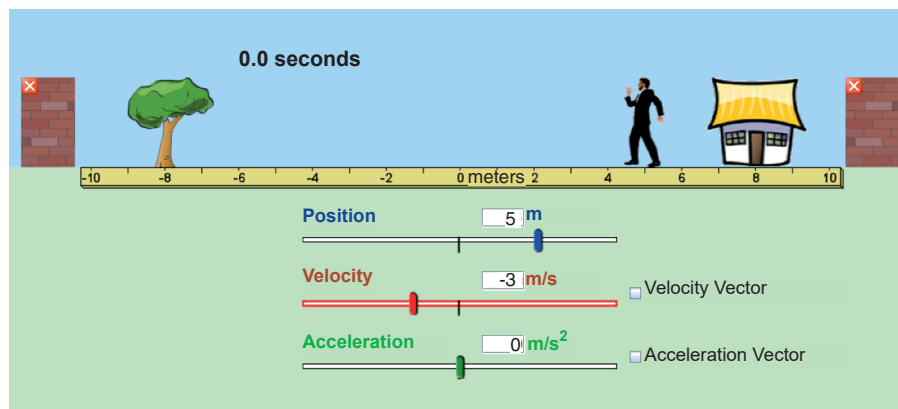


A skater with a mass of 100 kg starts gliding from a height of 5 m.

What is the maximum speed of the skater? ($g=10\text{m/s}^2$)

- A) 5 m/s
B) 10 m/s
C) 25 m/s
D) 50 m/s



The position, velocity and acceleration of a person is as given in the figure above.
(position: 5 m, velocity: -3 m/s, acceleration: 0m/s^2)

Where will he be in 2.5 seconds?

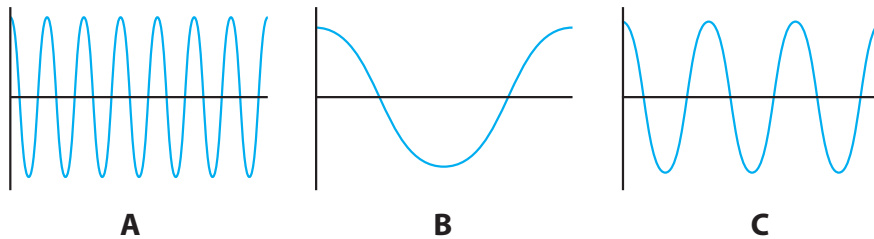
- A)
- B)
- C)
- D)



When a car makes a sharp turn to one side, the passengers move toward the other side of the car.

What is the main cause of this?

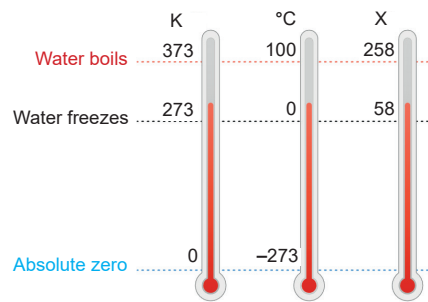
- A) Centripetal acceleration
- B) Centripetal force
- C) Centrifugal force
- D) Inertia



Wavelength can be defined as the distance between two successive crests or troughs of a wave.

In which of the following options are the waves sorted from the longest wavelength to the shortest?

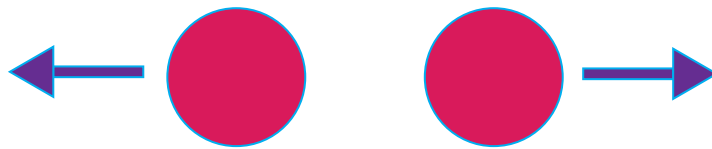
- A) C, A, B
- B) A, C, B
- C) B, C, A
- D) A, B, C



Different countries use different temperature scales such as Kelvin, Celsius and Fahrenheit. Suppose that you designed your own scale. According to your scale water boils at 258°X and freezes at 58°X .

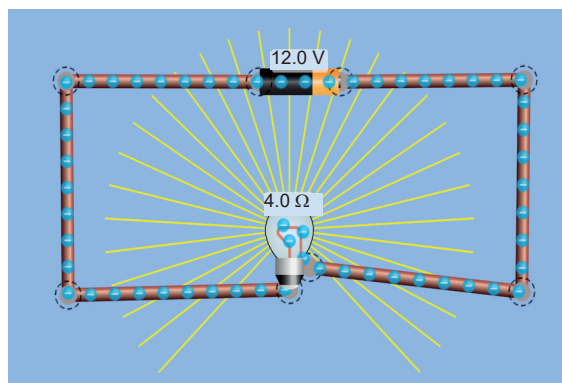
What is the equivalent temperature of 50°C in terms of $^{\circ}\text{X}$?

- A) 108°X B) 158°X C) 208°X D) 258°X



What can we say about the force of gravity between two objects when the distance between them increases?

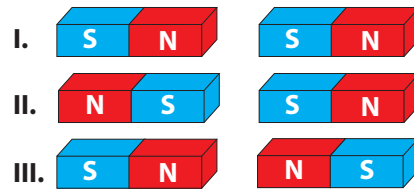
- A) It increases slightly.
B) It does not change.
C) It increases greatly.
D) It decreases.



A DC battery of 12 volts is connected to a light bulb of 4 ohms as shown in the figure above.

What is the current on the circuit?

- A) 8 A B) 48 A C) 3 A D) 4 A



How do the magnets affect each other in the situations given above?

	I	II	III
A)	Attract	Repel	Repel
B)	Repel	Repel	Repel
C)	Repel	Attract	Repel
D)	Attract	Attract	Repel



Which of the following is NOT an inner planet?

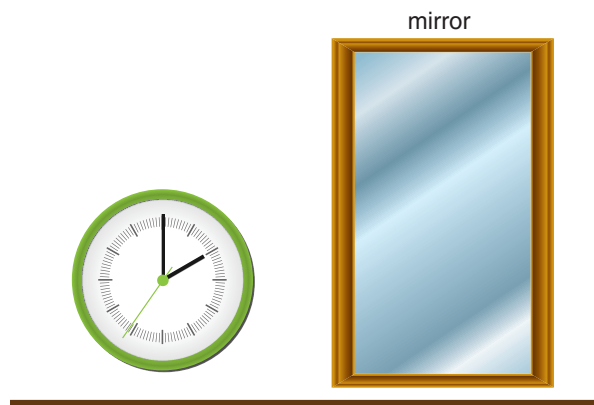
- | | |
|------------|------------|
| A) Jupiter | B) Mars |
| C) Earth | D) Mercury |



A weightlifter lifts a weight of 3000 Newtons 2 meters high in 2 seconds.

How much power does the weightlifter have?

- A) 1500 Watts
- B) 12000 Watts
- C) 6000 Watts
- D) 3000 Watts



A clock is placed in front of a flat mirror as shown in the figure.

What would be the time on the reflection of the clock in the mirror?

- A) 02:00
- B) 00:10
- C) 11:50
- D) 10:00

Elasticity is the ability of a body to restore its original shape after being deformed under applied forces.

Which one of the following everyday objects has the most elasticity?

A) A piece of wood



B) A sponge



C) A glass



D) A rock



The celestial body above has been recently photographed by the Hubble Telescope. It has a frozen body made of ice, rock and dust.

What is the name of this celestial body?

A) Asteroid

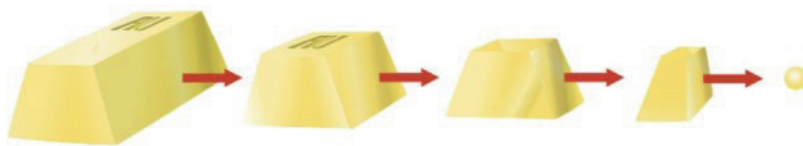


Matter makes up the world around you. From the rain that runs down your car windows to the oxygen you breathe in, matter is incredibly diverse. The screen you're using to view this quiz, that's matter, as is the sandwich you ate last week. Matter constitutes everything you can touch and feel. Matter is found in the most distant nebulas and makes up the cells in your brain.

Which one of the followings is correct about matter?

- I. Matter is anything that has mass and takes up space.
- II. Mass is the amount of matter in an object.
- III Matter is the physical substance that makes up our world.
- IV. Substances can exist in only solid or liquid state.

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

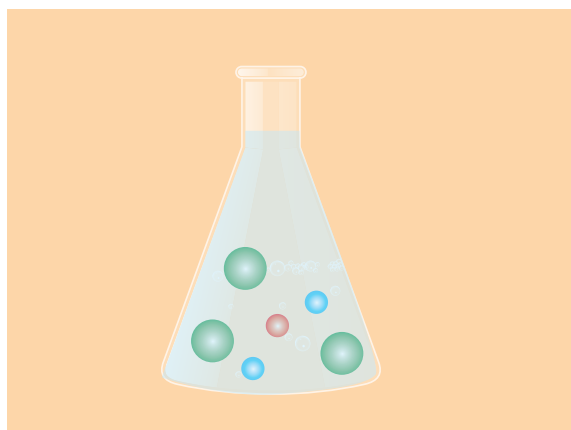


Long before the organised scientific experimentation that followed the scientific revolution, the ancient Greek philosophers Leucippus and Democritus first suggested that matter was made of indivisible (uncuttable) particles. Indeed, it was they who proposed our thought experiment about 2400 years ago. The duo referred to these units as atomos, which means undivided in Ancient Greek. They believed that atomos varied in size, shape, and mass. Although their hypothesis was on the right track, their idea was generally rejected and overlooked in favor of alternative propositions.

There was something lacking about these Greek philosophers' theory. Which one of the followings can be the reason to reject this theory?
















- I. They did not have empirical evidence to support their theory.
- II. They did not have the means to test their theory.
- III. There is a point in which we cannot cut the the substance anymore and have it retain its properties.

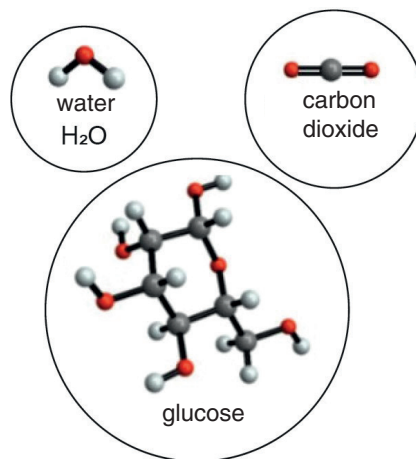
- A) Only III
- B) I and III
- C) II and III
- D) I, II and III



Molecules are simply atoms that join together in fixed and consistent ratios, and that the identities of the atoms do not change during a reaction.

Which reaction may occur in the beaker?

- A)   \longrightarrow  
- B)   \longrightarrow 
- C)   \longrightarrow  
- D)   \longrightarrow  



Which of the following statements about the glucose molecule is correct?

- A) There are three types of compounds in its structure.
- B) The total number of molecules is 24.
- C) Its formula is $\text{C}_6\text{H}_{12}\text{O}_6$.
- D) It has hydrogen, oxygen, and nitrogen atoms in its structure.

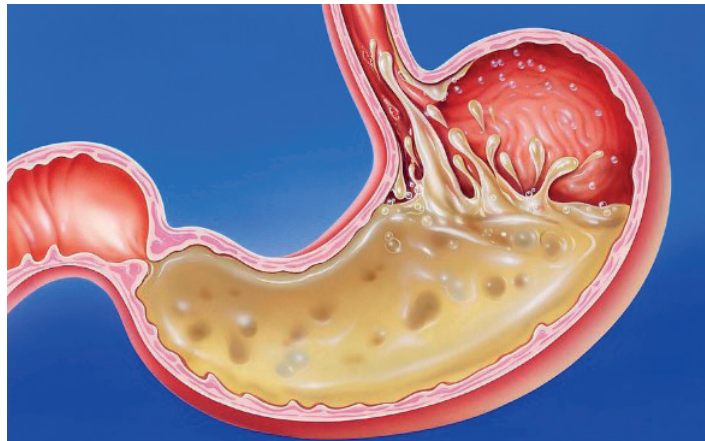


Sodium chloride, commonly known as salt, is an ionic compound with the chemical formula NaCl . It is one of the most abundant minerals on Earth and an essential nutrient for many animals and plants.

When is sodium chloride able to conduct electricity?

- I. In solid state
- II. In liquid state
- III. When dissolved in water

- A) I-II
- B) I-III
- C) II-III
- D) I-II-III



Stomach acid helps the digestion of food and kills the harmful microorganisms in the stomach.

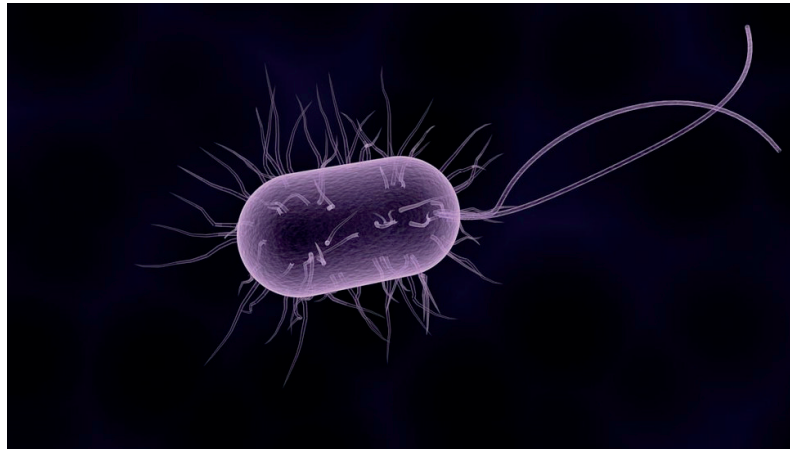
What is the chemical name of stomach acid?

- A) Hydrochloric acid
- B) Hydrobromic acid
- C) Hydroiodic acid
- D) Hydrofluoric acid

The 2nd Law of Thermodynamics states that a system will tend to maximize its number of configurations. It also states that a system will tend to minimize its energy.

Accordingly, which of the following statements is true?

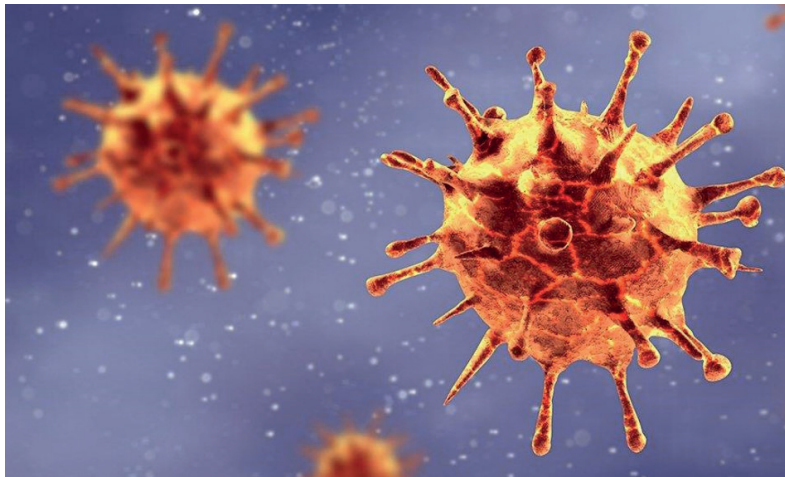
- A) There is more single-stranded DNA in most human cells because there are more possible configurations than with double-stranded DNA.
 - B) There is more double-stranded DNA in most human cells because there are more bonds, which minimizes the DNA's energy.
 - C) There is more single-stranded DNA in most human cells because this structure is more unstable, which makes it more likely to appear in nature.
 - D) There is more double-stranded DNA in most human cells because this structure is coiled and rigid, making it have less bonds.
-



Unicellular bacteria can move to a nutrient source using a protein propeller called a flagellum. They can break down nutrients into molecular building blocks in order to make structures called biofilms.

After cells make a biofilm, they usually make their home there. They settle in their new home and focus on reproduction instead of moving and searching for nutrients. Where do cells get their instructions when they make such a change in behavior?

- A) Instinctive instructions encoded in their brain
- B) Genetic instructions encoded in their DNA
- C) Random behavior typical of unicellular organisms
- D) Inborn instructions passed down through RNA



Why are viruses not considered by biologists to be living organisms?

- A) Viruses do not use DNA to encode their genome.
- B) Viruses only work in mutualistic relationships.
- C) Viruses only have single-stranded DNA.
- D) Viruses cannot make copies of themselves without the help of other cells.

A knock-out cell study is when a complete gene is removed from a cell's genome. This allows scientists to learn about the specific location of each gene within the genome, the gene sequence that leads to a fully functional cell, and the function of each gene.

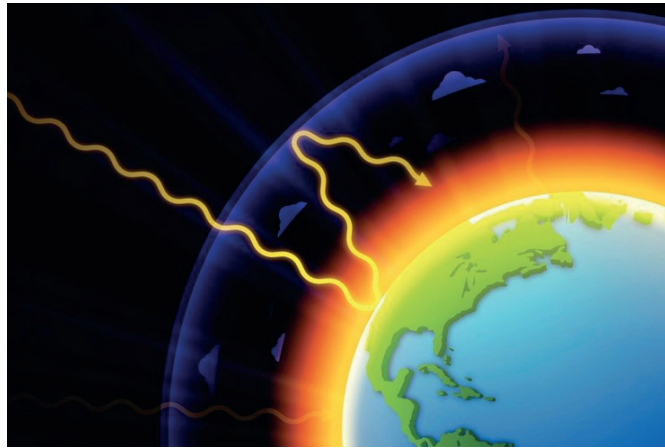
Sometimes, when a gene is knocked out, the cellular function of that gene still works. Why?

- A) If a cellular function is very important, there are often more than one gene that are responsible for that function.
- B) Not every cellular function requires a gene.
- C) Some cellular functions require multiple genes.
- D) After the knock-out, the cell repairs itself and re-builds the gene.



Which of the following statements about DNA is NOT correct?

- A) All of an organism's DNA forms its genome and is made of a string of nucleotides.
- B) An organism's DNA contains instructions for how that organism responds to its environment.
- C) An organism's DNA contains blueprints for how to make other cells.
- D) All of an organism's DNA contains codes for making proteins.



What is the 'greenhouse effect'?

- A) Greenhouse gases trap Carbon Dioxide and warm the earth.,
 - B) Greenhouse gases trap carbon dioxide so plants can grow.
 - C) Greenhouse gases trap infrared radiation and warm the earth.
 - D) Greenhouse gases trap in UV radiation and warm the earth.
-