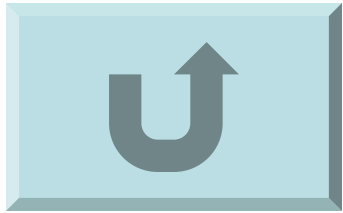


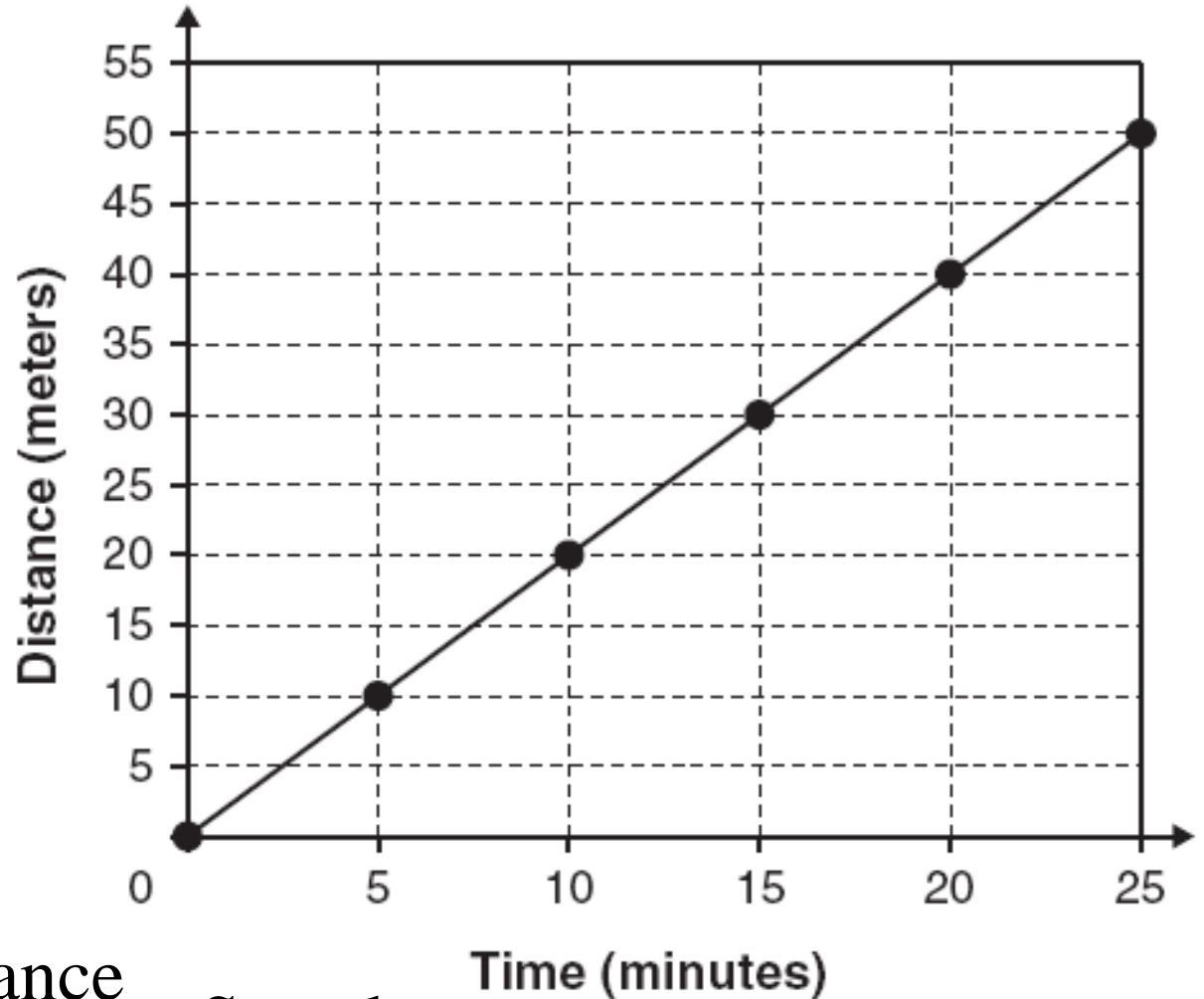
STAR TEST REVIEW

8th Grade Physical Science

Forces & Motion	Density & Buoyancy	Chemistry	Astronomy
<u>1</u> <u>2</u>	<u>15</u>	<u>22</u> <u>23</u>	<u>41</u>
<u>3</u> <u>4</u>	<u>16</u>	<u>24</u> <u>25</u>	<u>42</u>
<u>5</u> <u>6</u>	<u>17</u>	<u>26</u> <u>27</u>	<u>43</u>
<u>7</u> <u>8</u>	<u>18</u>	<u>28</u> <u>29</u>	<u>44</u>
<u>9</u> <u>10</u>	<u>19</u>	<u>30</u> <u>31</u>	<u>45</u>
<u>11</u> <u>12</u>	<u>20</u>	<u>32</u> <u>33</u>	
<u>13</u> <u>14</u>	<u>21</u>	<u>34</u> <u>35</u>	
		<u>36</u> <u>37</u>	
		<u>38</u> <u>39</u>	
		<u>40</u>	



Object Movement



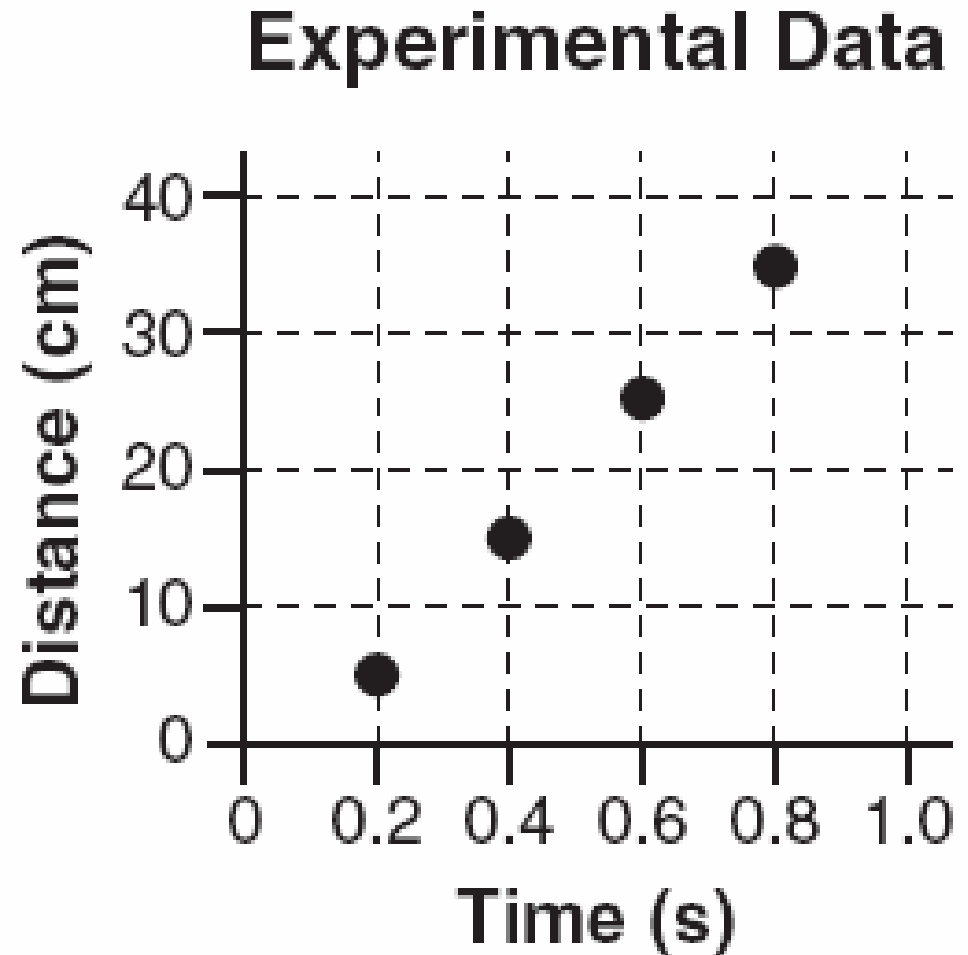
$$\text{Slope} = \frac{\Delta \text{rise}}{\Delta \text{run}} = \frac{\Delta \text{distance}}{\Delta \text{time}} = \text{Speed}$$

$$\frac{\Delta \text{distance}}{\Delta \text{time}} = \frac{20 \text{ m}}{10 \text{ min}} = \mathbf{2 \frac{m}{min}}$$

ie average speed of the object?

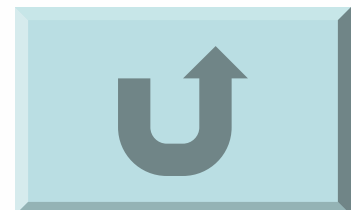
Experimental Data

Distance	Time
5 cm	0.2 s
15 cm	0.4 s
25 cm	0.6 s
35 cm	0.8 s



Average Speed

The slope of the graph represents what characteristic of an object?



3

A spring scale is pulled downward and readings are recorded.

Data Table

Distance Pulled	Spring Scale Reading
1.0 cm	4 N
1.5 cm	6 N
2.0 cm	8 N
2.5 cm	10 N



If the spring is pulled 3.5 cm, the spring scale should read **14 N**

An athlete can run 9 kilometers in 1 hour. If the athlete runs at that same average speed for 30 minutes, how far will the athlete travel?

4.5 km



How much time is required for a bicycle to travel a distance of 100 m at an average speed of 2 m/s?

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{100m}{2m/s} = 50 \text{ seconds}$$



Which of the following represents the velocity of a moving object?

A 40

B 40 m north

C 40 m/s

D 40 m/s north



Which characteristic of motion could change without changing the velocity of an object?

A the speed

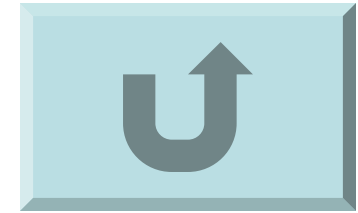
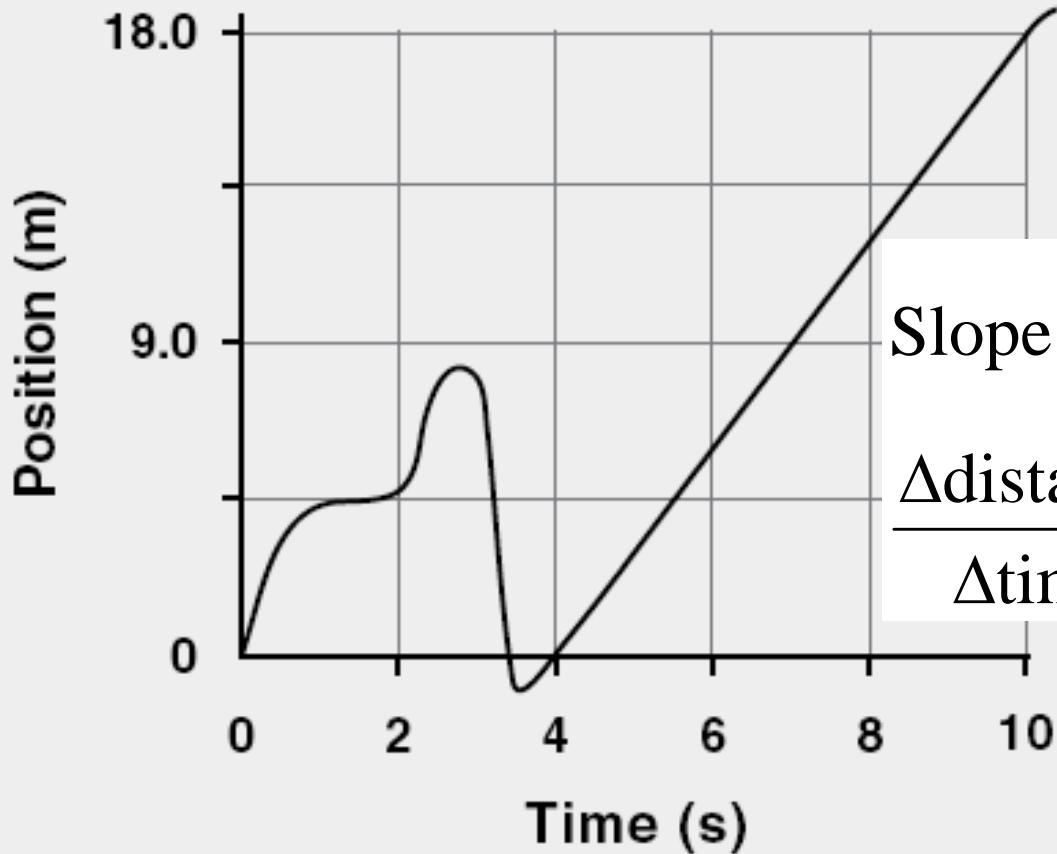
B the position

C the direction

D the acceleration



Position vs. Time

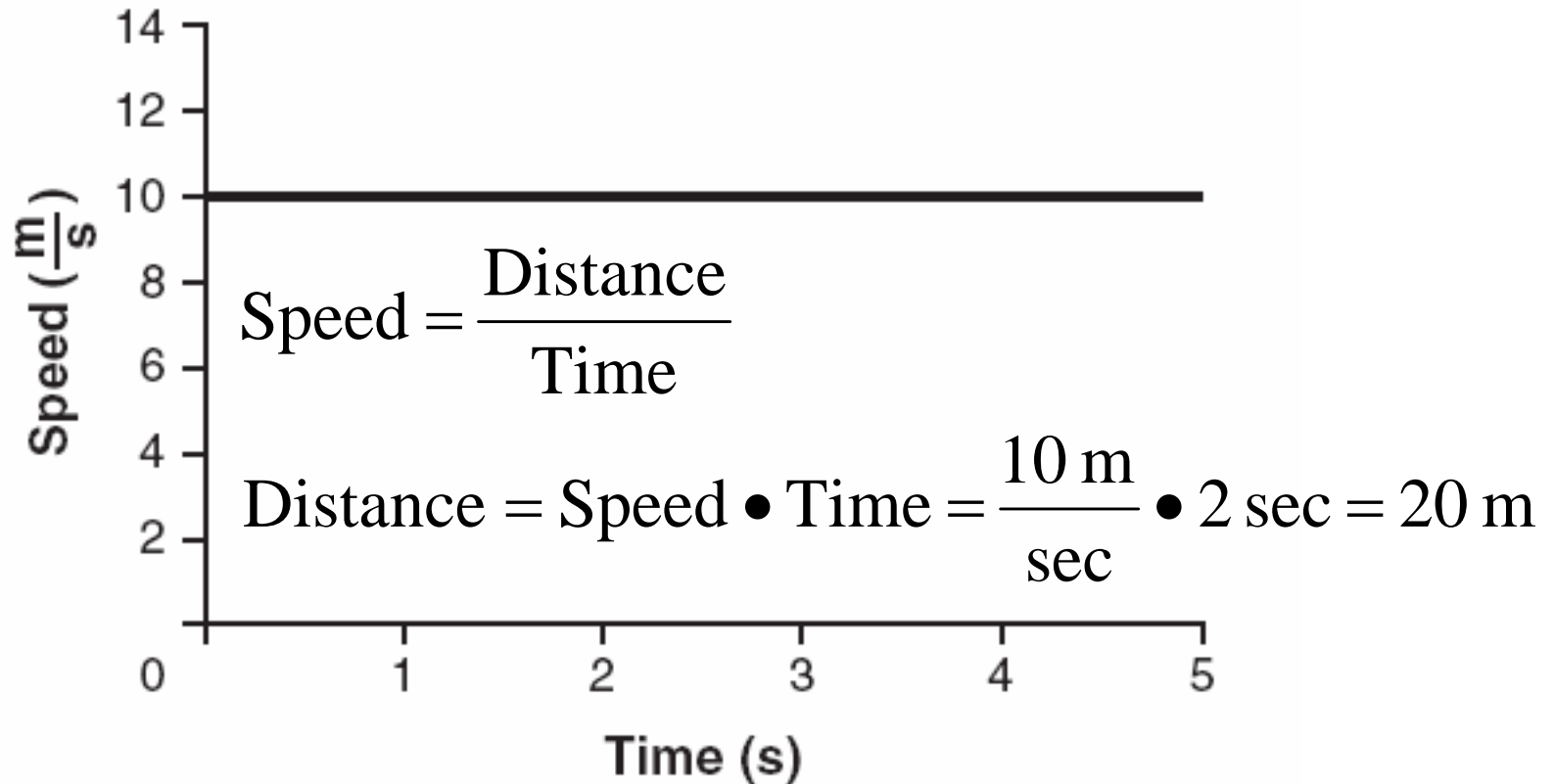


$$\text{Slope} = \frac{\Delta \text{rise}}{\Delta \text{run}} = \frac{\Delta \text{distance}}{\Delta \text{time}} = \text{Speed}$$

$$\frac{\Delta \text{distance}}{\Delta \text{time}} = \frac{18 \text{ m}}{6 \text{ sec}} = 3 \frac{\text{m}}{\text{sec}}$$

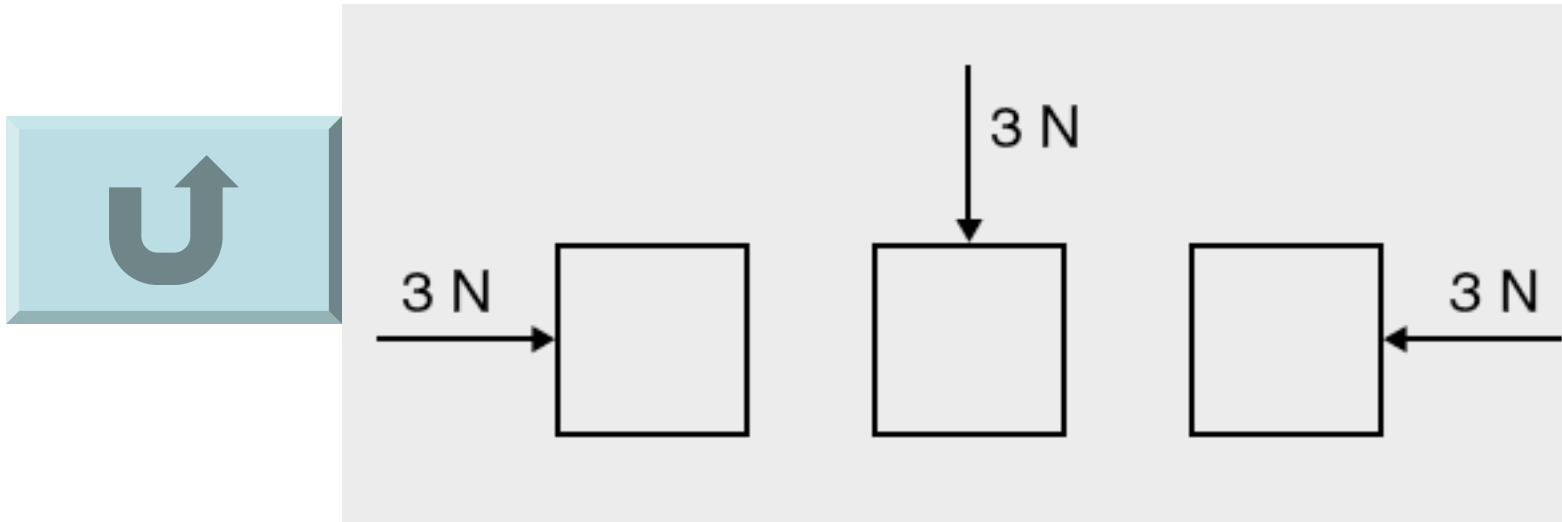
What is the speed of the object during the time interval from 4 seconds to 10 seconds?

The Speed of a Vehicle



How far did the vehicle travel during the first two seconds?





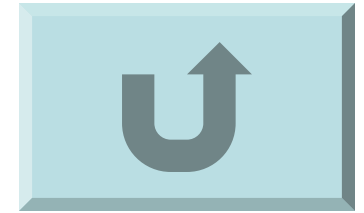
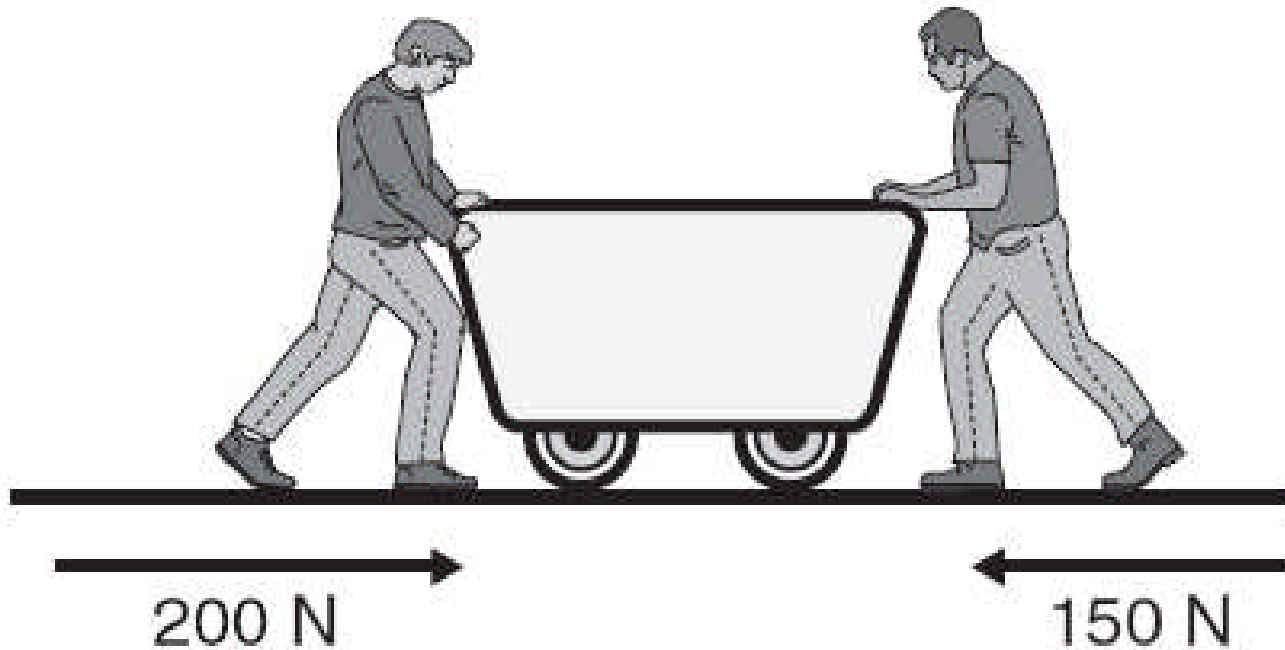
What can be concluded about these forces?

A They are the same because they point toward the objects.

B They are the same because they have the same magnitude.

C They are different because they have different magnitudes.

D They are different because they have different directions.



The cart will move as if it were acted on by a single force with a magnitude of 50 N.

A ball is dropped from the top of a tall building. As the ball falls, the upward force of air resistance becomes equal to the downward pull of gravity. When these two forces become equal in magnitude, the ball will

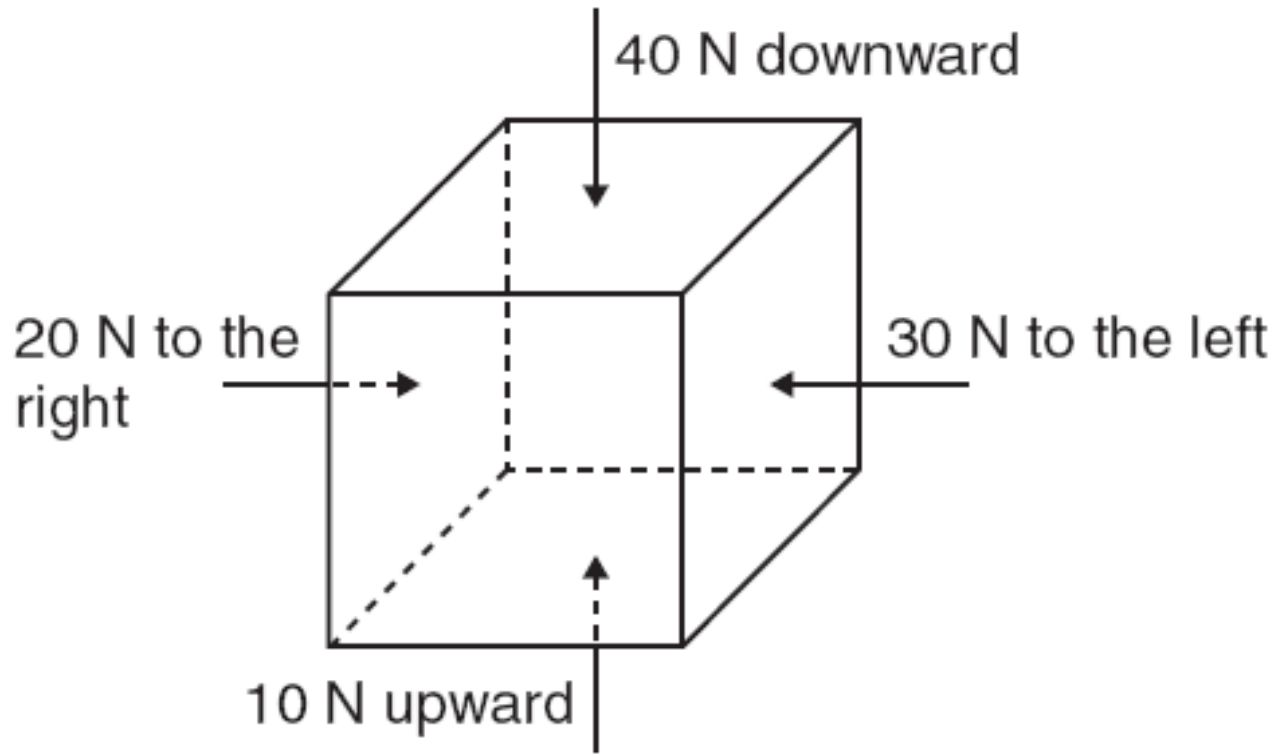
A flatten due to the forces.

B fall at a constant speed.

C continue to speed up.

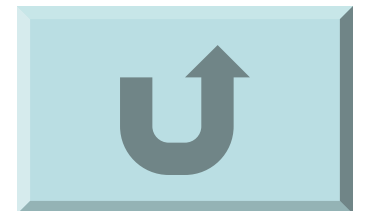
D slow to a stop.





This box will increase in speed

- A** downward and to the left.
- B** downward and to the right.
- C** upward and to the left.
- D** upward and to the right.



A force of 5 N is required to increase the speed of a box from a rate of 1 m/s to 3 m/s within 5 seconds along a level surface. What change would *most* likely require additional force to produce the same results?

A reduce the mass of the box



B increase the mass of the box

C make the surfaces of the box smooth

D make the surface of the floor smooth

What is the density of a 64-g iron cube that displaces 8 mL of water?

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}} = \frac{64 \text{ g}}{8 \text{ mL}} = \frac{8 \text{ g}}{\text{mL}}$$



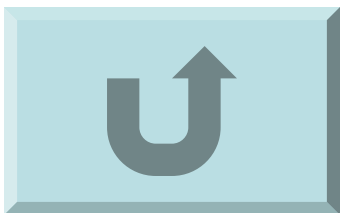
A piece of pine wood floats on the surface of a lake because the water exerts

A an upward force equal to the weight of the wood.

B a downward force equal to the weight of the wood.

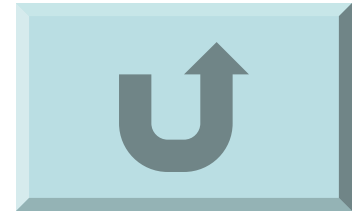
C an upward force equal to the weight of the displacement water.

D a downward force equal to the weight of the displacement water.



Physical Properties

Sample Number	Mass	Volume
1	89 g	10 mL
2	26 g	10 mL
3	24 g	100 mL
4	160 g	100 mL



$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$



Given that the density of water is 1 g/mL, which of the samples is *most* likely cork?

Red-clay bricks have a density of approximately 2000 kg/m³. Air has a density of 1 kg/m³. Which of the following has the lowest mass?

A 2 m³ of bricks

B 4 m³ of bricks

C 6,000 m³ of air

D 10,000 m³ of air

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

$$\text{Mass} = \text{Density} \bullet \text{Volume}$$



A student divides several cubes into two groups, based on whether or not each cube can float in water. What property is the student using to classify the cubes?

A weight

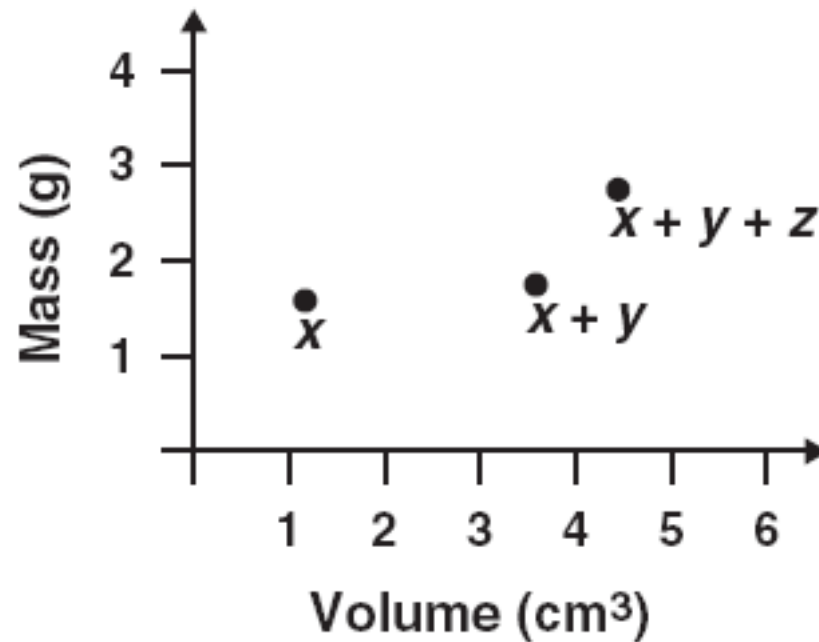
B density

C conductivity


D mass



Clay Transformation Graph



What is the *most* logical conclusion about the clay used in this investigation?

- A Lump z had the greatest mass.
- B Lump z had the lowest density.
-  C Lump y had the lowest density.
- D Lump y had the greatest mass.

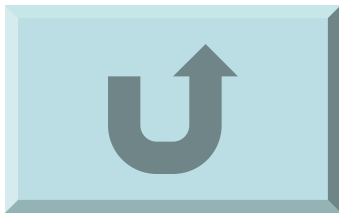


Wood Sample Densities

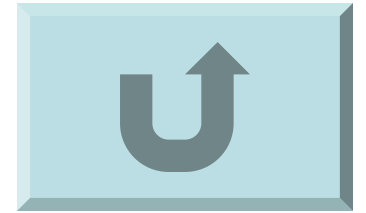
Type of Wood	Density ($\frac{\text{g}}{\text{cm}^3}$)
African Teakwood	0.98
Balsa	0.14
Cedar	0.55
Ironwood	1.23



Which wood will sink when placed in a fluid with a density of 1.14 g/cm^3 ?



Which of the following *best* describes an atom?



A protons and electrons grouped together in a random pattern

B protons and electrons grouped together in an alternating pattern

C a core of protons and neutrons surrounded by electrons

D a core of electrons and neutrons surrounded by protons

Which of the following is found farthest from the center of an atom?

A nucleus

B proton

C neutron

D electron



When magnesium (Mg) metal is burned in the presence of oxygen (O₂), magnesium oxide (MgO) is produced. The properties of magnesium oxide are different than the individual properties of magnesium and oxygen because magnesium oxide is

- A a solution.**
- B a mixture.**
- C a compound.**
- D an element.**



Within a substance, atoms that collide frequently and move independently of one another are *most* likely in a
A liquid.

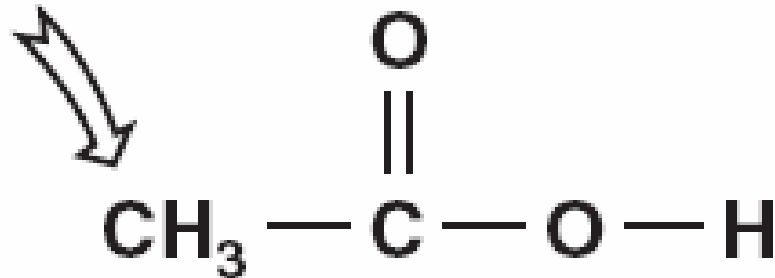
B solid.

C gas.

D crystal.



Acetic Acid
(Vinegar)



What is the name of the indicated atom in the acetic acid molecule shown above?



Carbon

Iron oxides, such as rust, form when iron metal reacts with oxygen in the air.

What are the chemical symbols for the two elements found in iron oxide?



Fe and O

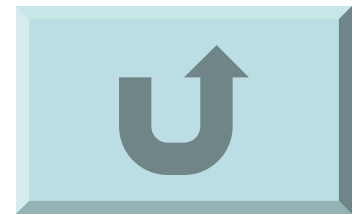
What do the elements sulfur (S), nitrogen (N), phosphorus (P), and bromine (Br) have in common?

A They are noble (inert) gases.

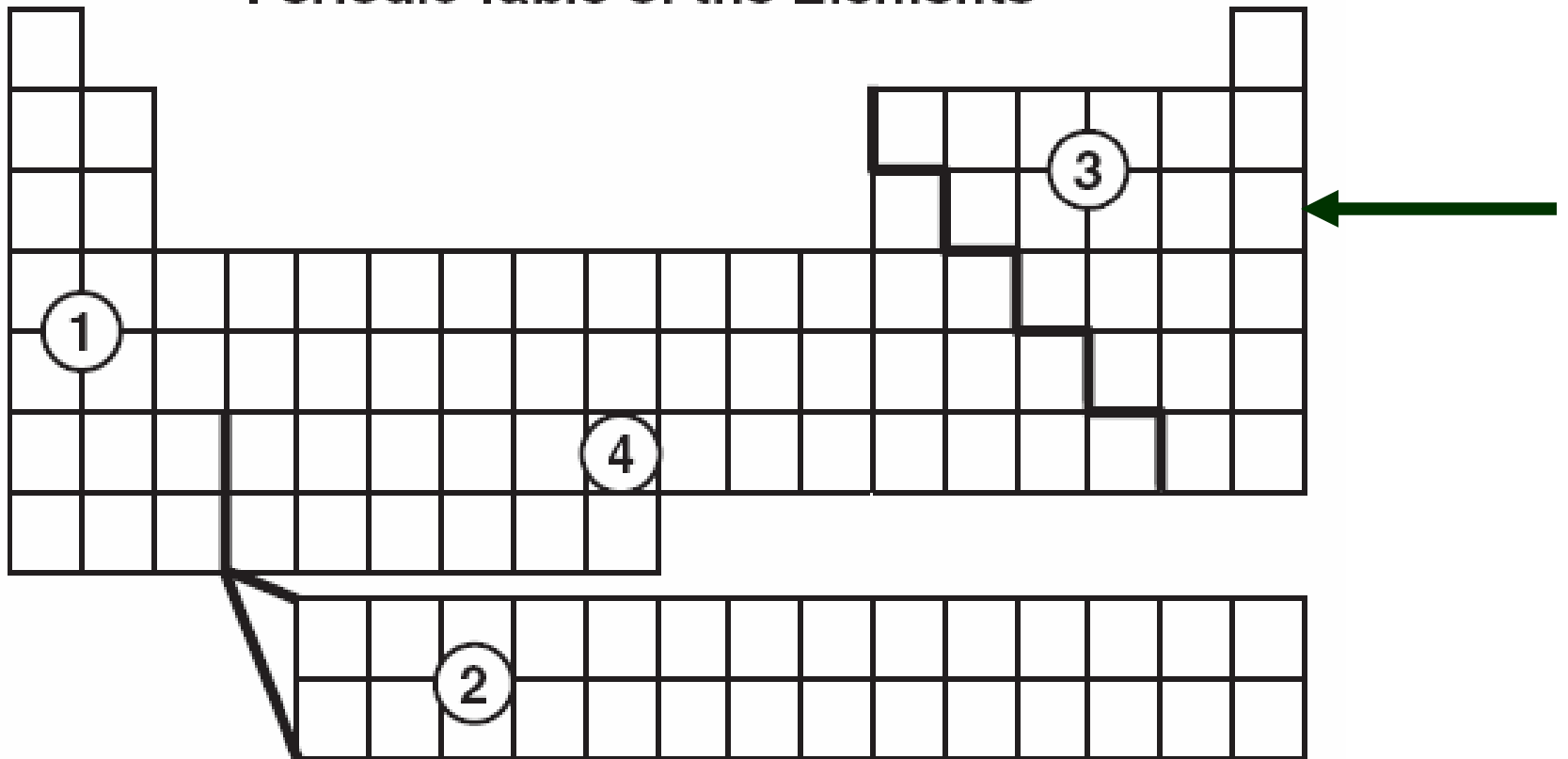
B They are nonmetals.

C They have the same thermal conductivity.

D They have the same number of protons.



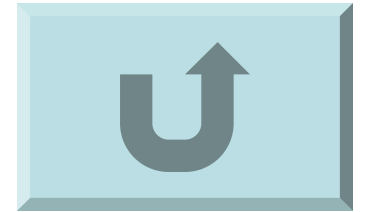
Periodic Table of the Elements



In which region of the table would nonmetals be found?



Isotope	Atomic Mass
Ca-40	40
Ca-42	42
Ca-43	43
Ca-44	44



What characteristic is different in each isotope?

- A** the position in the periodic table of the elements
- B** the net charge of the nucleus
- C** the mass of the protons in the nucleus
- D** the number of neutrons in the nucleus

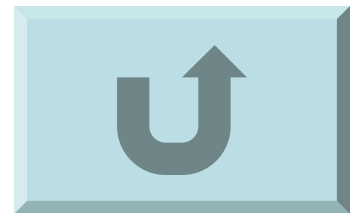
Which class of elements *best* conducts electricity?

A metals

B nonmetals

C semimetals

D noble (inert) gases



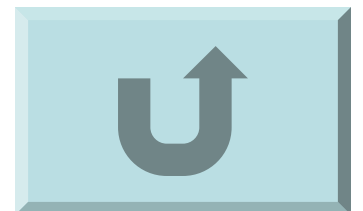
In a comparison of metals to nonmetals, metals tend to have

A lower melting points and greater conductivity than nonmetals.

B lower conductivity and lower density than nonmetals.

C higher density and lower melting points than nonmetals.

D greater conductivity and higher melting points than nonmetals.



Copper (Cu) reacts with oxygen (O) to form copper oxide (CuO). The properties of CuO are *most likely*

A different from copper or oxygen.

B similar to both copper and oxygen.

C similar only to copper.

D similar only to oxygen.



Chemical Reactions

1	$2\text{Na} + 2\text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$
2	$\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
3	$\text{Mg} + \text{Cl}_2 \rightarrow \text{MgCl}_2$
4	$\text{NaOH} + \text{MgCl}_2 \rightarrow \text{NaCl} + \text{MgOH}$



Which equation shows that the total mass during a chemical reaction stays the same?



Which of the following forms of energy is released or absorbed in *most* chemical reactions?

A light energy

B electrical energy

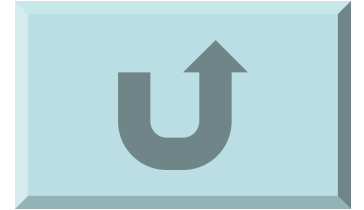
C sound energy

D heat energy



As a sample of water turns to ice,

A new molecules are formed.



B the mass of the sample is increased.

C the arrangement of the molecules changes.

D energy is absorbed by the molecules.

Body Fluid	pH	red litmus	blue litmus
Blood	7.4	turns blue	no change
Bile	8.2	turns blue	no change
Saliva	6.8	no change	turns red
Gastric Juice	1.7	no change	turns red

These data indicate that gastric juice is

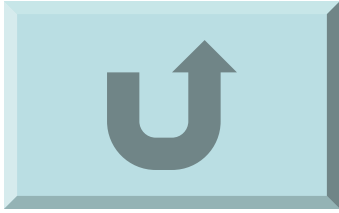
A very acidic.

B very basic.

C positively charged.

D negatively charged.





What characteristic of carbon (C) makes it essential to living organisms?

- A** Carbon forms crystal structures under certain conditions.
- B** Carbon can exist as a solid, liquid, or gas.
- C** Carbon bonds in many ways with itself to form chains.
- D** Carbon exists in radioactive forms.

Which of the following elements is *best* able to combine with itself and hydrogen (H) to form large molecules?

A sodium (Na)

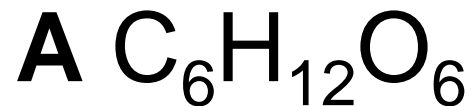
B lithium (Li)

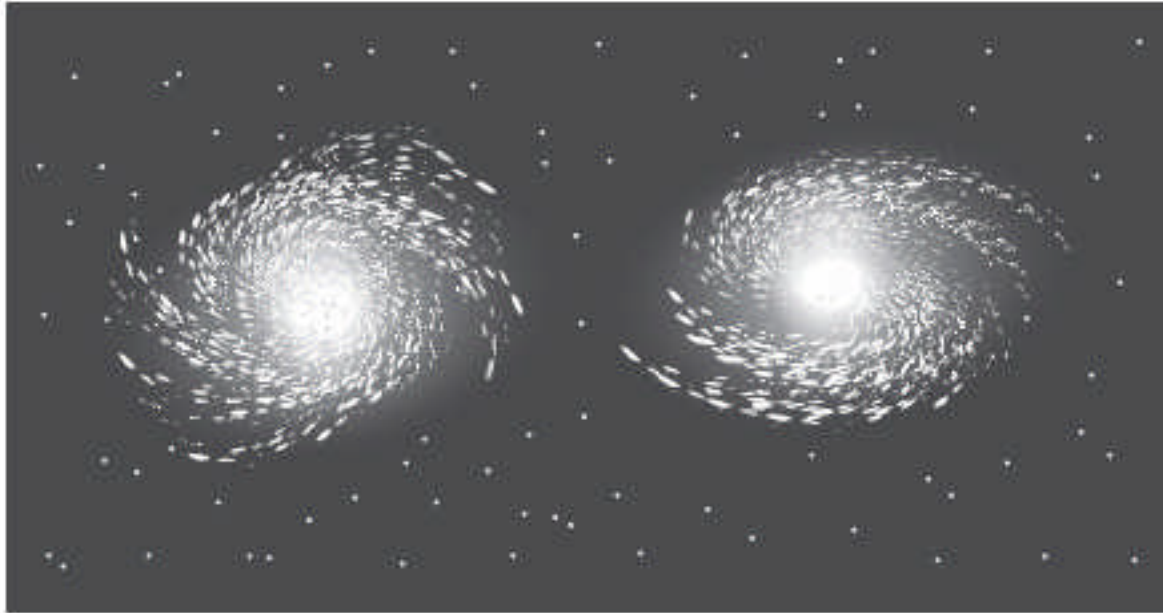
C sulfur (S)

D carbon (C)



Which of the following compounds is *most* likely to be part of living organisms?





The galaxies pictured above would *best* be classified as

- A** barred galaxies.
- B** spiral galaxies.
- C** irregular galaxies.
- D** symmetrical galaxies.



A galaxy is *best* described as a cluster of

A hundreds of stars.

B thousands of stars.

C millions of stars.

D billions of stars.



To express the distance between the Milky Way galaxy and other galaxies, the *most* appropriate unit of measurement is the

A meter.

B kilometer.

C light-year.

D astronomical unit.



Which of the following sets contains only objects that shine as a result of reflected light?

A moons, planets, and comets

B moons, comets, and stars

C planets, stars, and comets

D planets, stars, and moons



An object composed mainly of ice is orbiting the Sun in an elliptical path. This object is *most likely*

A a planet.

B an asteroid.

C a meteor.

D a comet.

