

The questions here are in **Alphabetical Order** by the wording of the question.

12

50 female purebred (BB) black cats and 50 male purebred (BB) black cats have their hair bleached white. In 3 years these cats reproduce with each other. What percentage of their offspring is expected to have white hair?

- (A) 0%
- (B) 50%
- (C) 75%
- (D) 100%



19

A compost pile is the best method for disposing of

- (A) tin cans.
- (B) motor oil.
- (C) newspaper.
- (D) vegetable scraps.

14

A new organism is formed from one parent cell during

- (A) asexual reproduction.
- (B) sexual reproduction.
- (C) fertilization.
- (D) meiosis.

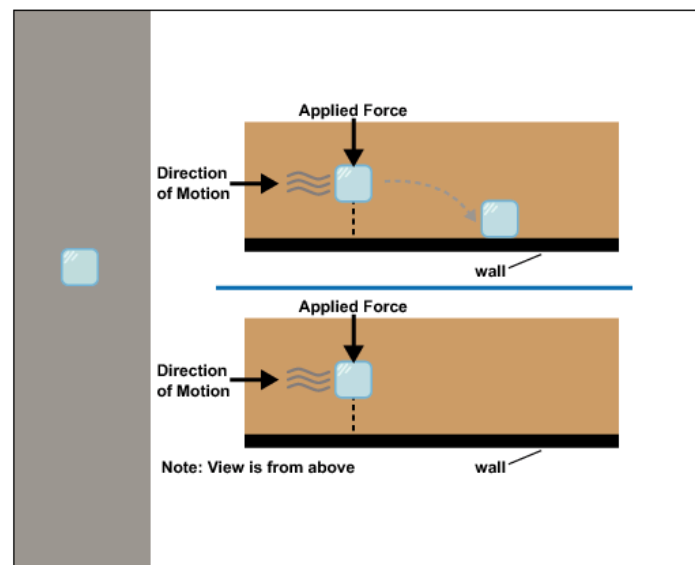
15

A piece of ice slides across a smooth wood floor. When the ice reaches the dotted line, a force is applied to it. This force causes the ice to hit the wall as shown in the diagram.

Move a piece of ice against the wall to predict where it would have hit if the ice had been moving at a slower speed when the original force was applied.

Guideline:

- Place only **one** piece of ice against the wall in the second diagram.



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1



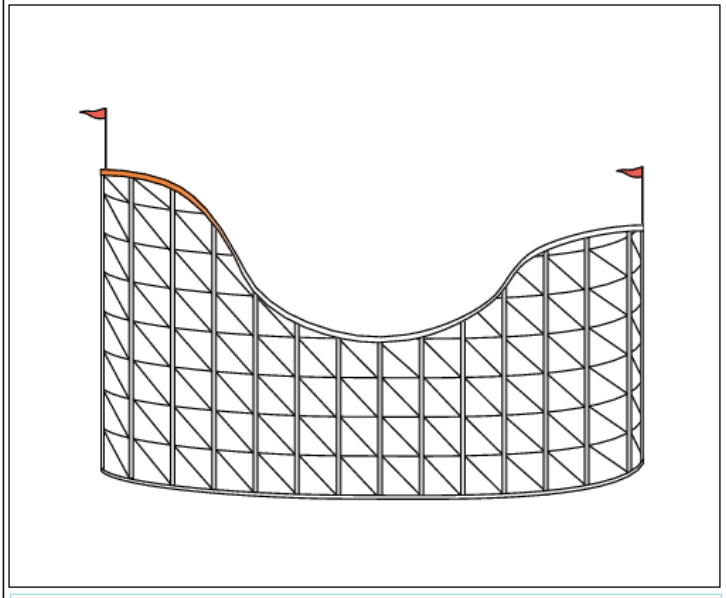
A roller coaster is shown. Cars A and B travel from left to right along the track of the roller coaster.

Place car A on the roller coaster where it has the maximum amount of gravitational potential energy.

Then place car B on the roller coaster where it has the maximum amount of kinetic energy.

- Be sure to use both cars, but use each car only once.
- Make sure you place the cars on the roller coaster's track.

Delete



9



A space shuttle re-entered Earth's atmosphere at 17,000 miles per hour. When the shuttle encountered Earth's atmosphere an enormous amount of heat was generated due to friction.

What did engineers do to the shuttle to accommodate the large amount of heat?

- | | |
|------------------------------|-----------------------------|
| (A) Attach parachutes | (C) Attach insulating tiles |
| (B) Attach reverse thrusters | (D) Attach air braces |



13

A stream will probably deposit the most sand and silt where the stream bed is

- (A) narrow and level.
- (B) narrow and steep.
- (C) wide and level.
- (D) wide and steep.

5



A student collected a bucket of polluted water from a nearby stream. The student then gathered the following materials to test with: large sponges, detergent, bacteria and absorbent paper. What problem is the student attempting to solve?

- | | |
|-------------------------------|----------------------------|
| (A) Erosion prevention | (C) Oil Spill clean up |
| (B) Alternative fuel creation | (D) Dumping of solid waste |

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4

A teacher studies the effect of temperature on solubility for salt in water. She fills two beakers with equal amounts of water.

Finish the teacher's experiment:

- Using the spoons, place the amount of salt the teacher should add to each beaker to create a valid experiment.
- In the blank box below each beaker, place the temperature to which the teacher should heat each beaker to create a valid experiment.
- Predict the results of the experiment by placing the red check mark in the "Beaker 1" or "Beaker 2" box to answer the question.

Guidelines:

- Each spoon and each temperature can be used more than once.
- Use the red check mark **only once**.

10 g

20 g

30 g

30°C


60°C

100°C

✓


Delete

A. Beaker 1



B.

Beaker 2



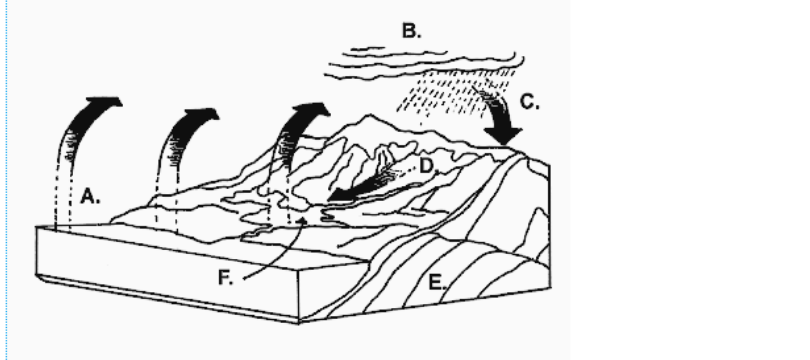
B.

C. In which beaker will the salt dissolve the fastest?

Beaker 1

Beaker 2

Identify the processes in the water cycle below and answer the following question.



16

At point A, what process in the water cycle is taking place?

- Condensation
- Precipitation
- Run-off
- Evaporation

4

Alfred Wegner's Theory of Continental Drift was not well accepted because he couldn't say what force could be big enough to move continents. Current theories explain this movement with

- subduction zones at continental margins.
- hot spots forming under continents.
- magnetic reversals of the north and south poles.
- convection currents in the mantle.

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All organisms obtain energy from

- (A) digestion.
- (B) green plants.
- (C) animals.
- (D) the sun.

11

Gregor Mendel's experiments with pea plants were important to our understanding of heredity because they showed that

- (A) simple traits like plant height are unpredictable.
- (B) simple traits like plant height are inherited.
- (C) two short pea plants can produce a tall pea plant.
- (D) two tall plants will always produce tall offspring.

12

Many plants reproduce asexually. How does the genetic material (DNA) compare between the new plant and the parent plant in this type of reproduction?

- (A) It is similar but not identical.
- (B) It depends on the plant the parent is crossed with.
- (C) It depends on the climate it is grown in.
- (D) It is identical.

17

Outlines of some continents seem to match outlines on other continents. This could support evidence for the theory of

- (A) mountain building.
- (B) natural selection.
- (C) plate tectonics.
- (D) volcanic eruptions.

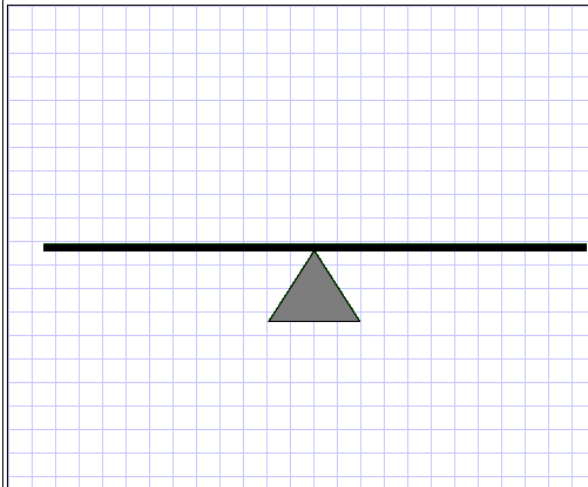
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2



Delete

Put one 5 kg weight and one 20 kg weight on the bar and position them so that the bar would remain balanced in the horizontal position.



3



The basic unit of life is the cell. However, plant cells are slightly different from animal cells because

- (A) plant cells are surrounded by a cell wall.
- (B) plant cells have no nucleus.
- (C) animal cells have no cell membrane.
- (D) animal cells have chloroplasts.

5



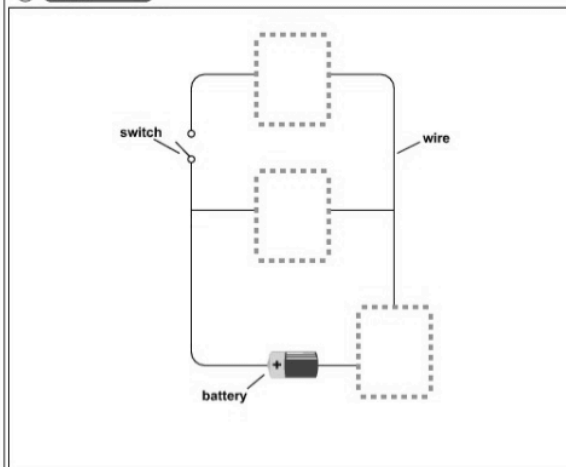
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The diagram shows a circuit containing a battery and a switch. The switch is open.

Place a lit or an unlit light bulb in each box to show whether or not a bulb lights up at each location.

Guidelines:

- A light bulb MUST be placed in every box.
- The light bulbs may be used more than once.



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RAFT TRIP

A student is on a guided raft trip going down a river in Oregon. As the raft approaches a fast moving section of rapids, the guide instructs her to paddle faster, which she does. This increased rate of paddling has an effect upon her body.

4

The student's heart is beating faster. Which of her body systems is **MOSTLY** involved with her heart rate?

- (A) Nervous
- (B) Excretory
- (C) Digestive
- (D) Circulatory

8

Two items found in many household trash cans that could easily be composted include

- (A) glass jars and magazines.
- (B) fruit peelings and vegetable scraps.
- (C) aluminum cans and motor oil.
- (D) tin cans and plastic bags.

15

What kind of relationship exists between grass and a cow?

- (A) Producer-consumer
- (B) Predator-prey
- (C) Parasite-host
- (D) Decomposer-dead matter

19

What would result if the Earth were not tilted on its axis?

- (A) Days and nights would be 6 months long.
- (B) The seasons would not change as they do now.
- (C) The Earth would not rotate.
- (D) The Earth would not revolve around the Sun.

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When boiling water, liquid water is transformed into water vapor. This change is called

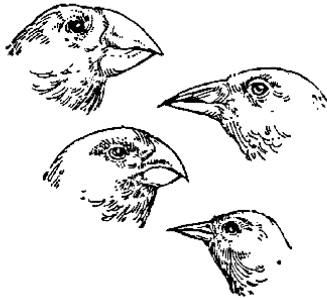
- (A) freezing.
- (B) condensation.
- (C) evaporation.
- (D) melting.

6

Which measurements would be necessary to calculate density?

- (A) Length and volume
- (B) Mass and volume
- (C) Length and pressure
- (D) Mass and pressure

Shown below are 4 species of finches, derived from a common ancestor. These species inhabit the same island.



5

Which of the following BEST explains the appearance of these birds' beaks?

- (A) Predation by the larger birds on the smaller birds led to a decreased population of the smaller birds.
- (B) Competition for limited food resources led to an increased similarity among species.
- (C) Predation by the larger birds on the smaller birds led to an increased fitness of the smaller birds.
- (D) Competition for limited food resources led to an increased diversity among species.

10

Which of the following DOES NOT affect weather?

- (A) Warm or cold fronts
- (B) Atmospheric pressure
- (C) Plate movement
- (D) Movement of air masses

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7



Which of the following shows a parasite—host relationship?

- (A) sun—flower
- (B) grass—caterpillar
- (C) coyote—deer
- (D) tick—rabbit

9



Which of the following solutions is an example of a mixture of gas and liquid?

- (A) Saltwater
- (B) Soda pop
- (C) Vinegar
- (D) Gasoline

10



Which of these is an example of erosion?

- (A) The Colorado River flowing through the Grand Canyon
- (B) A car rusting in the rain
- (C) A forest being destroyed by a fire
- (D) Snow melting off a metal roof

3

Which Punnett square shows the correct pattern of heredity for the cross of two dogs—a male, purebred shorthair (SS) and a female purebred longhair (ss)?

(A)

	S	S
s	Ss	Ss
s	Ss	Ss

(B)

	s	S
s	ss	Ss
S	Ss	SS

(C)

	S	s
S	SS	Ss
s	Ss	ss

(D)

	S	S
s	Ss	Ss
S	SS	SS

5



Which statement represents the MOST RECENT knowledge gained about microbes?

- (A) Microbes are only visible with a microscope.
- (B) Some microbes are killed by heat.
- (C) Microbes can become resistant to antibiotics.
- (D) Some microbes can cause disease.

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While digging, a person found that most of the rocks were igneous rock. What can be concluded?

- (A) The rocks were probably carried there by ancient people.
- (B) The area was once covered by an ocean.
- (C) A glacier passed through at one time.
- (D) A volcano was nearby at one time.

18

You and your partner are investigating the impact that friction has on how far a toy car will travel. You use a raised ramp to provide energy to allow the car to move.

Which of the following should be the only variable that is changed?

- (A) Height of the ramp
- (B) Starting point of the car
- (C) Surface the car travels on
- (D) Person who starts the car

3

You are designing a better carrot peeler. What is a significant constraint that must be addressed when building the carrot peeler?

- (A) Where the carrot was grown
- (B) The material used to make the peeler
- (C) The other vegetable it can peel

16

You are given a flask with a mixture of salt and water and asked to separate the two. You could

- (A) use an electric current to separate the salt from the water.
- (B) evaporate the water and collect the salt.
- (C) put it under the microscope to separate the salt and water.
- (D) let the salt settle out and pour off the pure water from the top.

12

You are measuring the temperature of a beaker of H₂O as the sun goes across the sky.

Which information would be BEST placed on the y-axis of a graph?

- (A) Temperature
- (B) Time
- (C) Angle of light

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8

You have built a better carrot peeler. What would be the **MOST** effective way to test whether your design will be successful?

- (A) Use several different carrots to see if it works.
- (B) Use it on a carrot, a potato, and a stalk of celery.
- (C) Use several people, each person peeling several carrots.
- (D) All tests need to be done before it is marketed.

13

Your body uses food as an energy source to move your muscles. This is an example of what type of energy conversion?

- (A) Chemical to mechanical
- (B) Mechanical to electrical
- (C) Mechanical to chemical
- (D) Electrical to mechanical

7

You live in an area which experiences frequent earthquakes. You have many secured bookshelves with objects which tend to fall off during these earthquakes.

Which of the following would provide the most effective and least costly solution to the problem, and still allow you easy access to the objects?

- (A) Tape everything to the shelf
- (B) Place non-skid materials under each item on the shelf
- (C) Stretch netting in front of each item on the shelf
- (D) Use velcro to attach objects to shelves

4

You watch your teacher mix two clear liquids together and see a new yellow substance form. This would be an example of

- (A) a phase change.
- (B) a chemical change.
- (C) a physical change.
- (D) a nuclear change.