

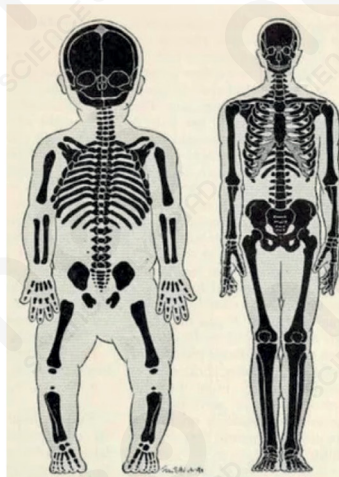
01



You turn a doorknob to open the door. Which simple machine is helping you?

- A) A wedge
- B) A wheel and axle
- C) A screw
- D) A pulley

02



What happens to the number of bones in the human body from birth to adulthood?

- A) Adults have more bones than babies
- B) Babies and adults have the same number of bones
- C) Babies have more bones than adults
- D) Adults lose all their bones and grow new ones

03

The Moon does not make its own light. Why do we see the Moon shining in the sky?

- A) The Moon is glowing with heat
- B) The Sun's light reflects off the Moon's surface
- C) Stars shine on the Moon to make it bright
- D) The Moon lights itself up at night

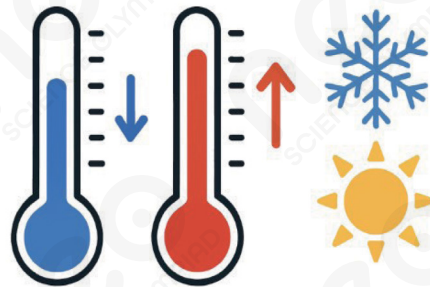
04



Which state of matter has particles that move freely and are far apart?

- A) Solid
- B) Liquid
- C) Gas
- D) Plasma

05



Which instrument do scientists use to measure air temperature?

- A) Barometer
- B) Thermometer
- C) Rain gauge
- D) Compass

06



You place a metal spoon in a hot cup of tea. After a minute, the spoon feels warm. What type of thermal energy transfer between the tea and the spoon has occurred?

- A) Electrical
- B) Sound
- C) Conduction
- D) Radiation

07

Which of the following is a producer (autotroph) in an ecosystem?

- A) A rabbit
- B) A mushroom
- C) A lion
- D) A green plant

08



Dry ice turns directly into a gas at normal atmospheric pressure without becoming liquid. What type of change is this?

- A) Condensation
- B) Evaporation
- C) Freezing
- D) Sublimation

09



On a stove, an open pot of water is boiling at sea level. Several potatoes are fully submerged in the boiling water. After several minutes, which statement is most accurate?

- A) The potatoes' centers quickly exceed 100 °C
- B) The potatoes' surfaces are near 100 °C, but their centers are still below 100 °C; in an open pot they won't exceed 100 °C
- C) The potatoes' centers reach 100 °C before the surface
- D) The potatoes remain near room temperature

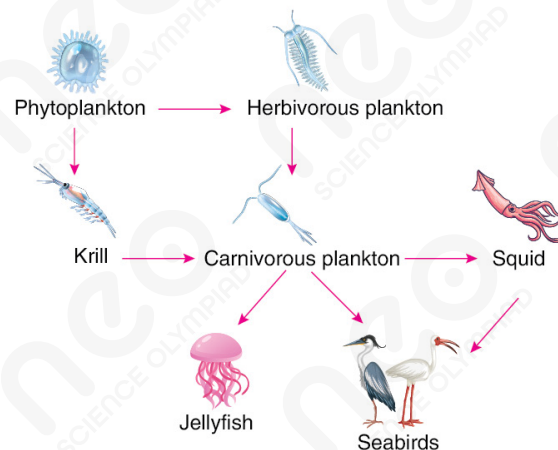
10



Large hydropower projects (big dams and reservoirs) are common in many countries. What is a major environmental challenge associated with building them?

- A) Water pollution
- B) Scarcity of water
- C) Depletion of the ozone layer over the region
- D) Destruction and fragmentation of aquatic habitats (for example, blocking fish migration)

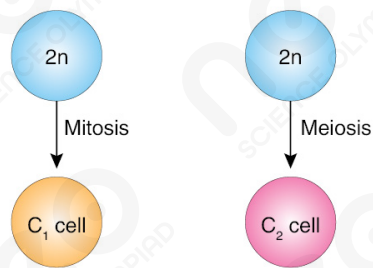
11



The diagram above shows a food web belonging to a marine ecosystem. Which of the following statements about this food web is incorrect?

- A) The concentration of heavy metal ions that accumulate in living tissues is expected to be highest in seabirds.
- B) The food web includes three trophic levels: primary consumers, secondary consumers, and tertiary consumers.
- C) Krill and herbivorous plankton are primary consumers.
- D) The squid becomes a tertiary consumer when it feeds on carnivorous plankton.

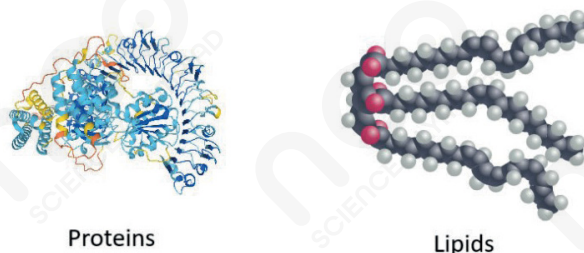
12



Based on these diagrams showing the formation of C_1 and C_2 cells of the same organism, which of the following statements is incorrect?

- A) Crossing over does not occur during the formation of the C_1 cell.
- B) Two rounds of DNA replication occur during the formation of the C_2 cell.
- C) The C_2 cell does not contain pairs of homologous chromosomes.
- D) The parent cells that form C_1 and C_2 have the same number of chromosomes.

13

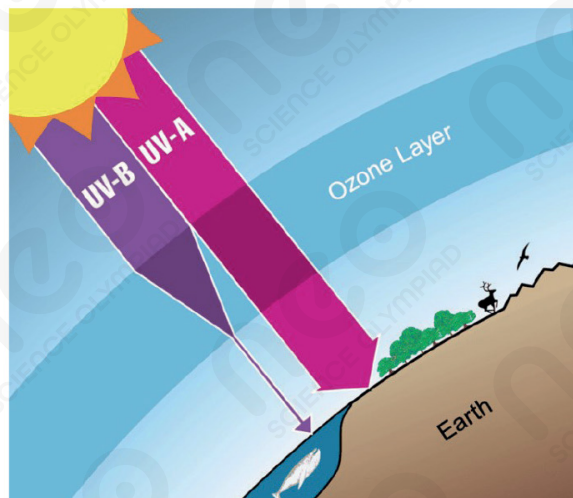


Which of the following are common characteristics of proteins and lipids?

- I. Being used as an energy source
- II. Being part of the structure of some hormones
- III. Serving as building and repairing materials

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

14



The ozone (O_3) layer filters harmful ultraviolet (UV) rays from the sun, preventing them from reaching the atmosphere.

Which of the following outcomes can be observed as a result of the thinning of the ozone layer?

- I. Yellowing of plant leaves
- II. Decrease in the number of phytoplankton
- III. Increase in the risk of skin cancer in humans
- IV. Increase in plant photosynthesis

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

15



Which of the following characteristics are guaranteed to be the same for two different protein molecules found in a human liver?

- I. The number of amino acids in their structure
- II. The number of peptide bonds in their structure
- III. The optimum temperature at which they function

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

16

In a fixed-volume, closed container at 25°C, there are 16 g of CH₄ gas.

Which of the following processes, when applied separately to the container, will cause the pressure to double?

I. Adding 2 g of He gas while keeping the temperature constant.

II. Increasing the temperature to 50°C.

III. Adding 2 g of H₂ gas while keeping the temperature constant.

(Assume that the gases behave ideally.)

(H = 1 g/mol, He = 4 g/mol, C = 12 g/mol)

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

17

Which statement best explains why elements in the same group (column) of the periodic table have similar chemical properties?

- A) They have the same number of protons in the nucleus.
- B) They have the same number of neutrons in the nucleus.
- C) They have the same number of electrons in their outermost (valence) shell.
- D) They have the same atomic mass

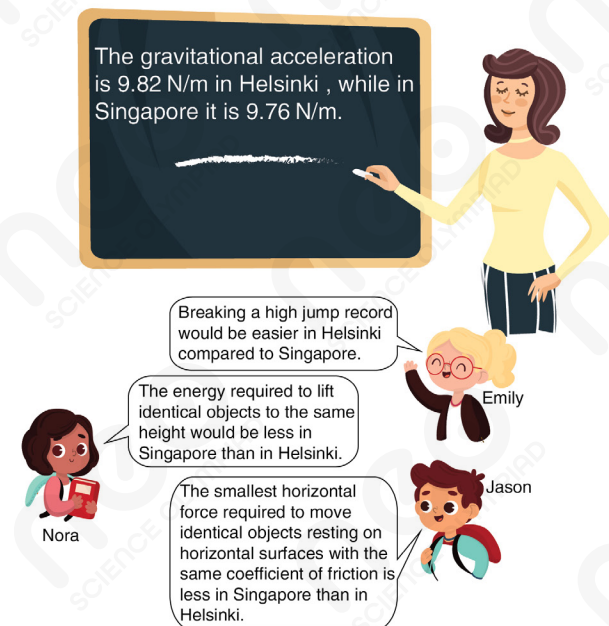
18



Why does Earth support life, while Venus and Mars do not (as far as we know)?

- A) Earth is closer to the Sun than Venus.
- B) Earth has a suitable atmosphere and liquid water.
- C) Earth's surface is covered entirely by land.
- D) Earth has more moons than Venus and Mars.

19



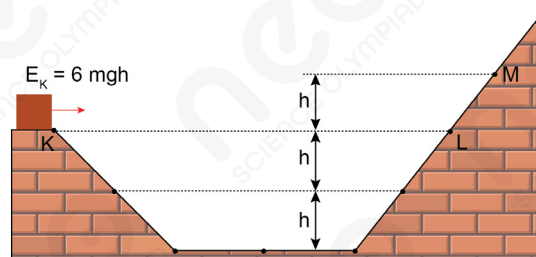
The teacher writes something on the board and then asks her students what kind of physical effects this difference could have.

Some of the students' answers are as above.

Based on this, which students' statements are correct?

- A) Emily
- B) Emily and Nora
- C) Emily and Jason
- D) Nora and Jason

20



An object passes point K with $6mgh$ kinetic energy and can only reach point L. When the same object passes point K with E kinetic energy, it can only reach point M. The distances between the points shown in the figure are equal, and a constant frictional force acts on the object throughout its motion.

What is the value of E in terms of mgh ?

(Where g is the gravitational acceleration and m is the mass of the object.)

- A) 6.5 B) 7 C) 7.5 D) 8

21

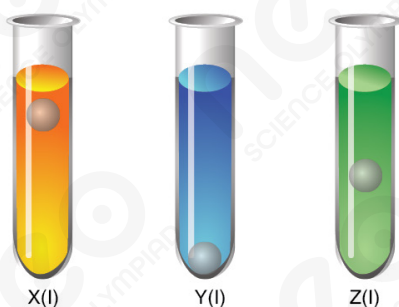
Scientists have used everyday materials to provide concrete examples in order to better explain their atomic models and subatomic particles. This helped make their atomic models easier to understand.

Accordingly, which of the following statements are correct?

- I. In Dalton's atomic model, the atom is likened to a billiard ball.
- II. J.J. Thomson explained his atomic model by comparing it to a plum pudding.
- III. Rutherford developed the planetary model by comparing the nucleus to the sun and the electrons orbiting around it to planets.

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

22



In test tubes containing liquids X, Y, and Z in the same environment, identical marbles are dropped from the same height and at the same time. The positions of the marbles at time t are shown in the figure above.

Based on this, which of the following statements are incorrect?

- I. The viscosity of liquid Z is smaller than that of liquid Y.
- II. The fluidity of liquid X is greater than that of liquid Z.
- III. Under the same conditions, the relationship between intermolecular forces is $X > Z > Y$.

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

23



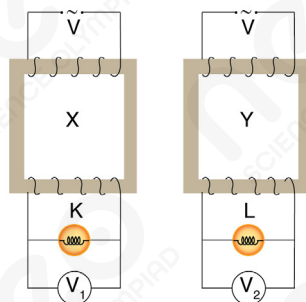
In the system above, solid X powder is added to substance Y. After waiting for a sufficient amount of time, it is observed that the elastic balloon inflates.

Based on this, which of the following pairings in the table (I, II, and III) regarding X(s), Y, and the gas accumulated in the elastic balloon might be correct?

	X(s)	Y	Gas Accumulated in the Balloon
I.	CaCO_3	HCl(aq)	CO_2
II.	Cu	$\text{HNO}_3(\text{aq})$	NO_2
III.	Al	KOH(aq)	H_2

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

24



In the figure, ideal transformers X and Y are connected to alternating currents with the same effective voltage applied to their inputs.

Identical bulbs K and L are connected, and the voltmeters across their terminals display readings V_1 and V_2 , respectively.

Given that $V_1 > V > V_2$, which of the following statements are correct?

- I. Transformer X is a step-up transformer.
- II. Transformer Y is a step-up transformer.
- III. The brightness of bulb K is greater than that of bulb L.

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

25

Zoe fills two identical balloons with the same type of gas in equal masses. After sealing the balloons, she places one in a hot environment and the other in a cold environment.

When thermal equilibrium is reached, which of the following properties of the gas inside the balloons will differ?

- I. Internal energy
- II. Density
- III. Volume

(The pressure in the environments where the balloons are placed is the same, and the balloons do not burst.)

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

Answer Key

1	B
2	C
3	B
4	C
5	B
6	C
7	D
8	D
9	B
10	D
11	B
12	B
13	D
14	D
15	C
16	C
17	C
18	B
19	D
20	D
21	D
22	D
23	D
24	D
25	D