

A bus moves at a constant speed in a straight road. Which of the following scientific explanations is true?

- a. An unbalanced force keeps the bus moving.
- b. No forces act on the bus as it moves.
- c. The forces of the bus's engine balance the force of friction opposing it.
- d. The friction exerted by the road is greater than the forces of the bus's engine.

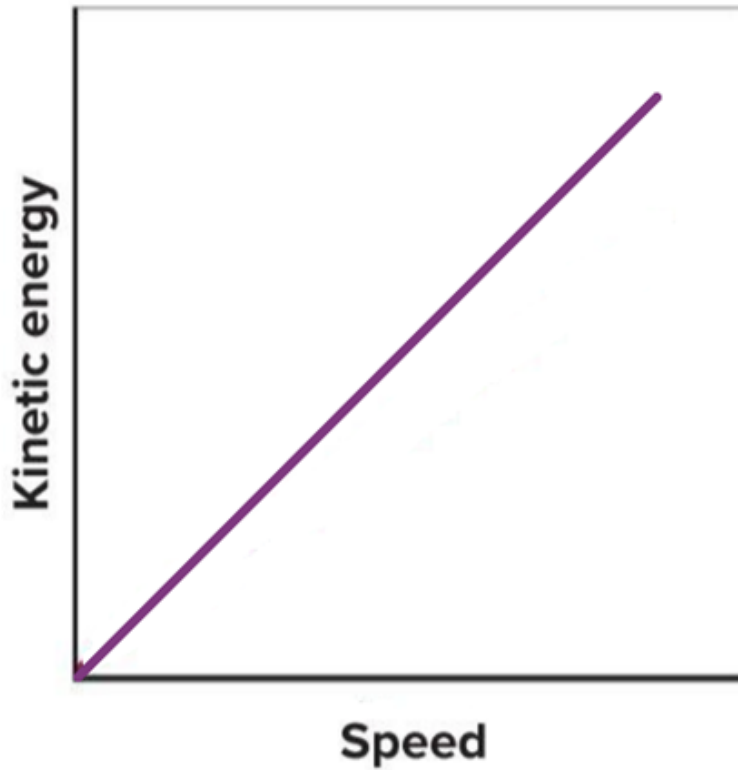
A bus traveled 150 km from its starting point in 3 hours. If the bus continues at the same average speed for another 2 hours, what will be the total distance traveled by the bus from its starting point?

- a. 30 km
- b. 100 km
- c. 150 km
- d. 250 km

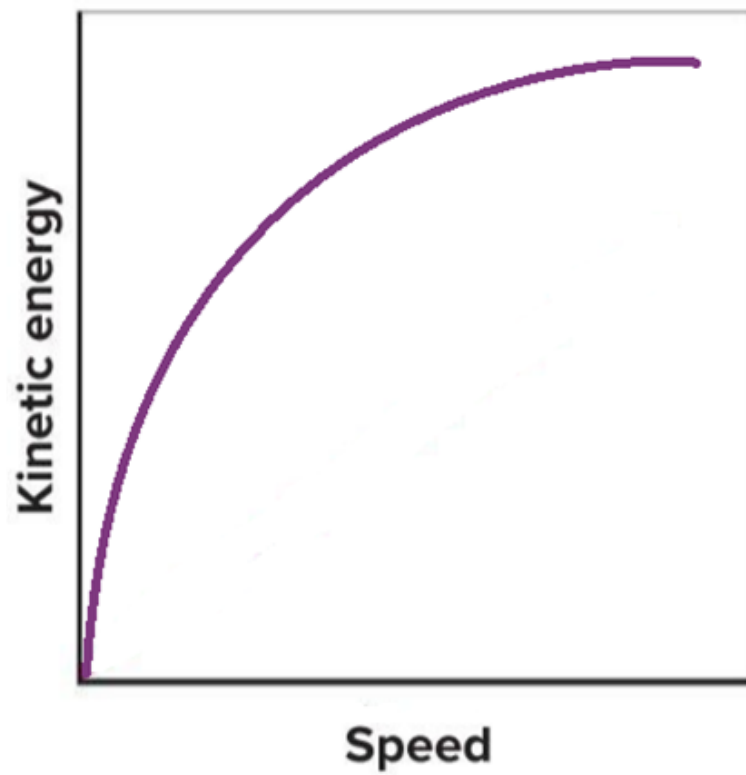
The location of an object relative to a reference point is referring to the _____ of that object.

- a. position
- b. motion
- c. displacement
- d. speed

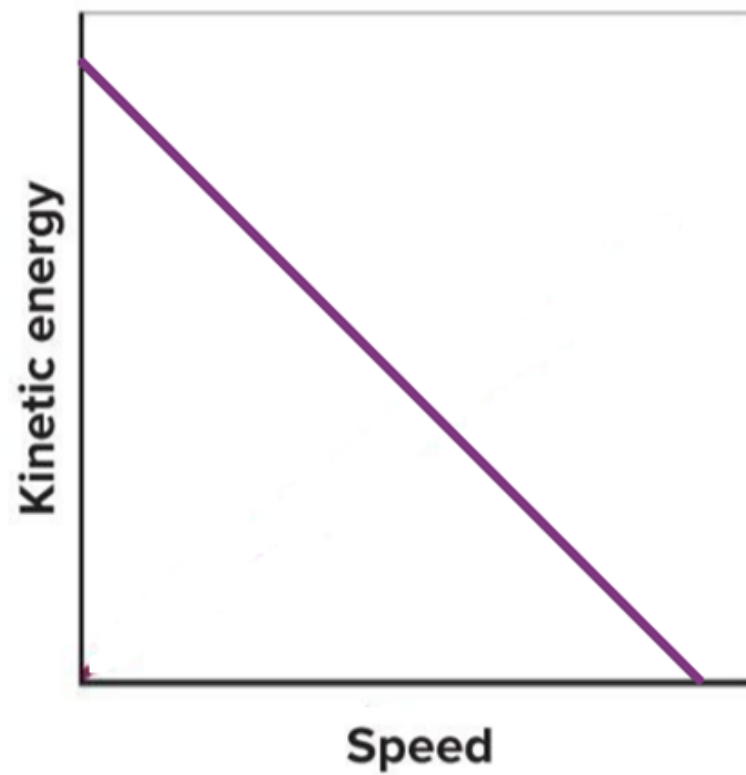
Which of the following graphs correctly shows the relationship between the speed and kinetic energy of an object?



a.



b.

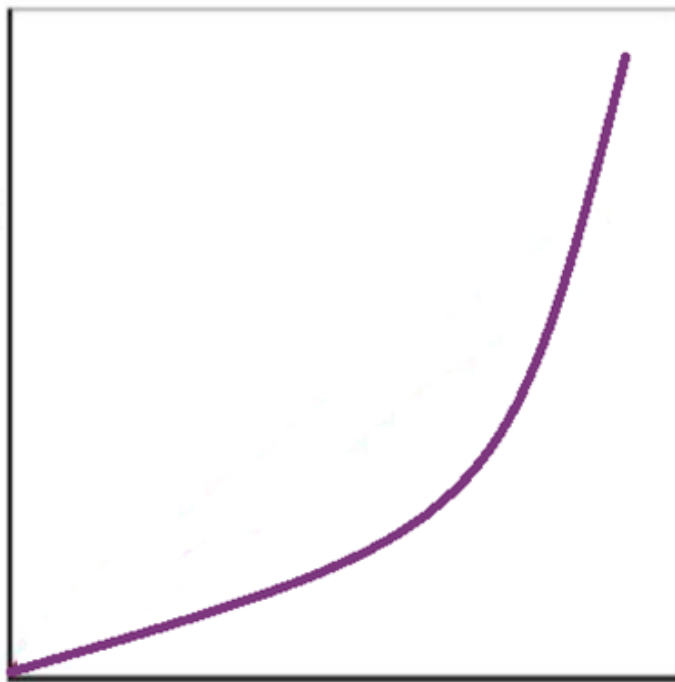


c.

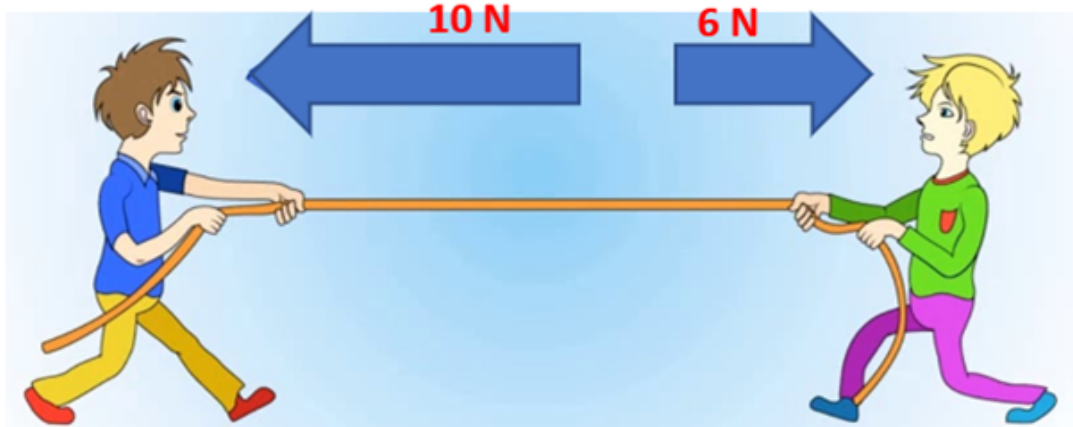
Kinetic energy

Speed

d.



Two people are pulling a rope in opposite directions with forces 10 N to the left and 6 N to the right. Which of the following statements best describes the forces acting on the rope?



- a. The forces are balanced, with a net force of 4 N acting on the rope to the right.
- b. The forces are balanced with a net force of 16 N acting on the rope to the left.
- c. The forces are unbalanced with a net force of 4 N acting on the rope to the left.
- d. The forces are unbalanced with a net force of 16 N acting on the rope to the right.

The invisible region around a charged object where it applies an electric force on other objects is _____.

- a. a magnetic field
- b. an electric field
- c. a magnetic domain
- d. an electric charge

A force of 250 N is applied to an object, giving it an acceleration of 5 m/s². What is the mass of the object?

- a. 0.02 kg
- b. 50 kg
- c. 255 kg
- d. 1250 kg

What is the weight of an apple of mass 0.15 kg falling freely towards the floor, if the gravitational acceleration of the apple is 9.8 m/s^2 ?

a. 0.015 N

b. 0.147 N

c. 1.47 N

d. 65.33 N

If you break a magnet into pieces, each piece will have:

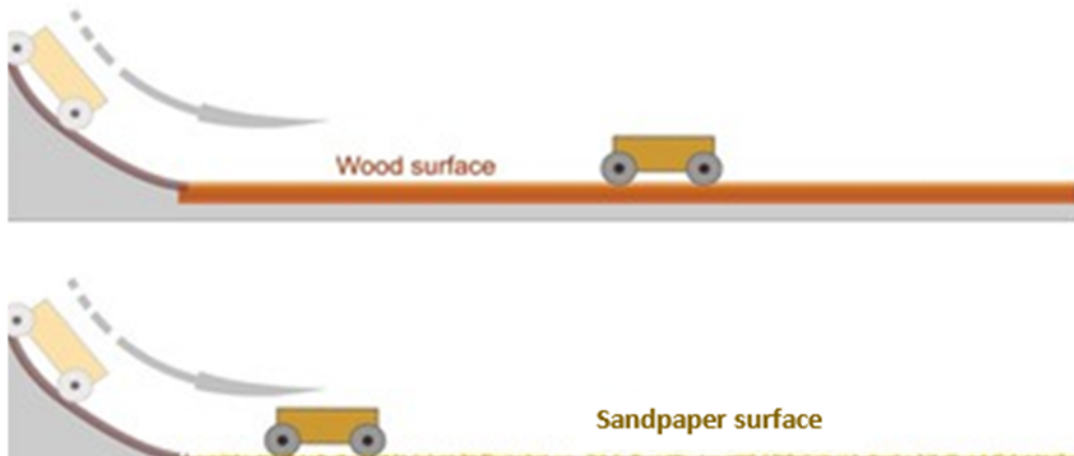
a. a north pole only

b. a south pole only

c. a north pole and a south pole

d. no pole

Why is there a greater force of friction between the cart tyres and sandpaper surface than between the cart tyres and the wooden surface?



- a. because the sandpaper surface is rougher and has more dips and bumps than the wooden surface
- b. because the sandpaper surface is smoother and has more dips and bumps than the wooden surface
- c. because the wooden surface is rougher and has more dips and bumps than the sandpaper surface
- d. because the wooden surface is smoother and has more dips and bumps than the sandpaper surface

Which of the following examples demonstrates a non-contact force?

- a. two kids pushing each other
- b. a cat pulling a string
- c. rain falling from the sky
- d. a mother pulling her children into a wagon

A student drops two balls of identical size from the same height into a container of sand. One ball has a mass of 2 g and the other ball has a mass of 8 g. Which of the following statements correctly describes the depth of the craters formed in the sand?

- a. Both the craters will be of the same size as the balls are of identical size.
- b. The ball with the least mass will create the shallowest crater because it has more kinetic energy.
- c. The ball with the greatest mass will create the shallowest crater because more energy will be transferred to the sand.
- d. The ball with the greatest mass will create the deepest crater because more energy will be transferred to the sand.

What happens to the kinetic energy of an object moving with constant velocity when the mass of the object is doubled?

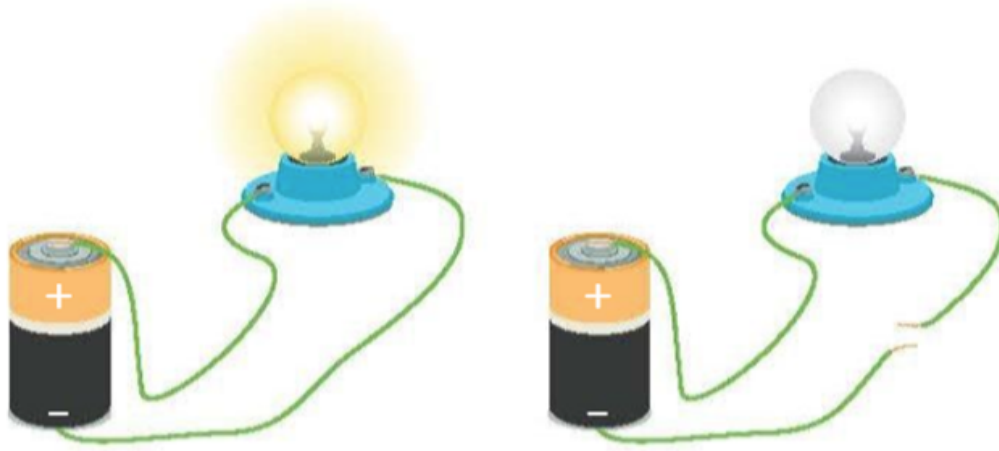
- a. The kinetic energy does not change.
- b. The kinetic energy is doubled.
- c. The kinetic energy is halved.
- d. The kinetic energy increases by a factor of four.

Two empty coffee mugs of the same mass are kept on tables P and Q. Which coffee mug has more gravitational potential energy and why?



- a. The coffee mug on table P has more gravitational potential energy because it is farther away from surface of Earth.
- b. The coffee mug on table Q has more gravitational potential energy because it is closer to surface of Earth.
- c. Both coffee mugs have the same amount of gravitational potential energy because they have the same mass.
- d. Both coffee mugs have the same gravitational potential energy because they are not moving.

A 6.0 V battery is connected to a light bulb with some wires. One of the wires is cut, breaking the circuit.



- a. 0.0 V because it is an open circuit and no electric energy flows through the circuit.
- b. 6.0 V because it is an open circuit and no electric energy flows through the circuit.
- c. 0.0 V because it is a closed circuit and no electric energy flows through the circuit.
- d. 6.0 V because it is a closed circuit and no electric energy flows through the circuit.

In which of these following situations is work being done and why?

a.

Situation	Reason
lifting up a book from a table	book moves in the direction of applied force

b.

Situation	Reason
pushing a wall very hard but it did not move	have put extreme effort to push it

c.

Situation	Reason
a man holding a heavy box on his head and standing still	the box is very heavy, a lot of effort is taken to hold it on top of the head

d.

Situation	Reason
studying science by reading textbook	a lot of effort is taken to think and understand the concepts

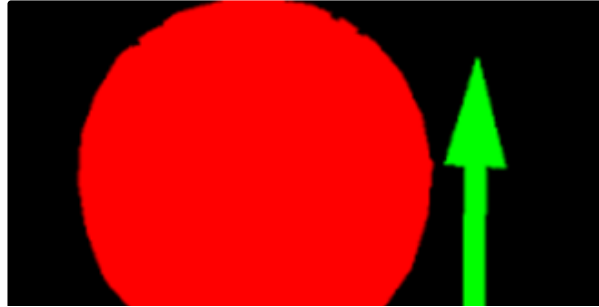
Q.17: G7_Elite_EOT3_2021-22_V1

Mark(s): 5/5

What are the factors affecting the gravitational potential energy of an object?

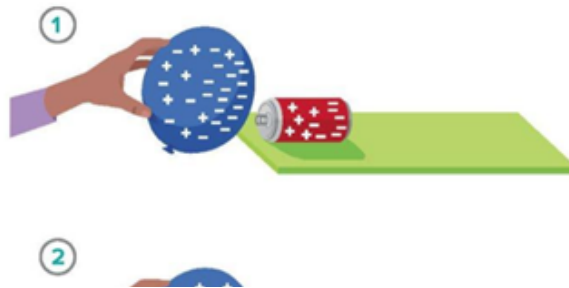
- a. mass and distance from Earth's surface
- b. mass and speed
- c. speed and distance from Earth's surface
- d. mass only

When air rushes out of a balloon, the balloon flies up. Salim draws a free body diagram of this scenario and labels the forces acting on the balloon and air coming out of the balloon. Salim says that this is an example of Newton's third law of motion. Khalid says the diagram is an example of Newton's first law of motion. By referring to the free-body force diagram, state and explain who is correct.



- a. Khalid is correct because the two forces acting on the balloon are balanced.
- b. Khalid is correct because both the forces are acting on different objects.
- c. Salim is correct because both the forces are acting on different objects.
- d. Salim is correct because the two forces acting on the balloon are balanced.

In the figure below, a negatively charged balloon is brought near empty soda cans. The negative charges in the cans are pushed away from the balloon. As a result, negative charges accumulate in the can farther from the balloon while positive charges accumulate in the can closer to the balloon. This method of charging an object without touching it is called:



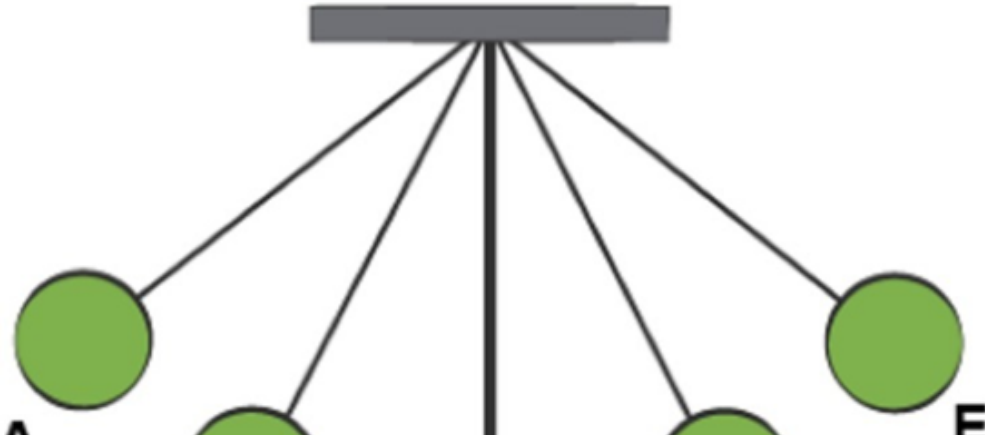
a. induction

b. conduction

c. radiation

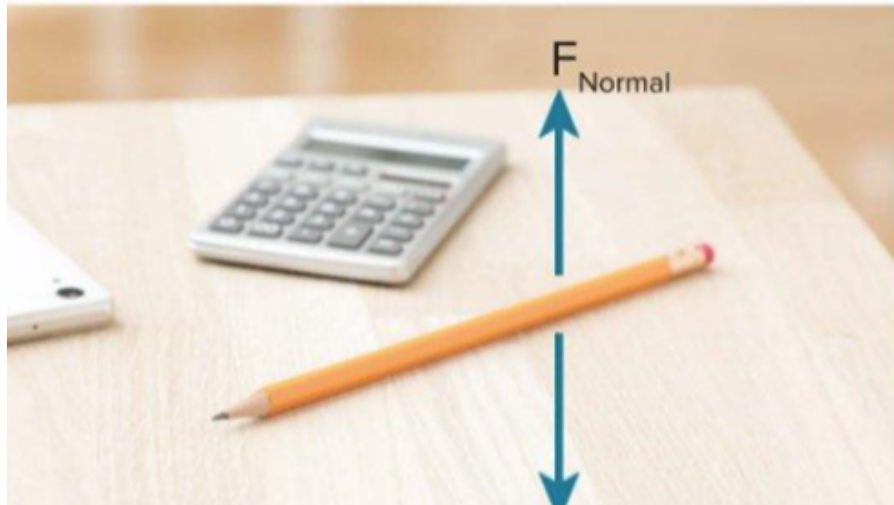
d. convection

As a pendulum swings back and forth, the kinetic energy and potential energy of the pendulum bob keep changing. Which of the following statement(s) is/are true about the pendulum bob as it swings?



- a. I only
- b. II only
- c. II&III only
- d. I and III only

What is the normal force exerted by the table on a pencil of weight 0.06 N resting on the table?



- a. 0.06 N acting downward on the pencil perpendicular to the table
- b. 0.06 N acting upward on the pencil perpendicular to the table
- c. 0.006 N acting downward on the pencil perpendicular to the table
- d. 0.006 N acting upward on the pencil perpendicular to the table

Two magnetic field models X and Y are given below.



- a. X, because the magnets are attracting
- b. Y, because the magnets are repelling
- c. X, because the magnets are repelling
- d. Y, because the magnets are attracting

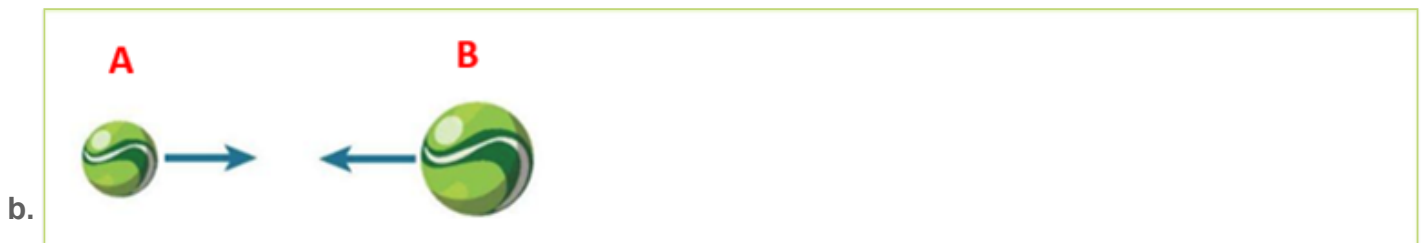
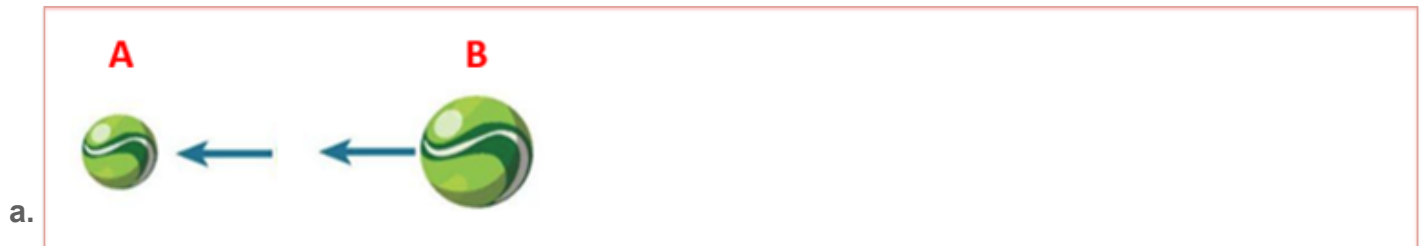
An experiment was carried out by a student to determine the strength of an electric field. He observed the interactions between two oppositely charged objects and recorded his findings as follows:

- I. As the distance between charged objects increases, the electric force between them decreases.
- II. As the amount of charge on either object increases, the electric force between them increases.
- III. Oppositely charged objects will attract each other.

Which of the above statements about the forces between charged objects is/are true?

- a. I only
- b. II only
- c. III only
- d. I, II & III

Which of the following models correctly represents the size and direction of the force of gravity?



If an iron nail is placed close to a magnet, what will happen to the nail's magnetic domains?

- a. The magnetic domains of the nail will be aligned, and the nail repels objects made of magnetic material.
- b. The magnetic domains of the nail will be aligned, and the nail attracts objects made of magnetic material.
- c. The magnetic domains of the nail will fall out of alignment, and the nail repels objects made of magnetic material.
- d. The magnetic domains of the nail will fall out of alignment, and the nail attracts objects made of magnetic material.