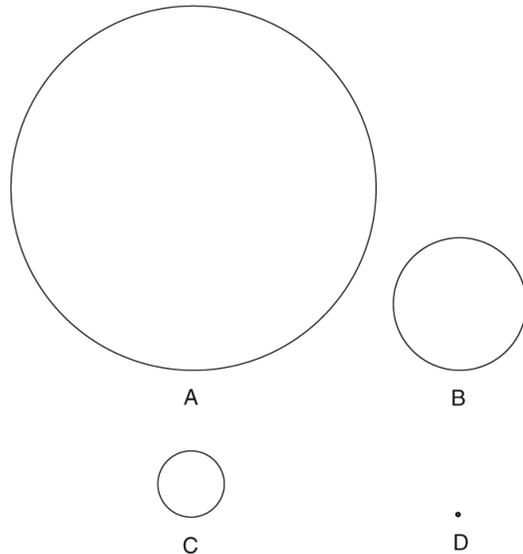


- (A) The sound waves travel faster when they move from air to water.
- (B) The sound waves collapse when they reach the surface of the water.
- (C) The sound waves keep the same speed as they pass from air to water.
- (D) The sound waves travel more slowly when they pass from air to water.

- 35 In the diagram below, the shaded circle represents the size of the sun.



Sun

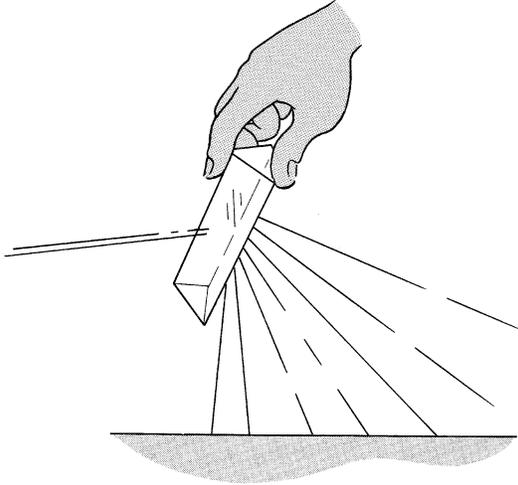


Which circle represents the size of Earth?

- (A) Circle A
- (B) Circle B
- (C) Circle C
- (D) Circle D

Name _____ Date _____

- 36 Which of the following sentences gives the best description of the information in the illustration below?



- (A) A convex lens focuses light.
 (B) A mirror reflects light in straight lines.
 (C) A prism refracts light into the colors of visible light.
 (D) A transparent glass allows light waves to pass through it.
- 37 A sharp, clear reflection is different from the original subject in what way?
- (A) The reflected image is reversed.
 (B) The reflected image is slightly blurry.
 (C) The reflected image is smaller than the original subject.
 (D) The reflected image is less bright than the original subject.

- 38 Mary Lou is pushing her younger brother, Steve, in his toy car. Steve gets out of the car. Steve's friend, who has more mass than Steve does, gets into the car. If Mary Lou wants to make the car go the same distance that it did when she pushed Steve, what should she do?

- (A) push the car with less force
 (B) push the car with more force
 (C) push the car with the same amount of force
 (D) add more mass to the car and push it with the same amount of force

Name _____ Date _____

- 39 A book is sitting motionless on top of a table. Earth's gravity exerts a constant force on the book of 15 N. Why does the book not move as a result of this force?
- (A) The force of gravity is balanced by the force of friction.
 - (B) The force of gravity is balanced by an upward push of the table.
 - (C) The force of gravity is exerted on an object only when it is falling toward Earth.
 - (D) The force of gravity is a balanced force by itself, so it does not cause the book to move.

- 40 Elizabeth wanted to know how fast the sun heats water. She put bowls of salted water and unsalted water in the sun. The water in both bowls was the same temperature when she started. She recorded water temperatures every 15 min for 3 hr. When she recorded the temperatures, what part of science did Elizabeth do?
- (A) stated an opinion
 - (B) collected evidence
 - (C) made a prediction
 - (D) drew a conclusion