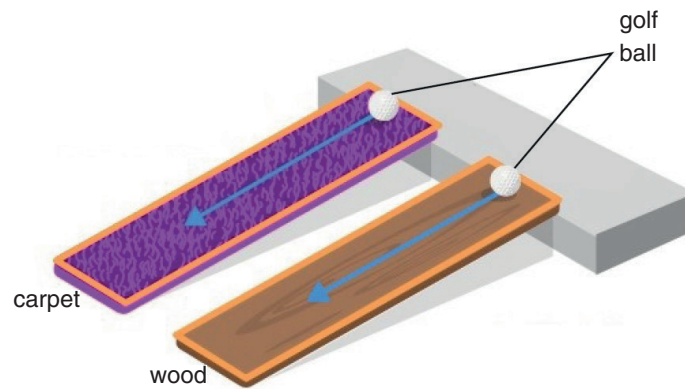


Above is the side view and panoramic view of a box with a hole at one side, two mirrors at two of the adjacent sides, and an obstacle opposite the hole.

Victor looks inside the box through the hole. How many diamonds does he see?

- A) He cannot see any diamonds because of the obstacle.
- B) He can see 1 diamond, which is a reflection.
- C) He can see 2 diamonds, both of which are reflections.
- D) He can see an infinite number of diamonds, all of which are reflections.



Peter, who wants to investigate whether objects move at different speeds on different surfaces, constructs the experimental setup above.

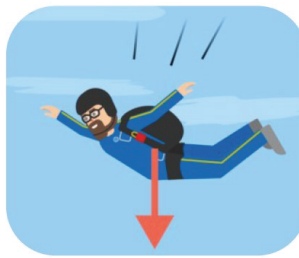
Which of the statements about this experimental setup is correct?

- I- The independent variable is slope/ramp height.
- II- The dependent variable is the rolling time.
- III- The independent variable is the surface type.
- IV- The dependent variable is the rolling speed.

- A) I and II
 - B) II, III, and IV
 - C) I, II, and IV
 - D) All are correct.
-



electrostatic force



gravitational force



spring force

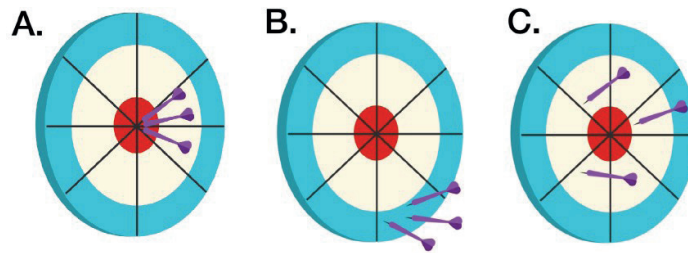


magnetic force

Force is on the basis of the changes and interactions of events occurring in the universe. There are basically two types of force, contact force and non-contact force.

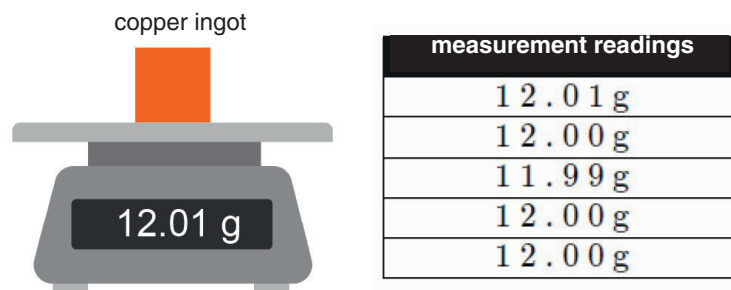
Which of the types of forces shown in the images above is different from the others?

- A) Electrostatic force
- B) Gravitational force
- C) Spring force
- D) Magnetic force



Two of the most common errors encountered in scientific studies are errors related to precision and accuracy. Accuracy is how close or far a given set of measurements is to their true value. Precision is how close or dispersed the measurements are to each other.

For example, in the figure above the dart player shot with a high precision on part B and a high accuracy on part C. He made a high-accuracy and high-precision shot in part A.



Suppose that you have a copper ingot with a mass of 12.01 g. We measure it five times in a row with the balance below and get the readings above.

How would you characterize the measurements on the precision balance accordingly?

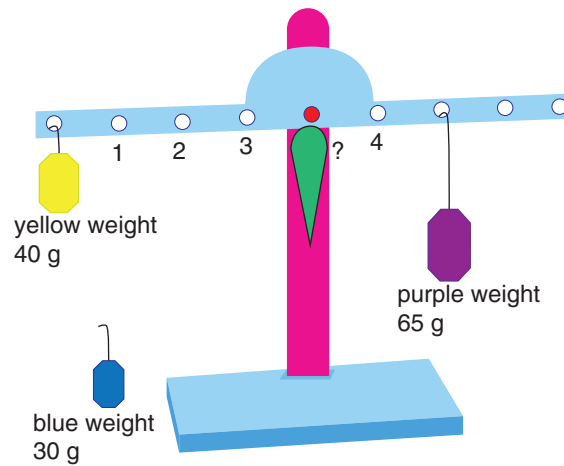
- A) Low accuracy, high precision
- B) Low accuracy, low precision
- C) High accuracy, high precision
- D) High accuracy, low precision



Alvin loves doing acrobatic movements with his bike in the park at the weekends and he is quite talented at it.

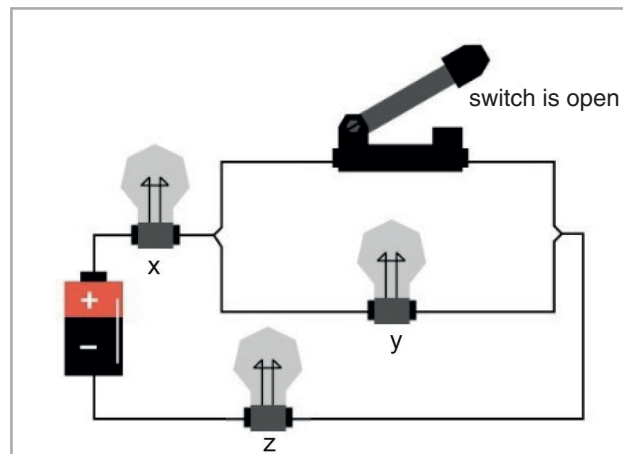
What technique does not Alvin use while trying to remain in balance on his motionless bicycle, rear wheel of which is at rest in the air?

- A) Reflex, attention and quick action are very important.
- B) He creates a balancing force in the opposite direction of its fall using centrifugal force steadily..
- C) He keeps the center of mass at the right distance from the point where the rear wheel touches the ground so that he stays in balance
- D) He constantly flexes his body in the opposite direction of the fall.



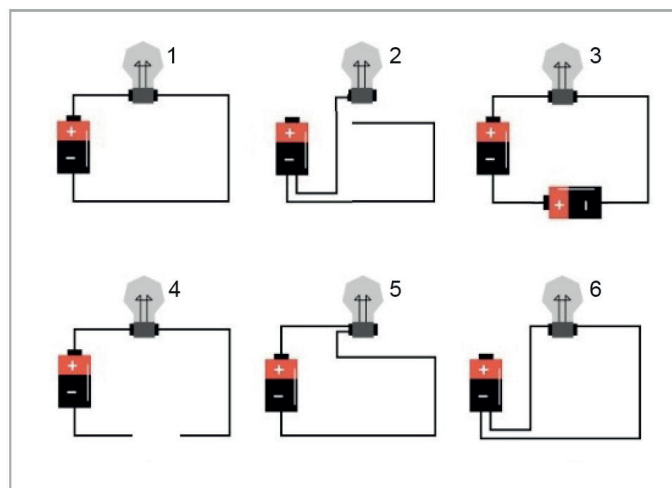
To which point should Henry hang the blue weight on his toy balance scale so that the system comes to equilibrium?

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



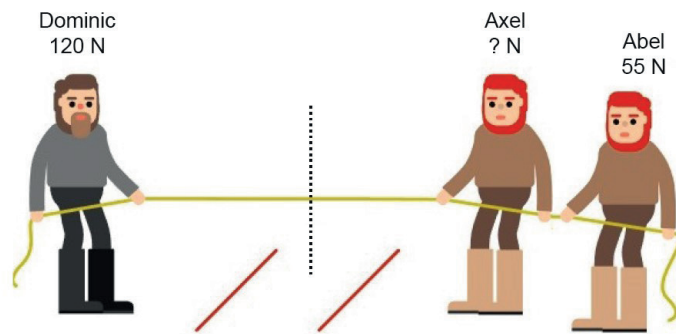
Which of the following events does not occur when the switch is closed in the electrical circuit given above?

- A) Lamp X continues to light.
- B) Lamp Y continues to light.
- C) Lamp X lights up brighter than before.
- D) Lamp Z lights up brighter than before.



Which of the light bulbs in the electrical circuits above do not give light?

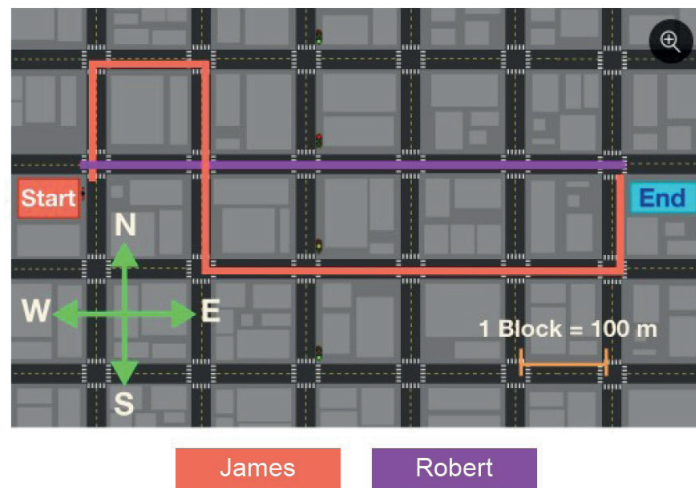
- A) 2 and 4
- B) 2 - 3 - 4
- C) 2 - 4 - 5 - 6
- D) 1 - 2 - 4 - 5 - 6



Axel and Abel are having a tug-of-war with their father. The forces applied by Dominic and Abel are given in the figure.

Given that ground friction is negligible, what is the smallest value of the force that Axel has to apply so that Axel and Abel win the game?

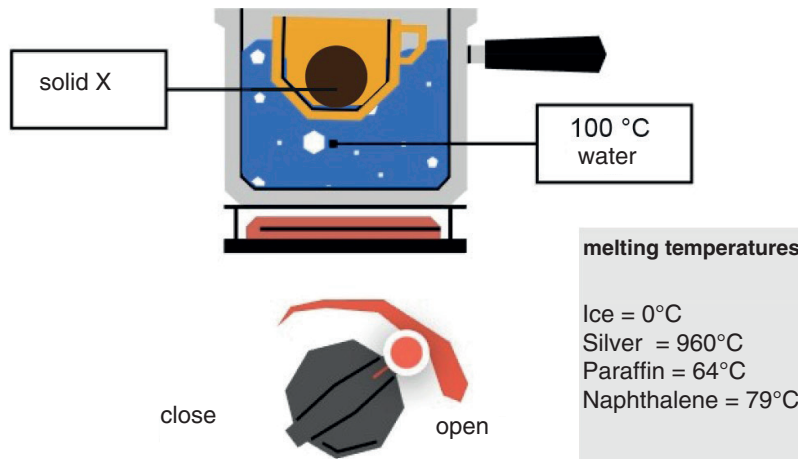
- A) 65 N B) 66 N C) 67 N D) 68 N



Brothers James and Robert leave their homes to go to school at the same time. They follow different routes cycling but they arrive at school at the same time.

Which of the following statements about James and Robert's journeys from home to school is false?

- A) James' has a longer route than Robert.
B) Robert has a higher speed than James.
C) The displacements of James and Robert are equal.
D) James has a higher speed than Robert.



In the experiment set above, the water in the pot is heated until it reaches boiling temperature. Then a cup is put in the water so that other solids can be melted in it. Which of the following solids can be melted in the cup?

- A) Ice only
- B) Paraffin and naphthalene
- C) Ice, naphthalene and paraffin
- D) all



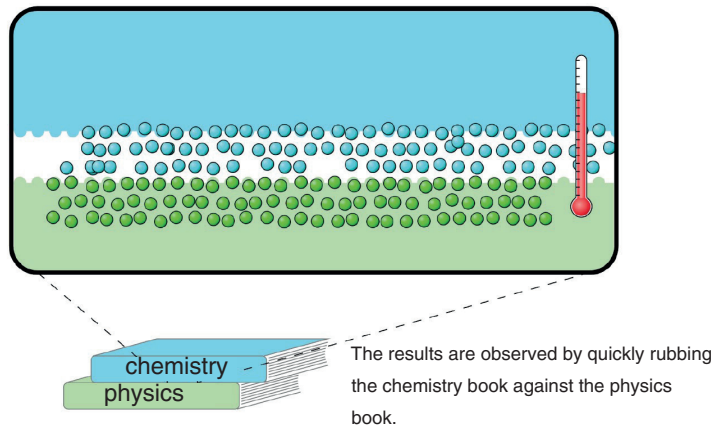
Experiment materials: a neutral sweater and a neutral balloon.

Neutral objects are rubbed against each other for a while

Which of the statements given below is/are correct about the third stage in the electrification experiment above?

- I. If the balloon is released slightly away from the sweater, the sweater will pull the balloon back up.
- II. The sweater and the balloon are charged with the same load.
- III. If the balloon is brought close to another negatively charged balloon, the two balloons repel each other.

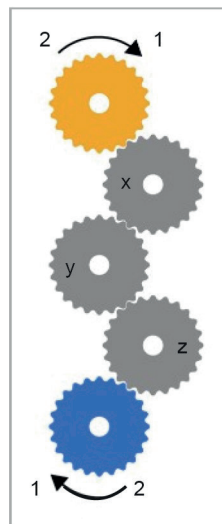
- A) I only
- B) III only
- C) I and III
- D) I, II and III



Henry, who wants to investigate the effect of friction on objects, sets up the experiment above.

Which of the following is not among Henry's conclusions?

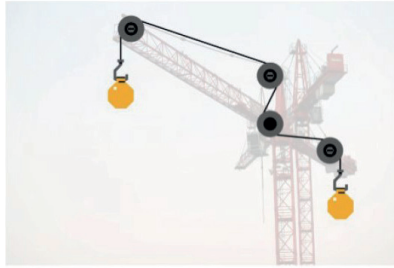
- A) Mechanical energy is converted into heat energy by friction.
- B) Friction between objects increases the temperature.
- C) Some particles break away from rubbing objects.
- D) Friction causes the kinetic energy of the particles of matter to decrease.



Julia constructs the setup above using identical gear wheels. He wants the blue wheel to rotate in the same direction with the yellow wheel but faster than it.

According to this, which change should Julia make in her setup?

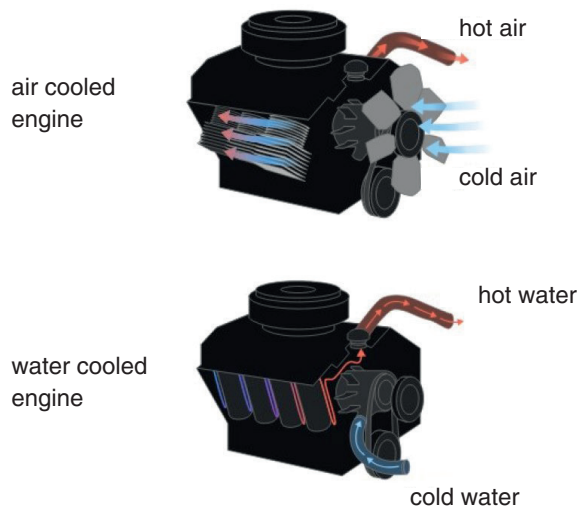
- A) The wheels x, y and z should be removed from the mechanism, the blue wheel and the yellow wheel should be brought into contact with each other.
- B) Instead of wheel z, a wheel with fewer cogs (gears) should be placed.
- C) Wheel y should be removed from the setup, and wheels x and z should be brought into contact with each other.
- D) The number of cogs (gears) of the blue wheel should be reduced.



Tower cranes are essential for moving heavy goods, materials or tools around a site. They're great for speeding up construction, saving time and manpower. Tower cranes are impressive works of engineering. Their height can reach up to 75 metres and they can lift up to 20 tons.

Which of the following statements is false?

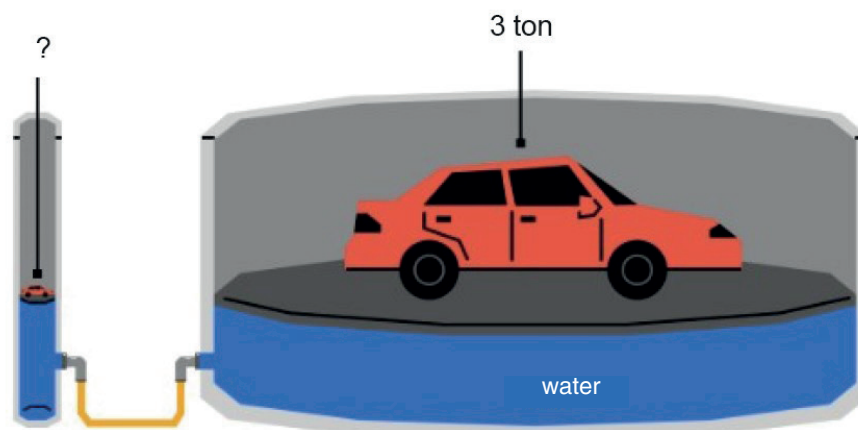
- A) A hydraulic system provides the power of a tower crane and an electric motor provides the pressure.
 - B) The weight lifting capacity at the far end of a tower crane is called the maximum weight capacity.
 - C) The strongest point of a tower crane is the furthest from the center of gravity of the pulley system.
 - D) Pulley and lever systems are used in tower cranes.
-



Car engines heat up very quickly, so engines have cooling systems. Cooling systems are based on heat transfer. The heat generated in the engine is transferred to the cooling system by the transfer method. While air-cooled engine systems were used in the early days, liquid-cooled engine systems are more common today.

Which property of matter has come forward in the development of cooling systems in engines?

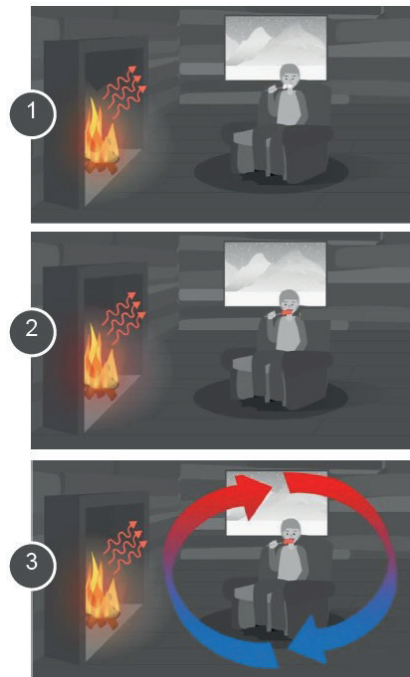
- A) Physical state (solid, liquid, and gas)
- B) Density
- C) The heat of change of state
- D) Specific heat



Brama found out that there is an inverse relationship between the forces applied to the pistons and the surface areas of the pistons in the hydraulic press system he developed.

In the hydraulic press system above, where the large piston is 300 times larger than the small piston, what is the mass of the toy car that can balance a car of 3 tons?

- A) 1 Kg
- B) 3 Kg
- C) 10 Kg
- D) 30 Kg



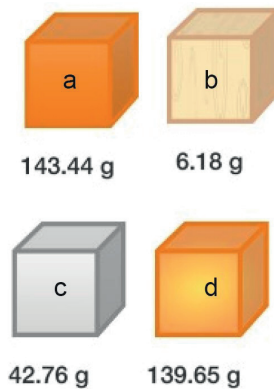
The flames in the fireplace are warming Michel.

Hot sausage burning Michel's mouth

Heating of the room with air circulation.

Match the patterns of heat dissipation with the appropriate visuals?

- A) 1: conduction, 2: convection, 3: radiation
- B) 1: radiation, 2: convection, 3: conduction
- C) 1: radiation, 2: conduction, 3: convection
- D) 1: convection, 2: conduction, 3: radiation

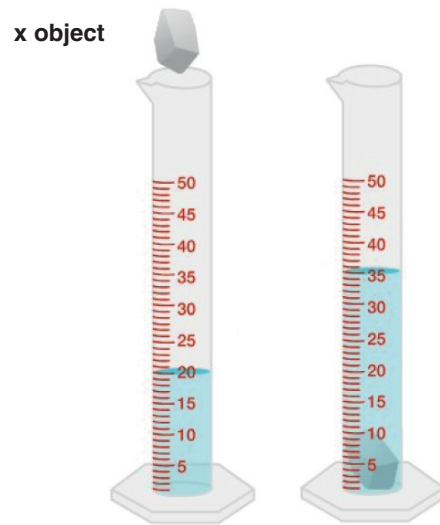


The cubes in the figure above all have the same size. (1 cm x 1 cm x 1 cm)

They are made of different materials so they have different weights as given in the figure.

Which of the following is the correct sorting of the densities of these materials?

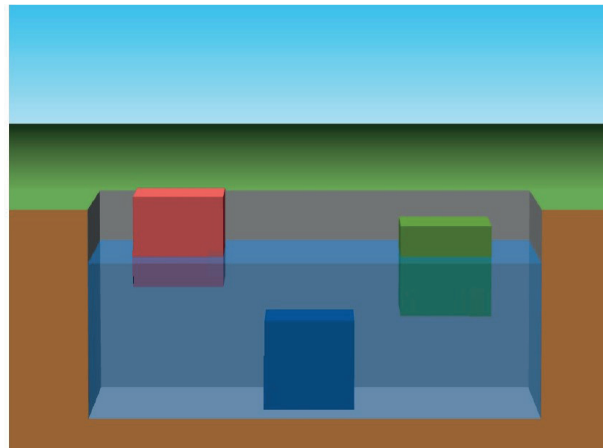
- A) $a > b > c > d$
- B) $a > d > c > b$
- C) $b > c > d > a$
- D) $b > c > a > d$



Putting the object x into the graduated cylinder containing 20 millilitres of water changes the level of the water as in the figure.

If the mass of object X is 30 grams, what is its density?

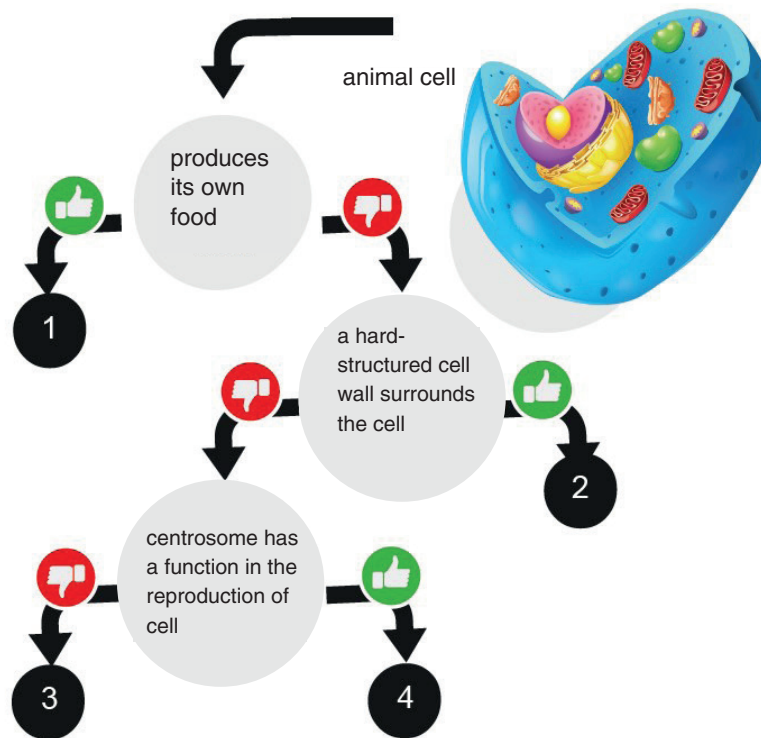
- A) 2 g/cm^3
- B) 450 litres
- C) 2 g/cm
- D) 450 grams



Yellow, blue and green cubes with equal volumes are in balance in water as in the figure.

Which of the following statements about the cubes is false?

- A) The densities of the red and green cubes are less than the density of water.
- B) The density of the blue cube is equal to or greater than that of water.
- C) The heaviest cube is the blue one, and the lightest is the red one.
- D) The cube with the greatest mass has the least density.



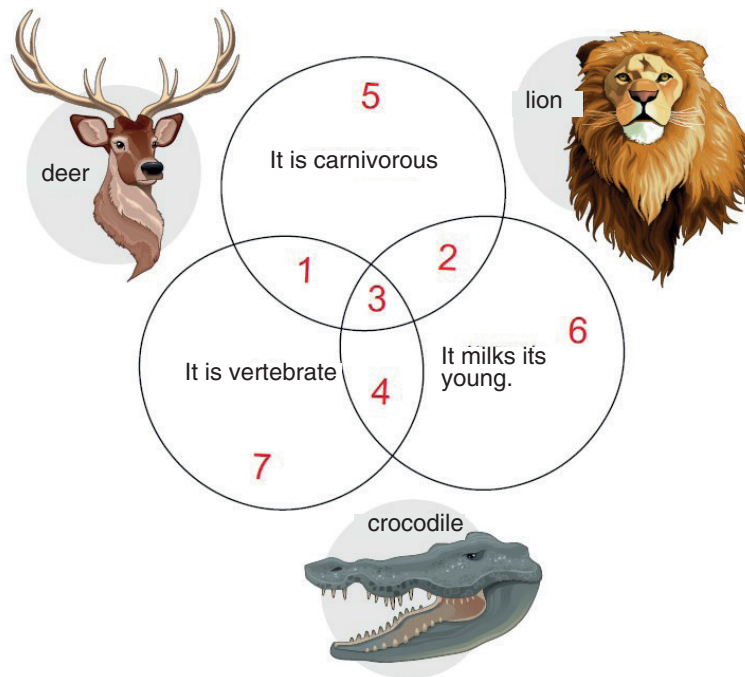
When the flow chart with (yes [thumbs up], no [thumbs down]) is followed, which of the following numbers identifies an animal cell in terms of its properties?

A) 4

B) 3

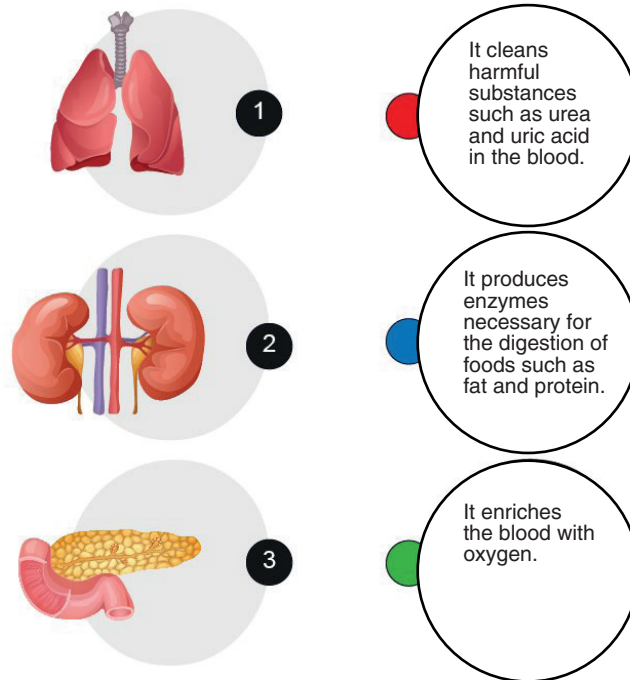
C) 2

D) 1

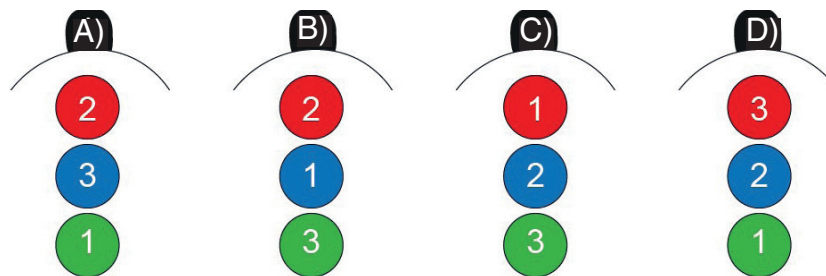


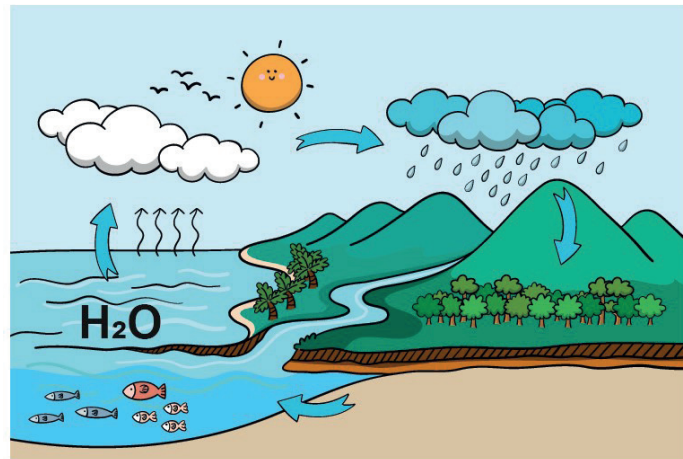
Find the correct group for the animals above.

- A) Crocodile:1, lion: 3, deer: 44
- B) Crocodile:1, lion: 2, deer: 2
- C) Crocodile:3, lion: 3, deer: 5
- D) Crocodile:1, lion: 3, deer: 2



Match the organs in our body according to the tasks they perform.





The diagram above shows the water cycle.

How many of the following statements are incorrect?

- Evaporation increases the amount of water in the atmosphere.
- Condensation reduces the amount of water on the ground.
- The water resources on earth are only the seas.
- During the water cycle, water can be observed as solid, liquid, and gaseous

A) 1

B) 2

C) 3

D) 4