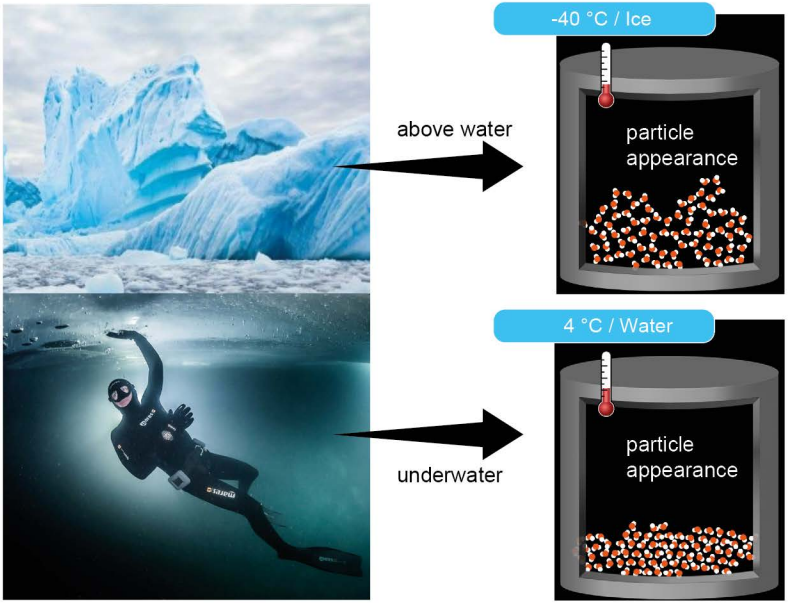


In Antarctica, the temperature often drops to -40 °C or even below. However, the temperature under water is +4 °C and life still exists.

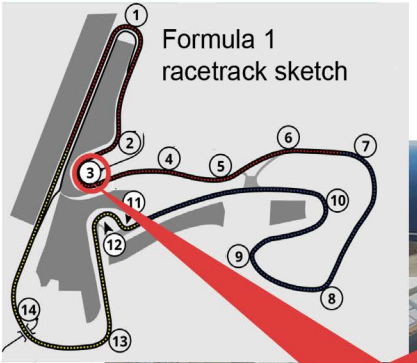
What is the reason behind this?

A) The water molecule consists of two hydrogen atoms and one oxygen atom.

B) The convergence of water molecules as they lose heat.

C) When water becomes solid, it expands and its density decreases.

D) Reflection of the sun's rays by the glaciers.



The 2021 Dutch Grand Prix Zandvoort racetrack is famous for its sharp bends.

The feature that makes this racetrack different from other Formula 1 tracks is that these bends are inclined.

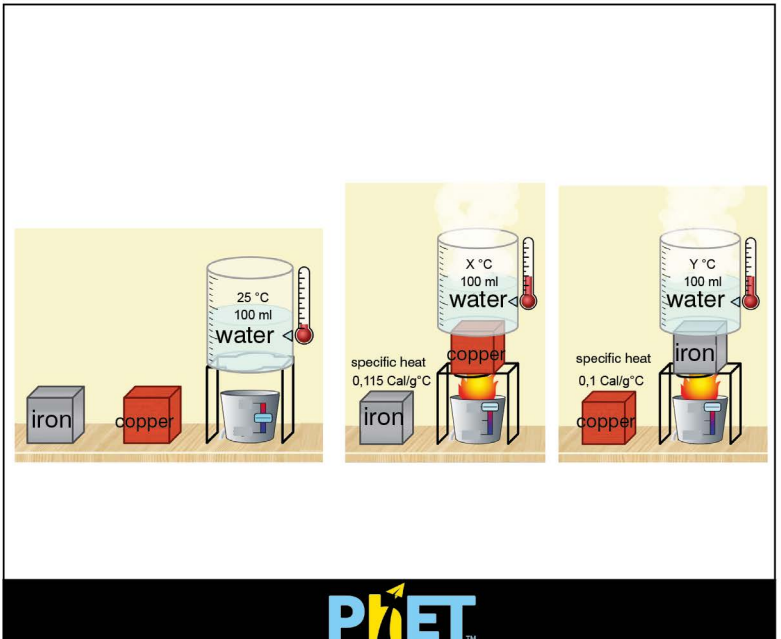
How do you think this will give Formula 1 drivers an advantage?

A) It provides a more comfortable driving opportunity.

B) By reducing the friction force, it enables the corners to be passed faster.

C) It prevents the vehicles from skidding by reducing the effect of centrifugal force.

D) It saves fuel.



At 25 °C, 100 ml of water is heated separately with identical heaters on a copper and then an iron block.

Accordingly, which of the following information is/are <u>incorrect</u>?

I- If the containers are heated for the same time, the X value will be smaller than Y.

II- Substances with low specific heat, heat up quickly and cool down quickly.

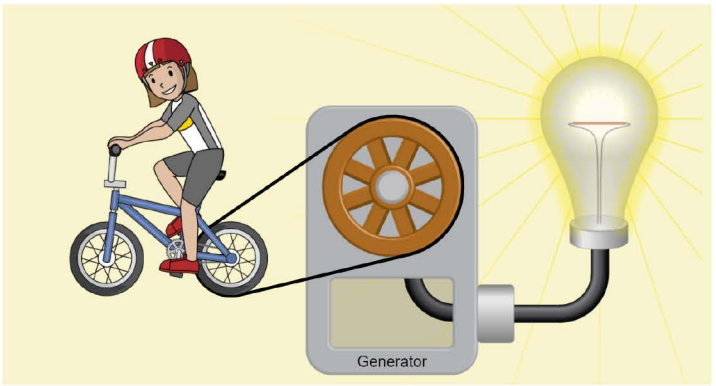
III- In order for the X and Y values to be the same, the heater in which the copper block is placed must operate for a longer time.

IV- If you are not in a hurry at the camp, you can heat your water in an iron pot.

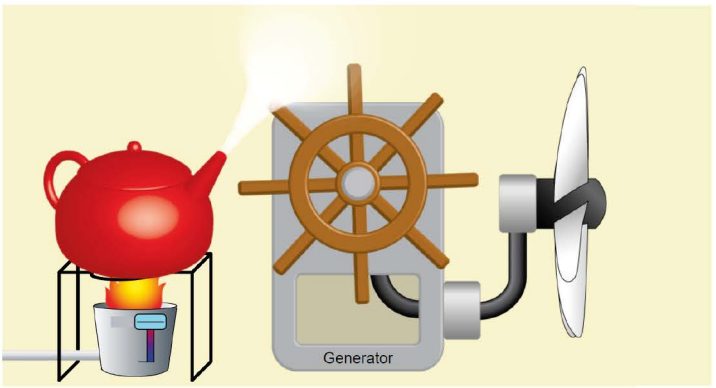
A) I and III B) II and III C) I, II and III D) I, III and IV

In which of the following arrangements is the input heat energy and the output is mechanical energy?

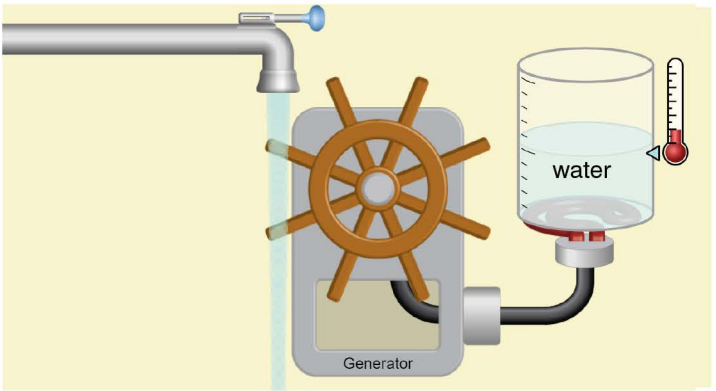
A)



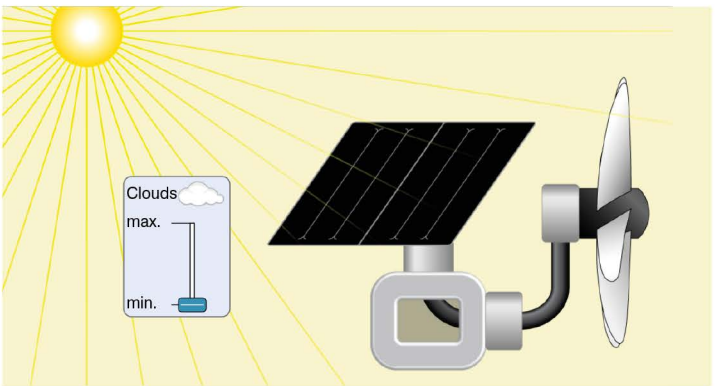
B)

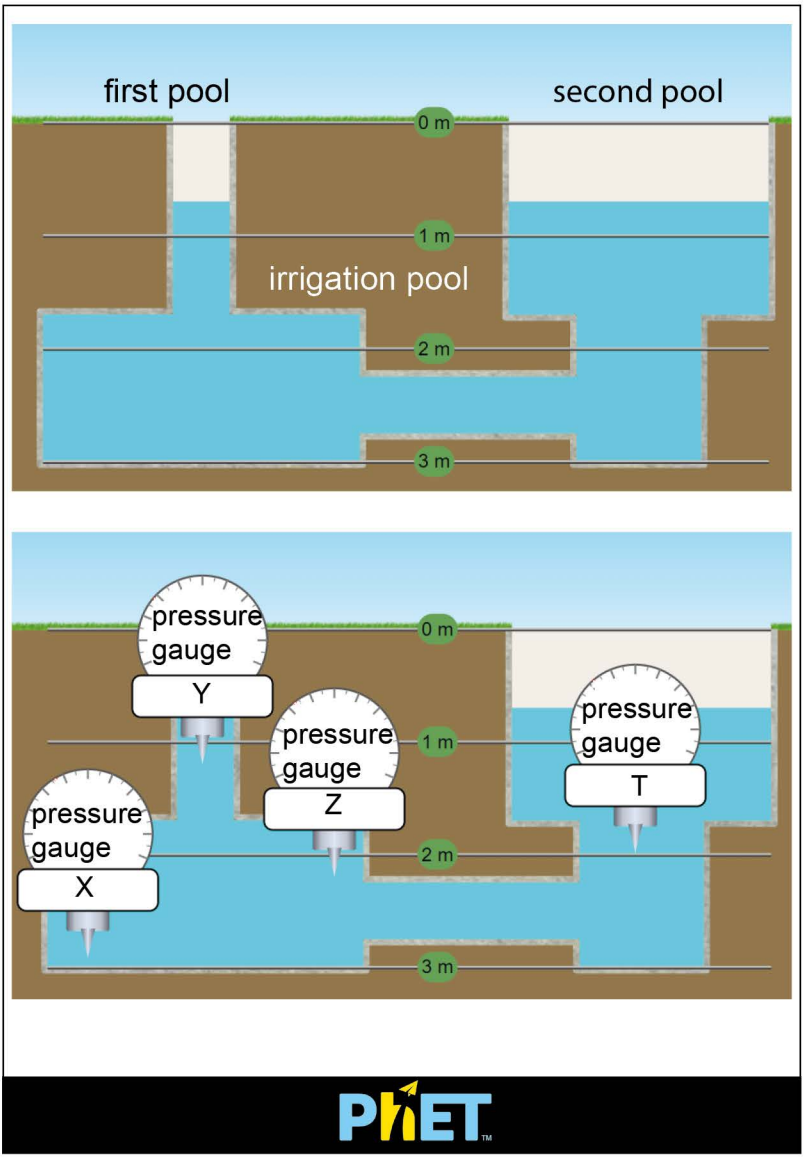


C)



D)





Pressure measurements are made in different parts of the 3-meter irrigation pool and the results are obtained as shown in the figure.

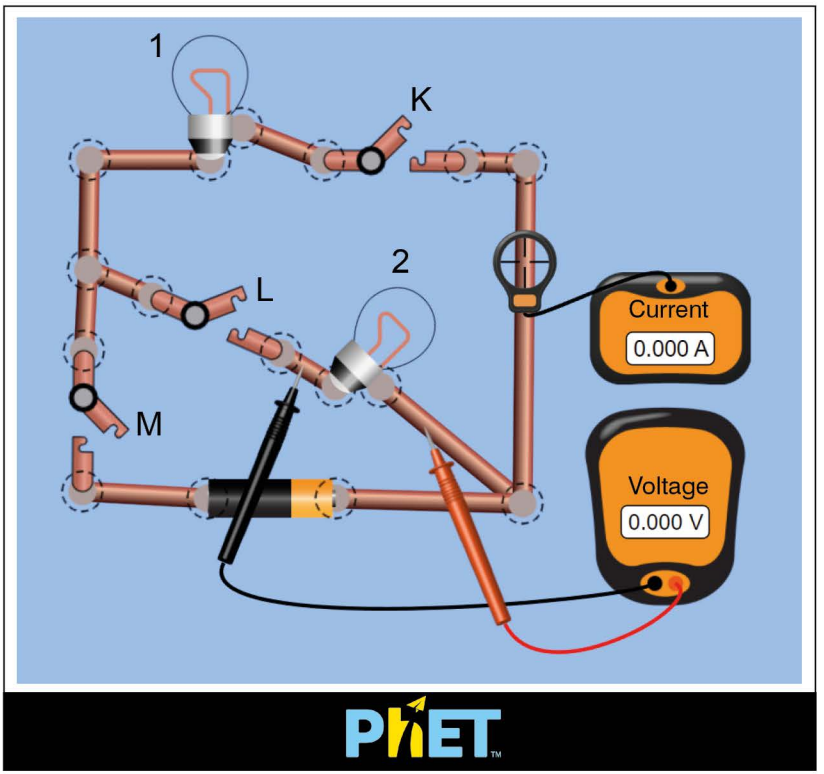
Based on this, which of the following information is correct?

A) Observation of different values in pressure gauges is due to liquid density.

B) The magnitude relationship between the values on the pressure gauges: Y>T>Z>X.

C) The fluid pressure that will affect a person who plans to dive into the water from the first pool and swim out of the second pool will first increase and then gradually decrease.

D) The fluid pressure at the bottom of the first pool is greater than the fluid pressure at the bottom of the second pool.



An electrical circuit is set up with identical bulbs with 2 ohm resistance and a battery with 6 volts voltage.

How many of the following expressions is/are correct regarding the electrical circuit?

I. If the switches K and M are closed, only bulb 1 will light up.

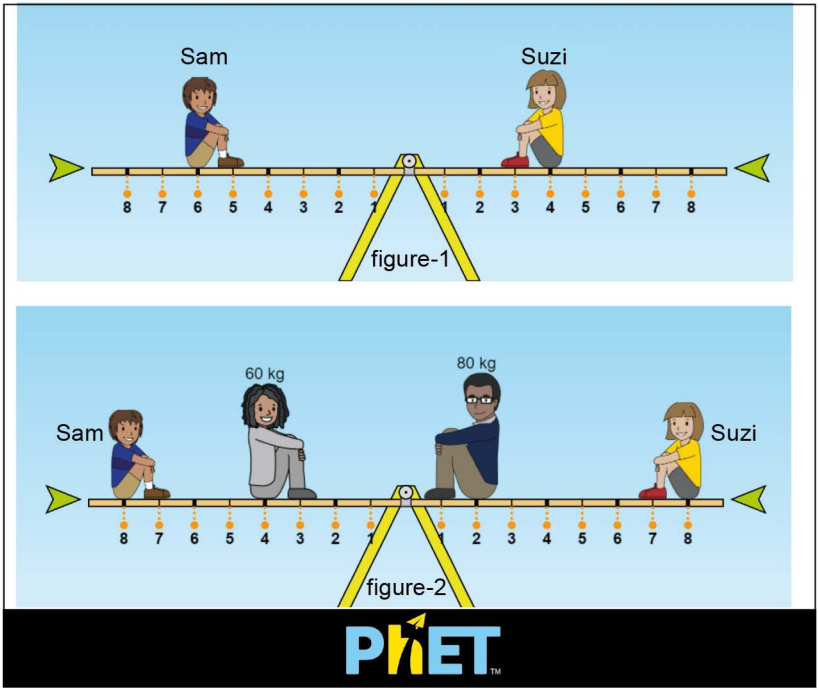
II- If the switches L and M are closed, the voltmeter will show 3 volts.

III- If the switches K and M are closed, the ammeter shows 3 amps.

IV- If all the switches are closed together, bulb 1 will be brighter than bulb 2.

V- If all switches are closed together, the value "3.00" is observed in the ammeter and voltmeter.

A) 4 B) 3 C) 2 D) 1



When Sam and Suzi sit opposite each other on the seesaw, they are in balance as in figure-1.

When their parents are involved in the seesaw game, they are in balance again as in figure-2.

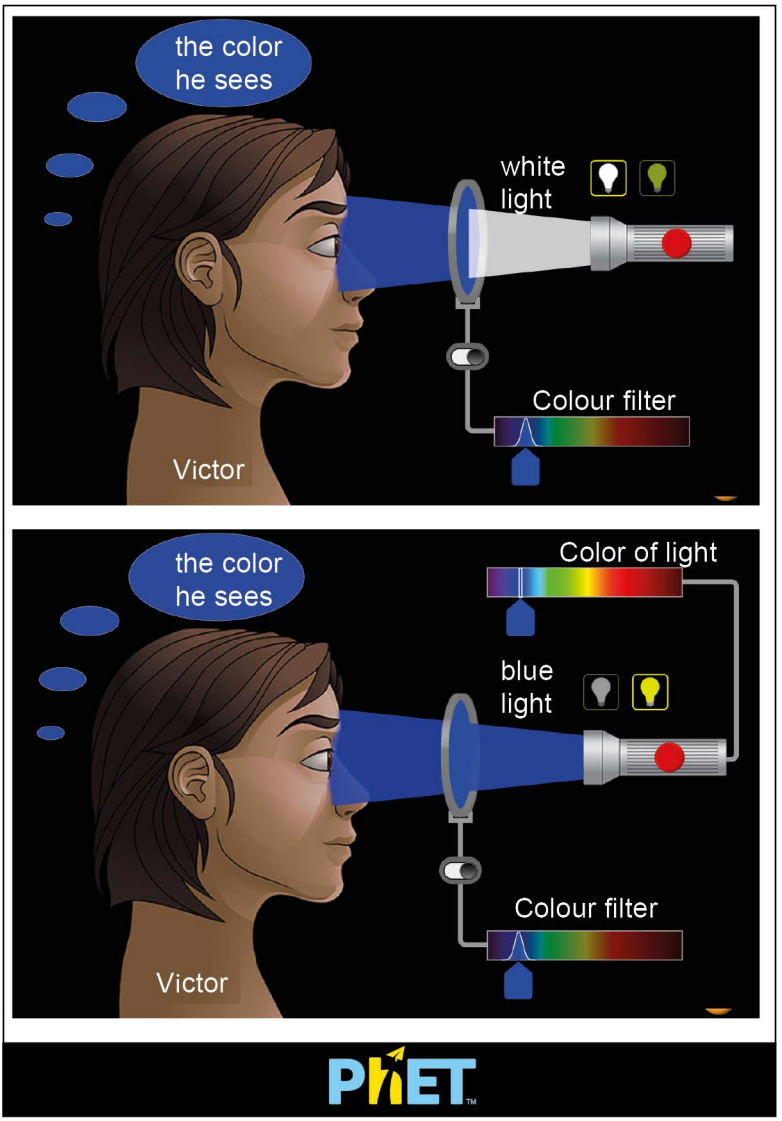
What are the weights of Sam and Suzi in kilograms?

A) Sam 20 kg, Suzi 30 kg.

B) Sam is 15 kg, Suzi is 30 kg.

C) Sam is 30 kg, Suzi is 20 kg.

D) Sam 60 kg, Suzi 30 kg.



Victor shares his light experiments with his friends about some of the results he achieved at the science center during the weekend. His friends listened to him with amazement and they made the following comments:

Olivia: When I look at our white car through blue-tinted glasses, I see it in blue.

Jessia: When I look at our green car through blue-tinted glasses, I see it in blue.

Benjamin: I can't see anything in a red-lit room through blue-tinted glasses.

David: In a room with a red light, I see a blue table in blue.

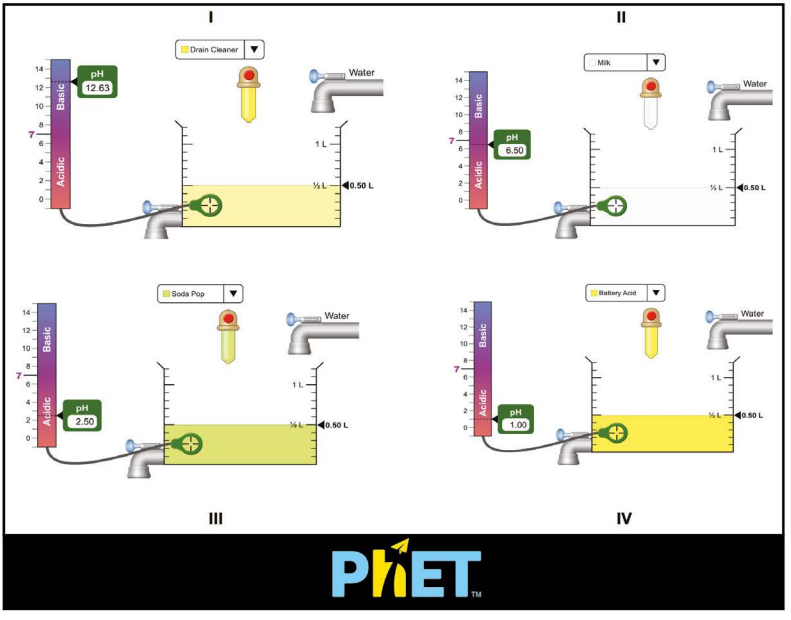
Which of his friends made correct comments?

A) Olivia and Benjamin

B) Olivia and David

C) David, Jessia and Olivia

D) Benjamin, Jessia and Olivia



Solutions of Drain cleaner(I), Milk (II), Soda Pop(III), and Battery Acid (IV) connected to pH meters on the diagrams are shown above.

Which of these solutions can be used to neutralize vinegar?

A) Only I

B) I and III

C) II, III and IV

D) I, II, III and IV

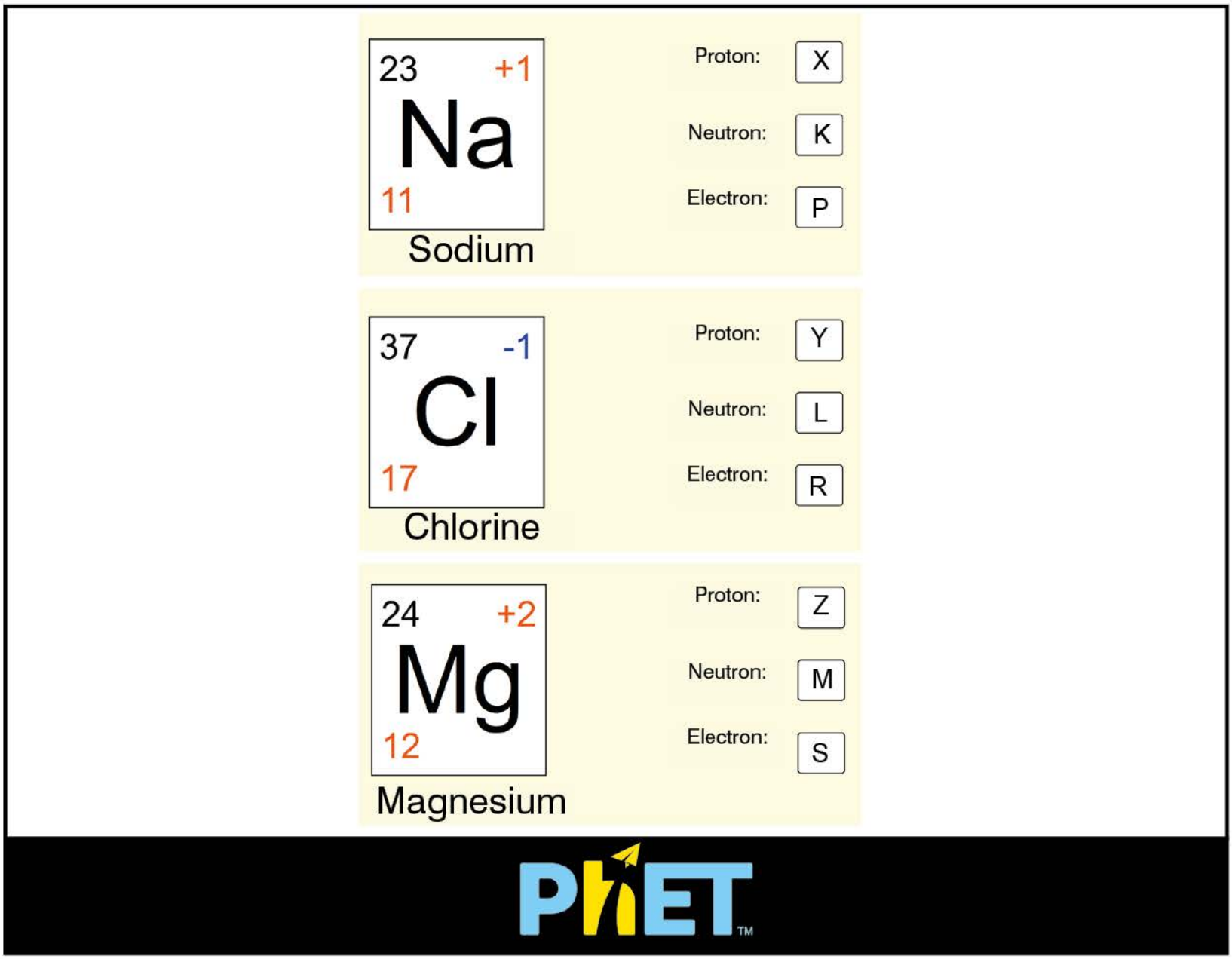
$CaCO_3 \rightarrow X + CO_2$

$X + 3C \rightarrow Y + CO$

$Y + 2H_2O \rightarrow Z + Ca(OH)_2$

Which of the following is represented by letter Z in the given consecutive equations above?

A) C_2H_2 B) C_2H_4 C) CH_4 D) C_2H_6



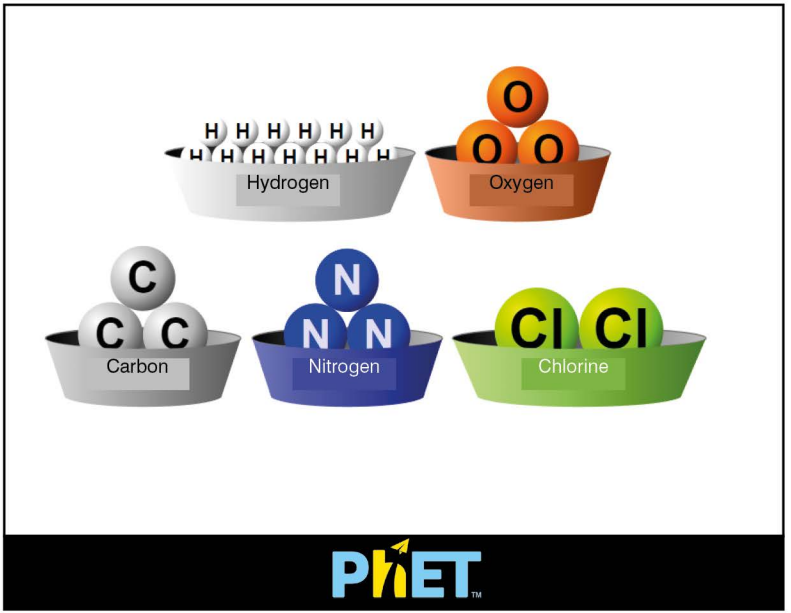
Information about the ions of some elements is given above. Which of the following information is <u>incorrect</u>?

A) The relationship between the number of protons is Y>Z>X.

B) Sodium and magnesium have the same number of neutrons.

C) These three elements appear one below the other in the periodic table.

D) The relationship between the number of electrons is R>P=S.



- 2 hydrochloric acid molecules,

- 1 carbon dioxide molecule,

- 3 ammonia molecules,

- 1 water molecule

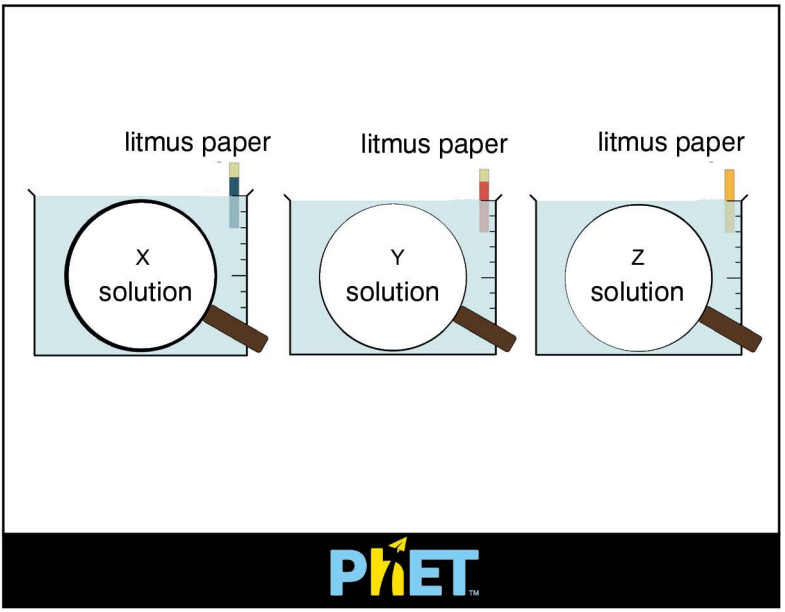
How many atoms will be remaining behind after forming the compounds above by using the atoms in the containers?

A) 2 carbon atoms.

B) 1 nitrogen, 2 hydrogen, 2 carbon atoms.

C) 3 hydrogen, 1 oxygen atoms.

D) All of them are used.



Litmus paper is an indicator used in chemistry. It is used to distinguish between acids and bases in solutions.

Which of the following statements about solutions X, Y and Z is correct?

I- X solution should be stored in glass and Y solution should be stored in metal container.

II- Y solution reacts with X and Z solutions to form water and salt.

III- X solution is rich in OH^- ions.

IV- If enough Z solution is added to the Y solution, the litmus paper may turn orange.

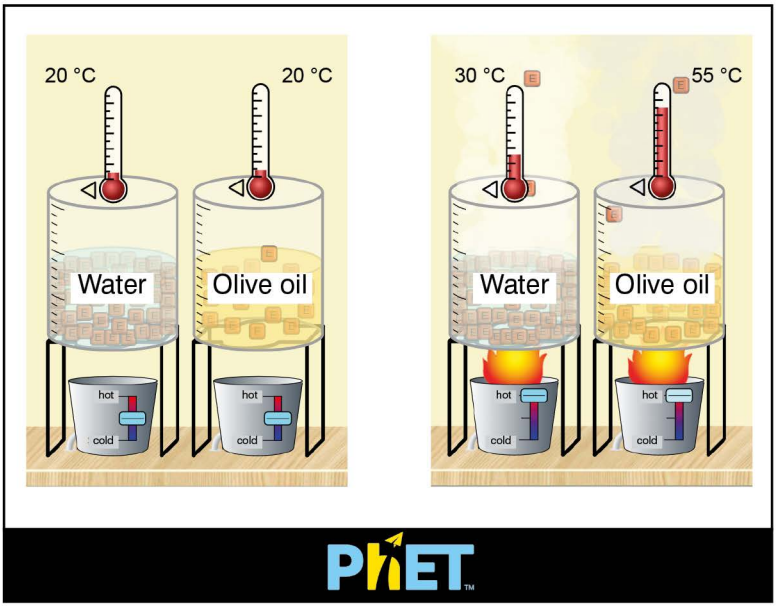
V- A result similar to solution Y is observed when litmus paper is dipped in lemon juice.

A) I, II and V

B) II, III, IV and V

C) III and V

D) I, III and IV



Equal mass of water and olive oil are heated in identical heaters for 5 minutes. Why did they reach different temperatures after a while, although they were at the same temperature at the beginning?

A) Because water is denser than olive oil.

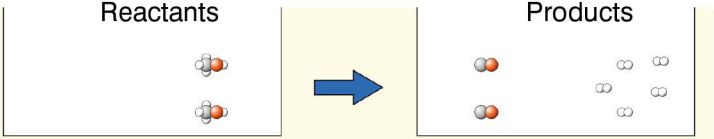
B) Because the specific heat of water is lower.

C) Since the energy consumed to increase 1 gram of olive oil by 1°C is lower.

D) The thermometer measuring the temperature of the water may be defective.

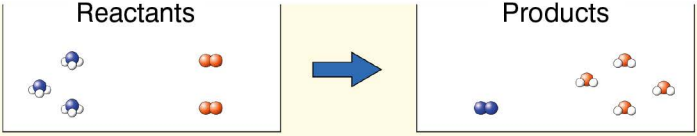
Which of the following chemical reactions is balanced correctly?

A)



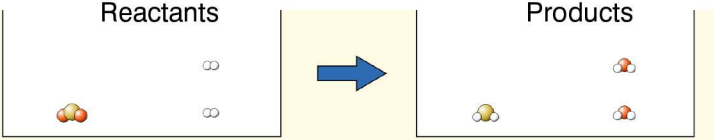
$2\ CH_3OH \rightarrow 2\ CO + 5\ H_2$

B)



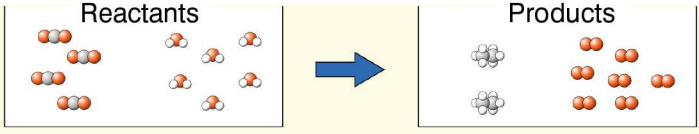
$3\ NH_3 + 2\ O_2 \rightarrow 1\ N_2 + 4\ H_2O$

C)

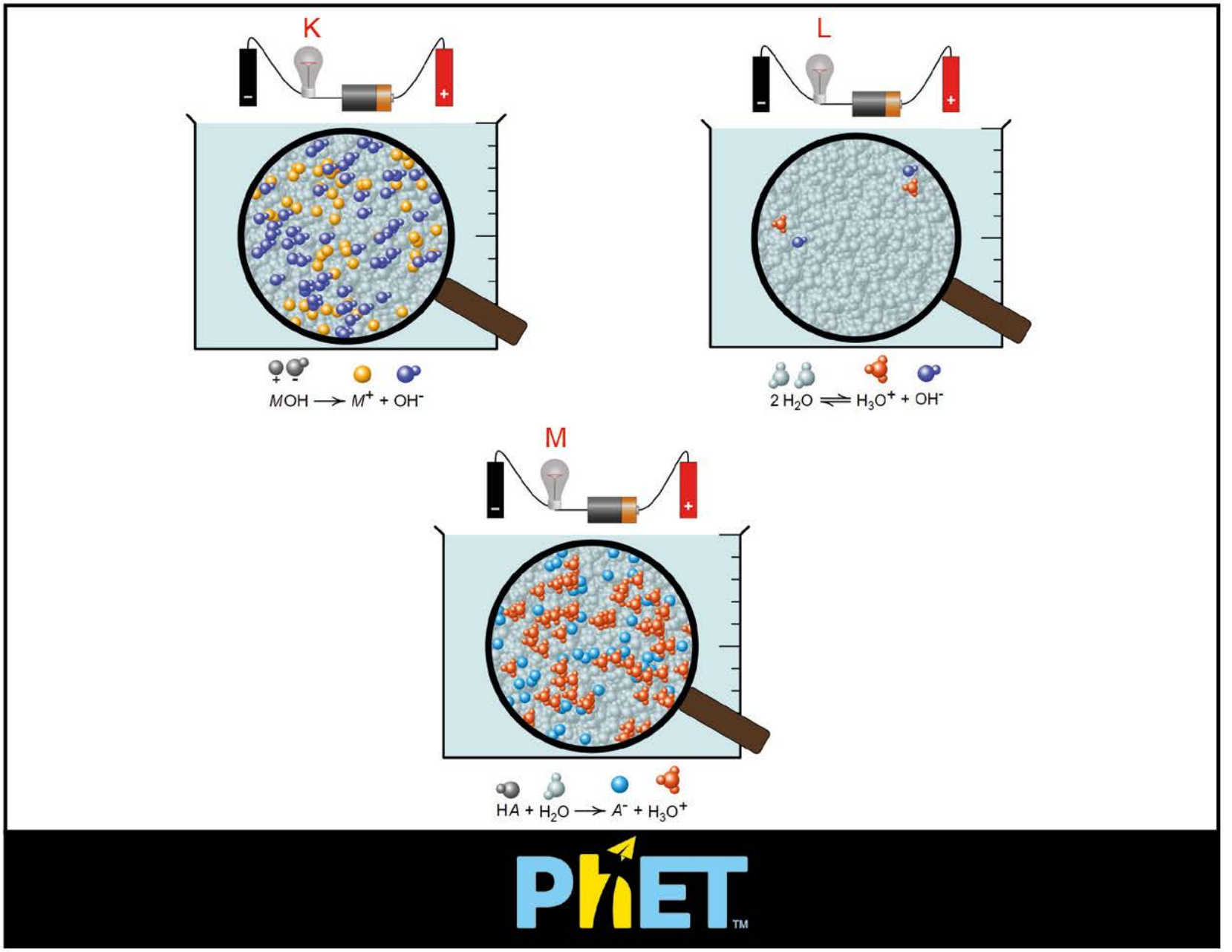


$1\ SO_2 + 2\ H_2 \rightarrow 1\ H_2S + 2\ H_2O$

D)



$4\ CO_2 + 6\ H_2O \rightarrow 2\ C_2H_6 + 7\ O_2$



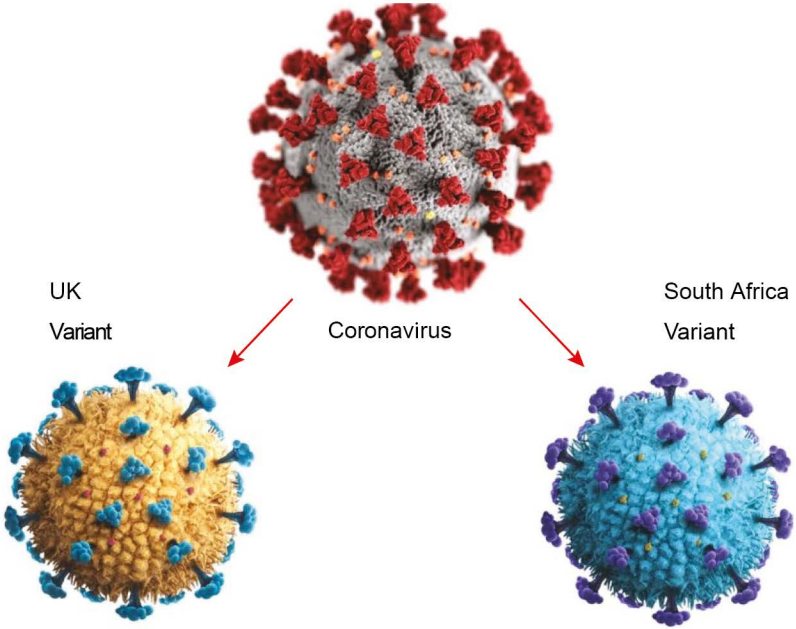
Which lamps give light when electrodes are immersed in solutions in containers?

A) Only lamp K gives light.

B) Lamps K and M give light.

C) Only lamp M gives light.

D) All lamps give light.



One of the most common topics we hear about coronavirus lately is that the virus is constantly mutating. This situation in which new types of viruses are formed is called variation. The new types that are formed are called variants. For example, we have been hearing about the omicron variant of the coronavirus frequently lately.

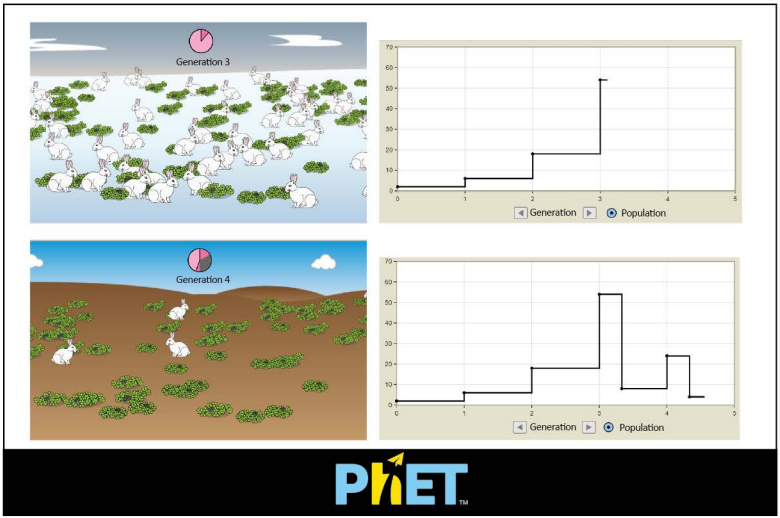
So how do different variants of viruses arise?

A) Enzymes making erroneous copies during the replication of genetic material due to X-rays.

B) Incorrect nucleotide transfer by the DNA polymerase enzyme that allows DNA to be replicated due to chemical reactions occurring in the cell

C) Enzymes making erroneous copies during the copying of genetic material due to ultraviolet (UV) radiation.

D) All of the above.



In Sweden, a group of rabbits was released into the northern region of Gotland Island, the surface of which is covered with snow for most of the year. For three generations, the rabbits had steady population growth. However, as a result of some changes observed on the island, the rabbit population suddenly decreased!

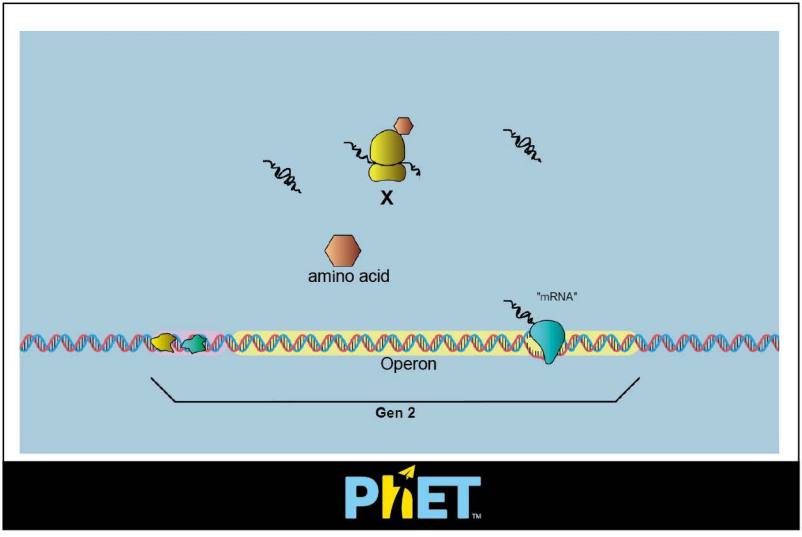
What do you think could be the reason for this?

A) Since the rabbits could not find enough food in the environment, their numbers decreased because of the competition among them.

B) Rabbits, which could not be camouflaged due to melting snow as a result of global warming, have become easy prey for wolves.

C) Since the protective effect of the ozone layer has disappeared, harmful rays have led to the death of rabbits.

D) Migration of snow mice from the island, which are the food source of rabbits, due to melting snow as a result of global warming.



Which of the following information about structure X given in the image above is correct?

K- It is a ribosome.

L- It takes part in the production of proteins.

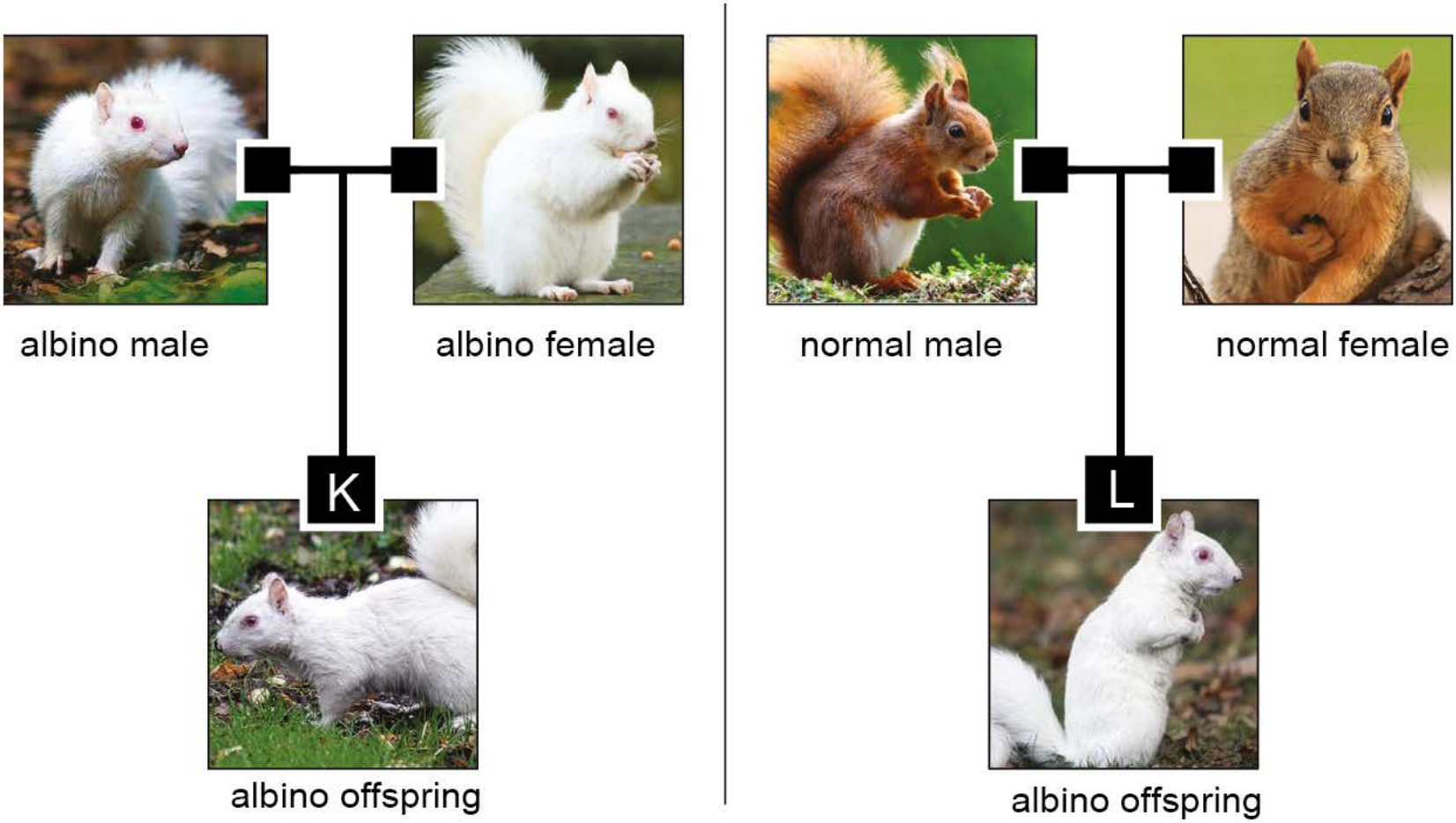
M- It is not a membrane-bound organelle.

N- It is found only in plant cells.

P- It secretes substances.

R- It binds amino acids together according to the genetic code on DNA.

A) K,L and M B) K,N and R C) K,L,M and R D) L,M,N and R



Albinism, a genetic disorder that affects humans and animals, is caused by a lack of melanin, a pigment that provides coloration. Albino individuals can arise from normal parents, but normal individuals cannot arise from albino parents.

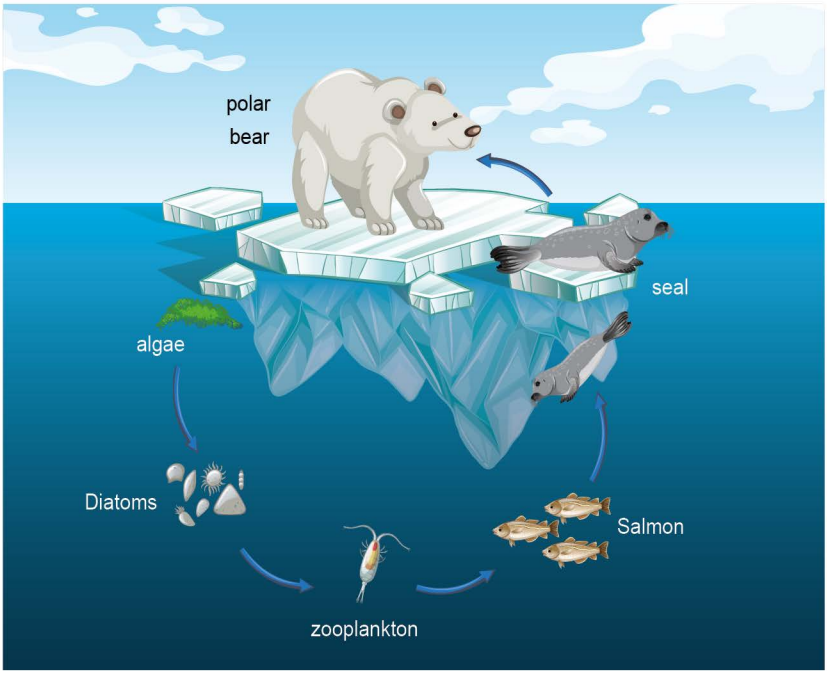
Accordingly, which of the following statements about albinism is false?

A) The gene that causes albinism is recessive.

B) If the parents of an albino offspring have a normal appearance, their genotypes must include the gene causing albinism.

C) The offspring of albino parents will be 100% albino.

D) The genotypes of K and L are different from each other.



Polar bears feed on seals they hunt on ice sheets in the Arctic Ocean. The melting and shattering of ice sheets due to global warming cause polar bears to have difficulty finding food and feeding their young. The rapid melting of sea ice in the Arctic could lead to the extinction of polar bears within 80 years.

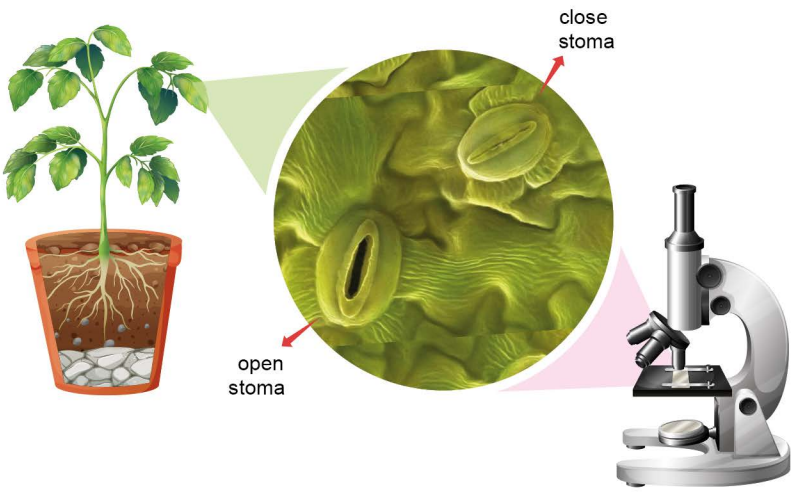
A rapid decline in the number of polar bears living in the Arctic Ocean would NOT cause which of the following?

A) Algal blooms occurring in the arctic sea.

B) While the seal population increases rapidly, the diatom population decreases.

C) The number of zooplankton decreases due to the increase in the salmon population.

D) There will be an increase in the food supply of autotrophs in the Arctic Sea.



We encounter interesting structures in every square millimeter of leaves. One of the extremely important structures for plants is the stomata. These microscopic pores on the leaves have a structure that enables them to open and close when necessary.

Which of the following statements about the stomata is false?

A) Stomata remain open during the day and closed at night.

B) Carbon dioxide, which is necessary for photosynthesis, is obtained through open stomata.

C) In hot and dry conditions, when the water loss is high due to evaporation (transpiration), the stomata are closed to prevent the plant from becoming dehydrated.

D) Stomata in aquatic plants are always open day and night.

Yellowstone National Park Volcanic Hot Spring

There is a group of species we have all heard of, extremophiles. Since these living things do not like to live with us, they have chosen to live in extreme conditions and have adapted to these conditions. For example, the heat-loving extremophilic archaea bacteria live around geysers located in Yellowstone National Park in America and give a blue tint to the hot spring.

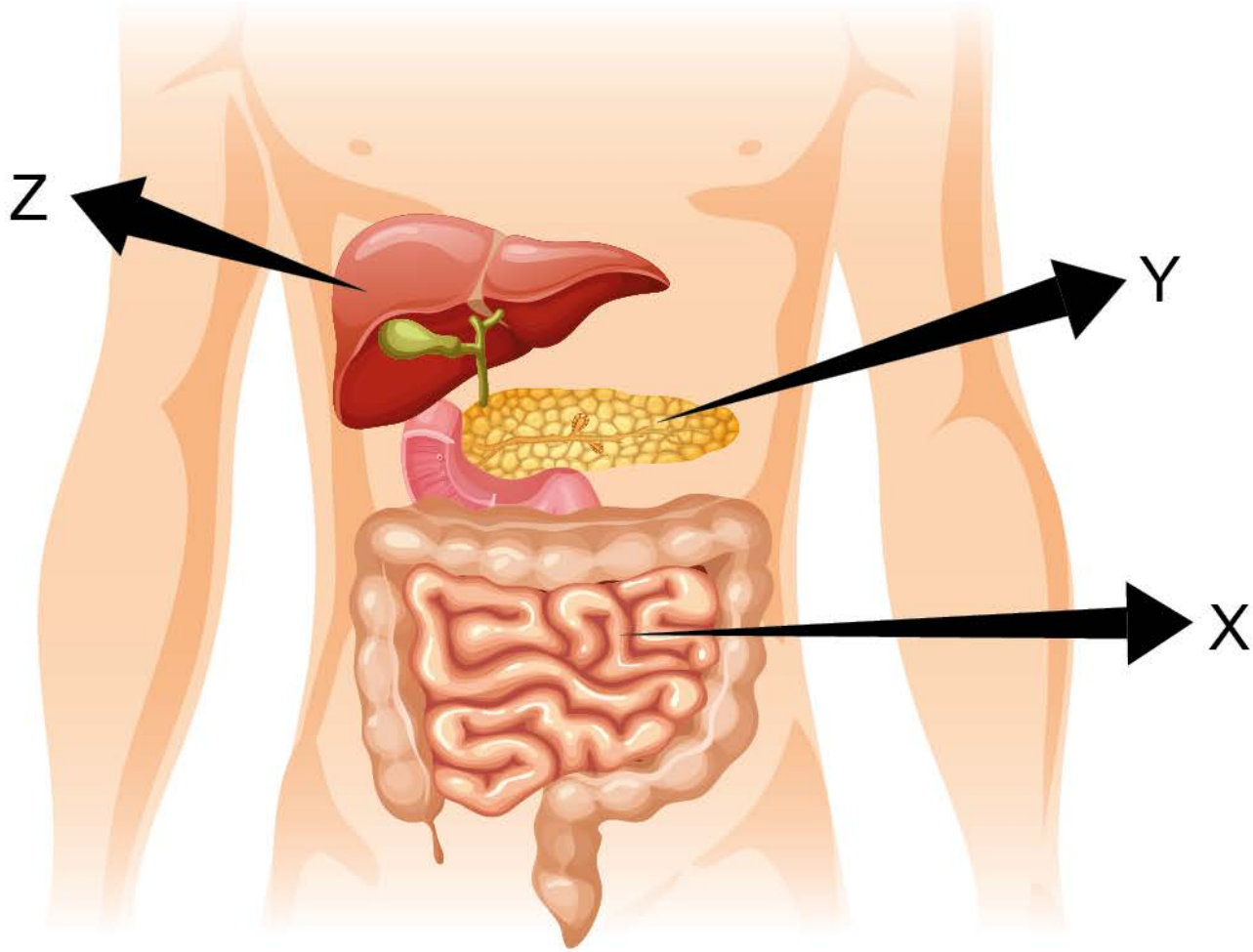
Which of the following is <u>not</u> a characteristic that distinguishes archaea from normal bacteria?

A) While bacteria are generally found in "normal" environments, Archaea can often be found in normal conditions along with extreme conditions.

B) While bacteria can reproduce by spores, archaea do not reproduce by spores.

C) Archaea are living things without a nucleus, whereas bacteria are single-celled prokaryotes.

D) Bacteria have ester bonds in their cell membrane, while archaea have ether bonds in their cell membrane.



While some organs are directly involved in the digestion of food, some organs help digestion. The three organs that fit this definition are indicated in the image above as X, Y, and Z.

According to the diagram, which of the following information is true?

A) Digestive enzymes produced in Y and Z perform chemical digestion.

B) The digestive enzymes produced in Y and Z are transferred to X, where they carry out the breaking down of carbohydrates.

C) Digested nutrients are absorbed at Z and pass into the blood.

D) Digestive enzymes produced in Z are transferred to X, allowing the chemical digestion of fats by enzymes from Y in a shorter time.