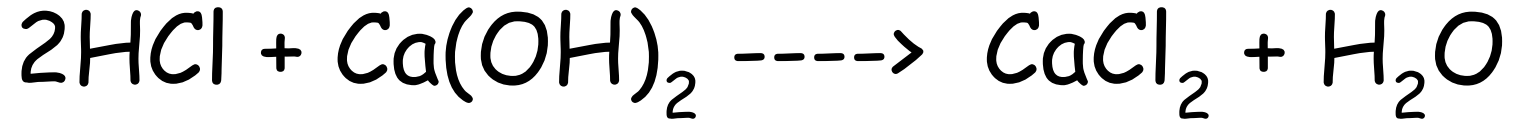


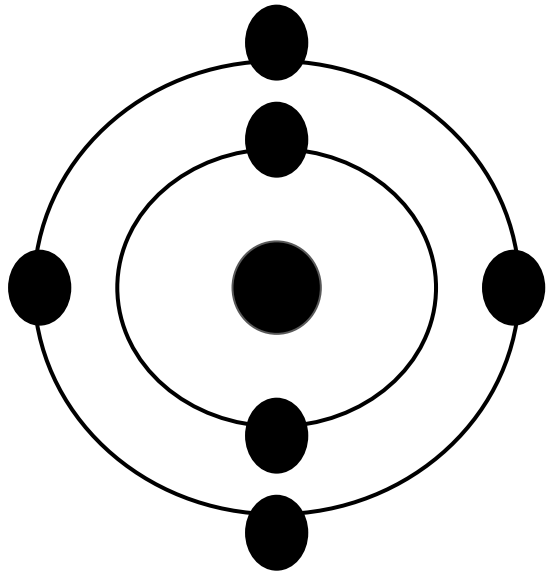
Chemistry and Physics Review



1. Write out the products
2. How many total elements are on the reactants side?
3. How many total atoms are on the product side?
4. Which of the following has 3 times as many atoms of Hydrogen on the product side:
 - a. H_6
 - b. H_3
 - c. H_9
 - d. H_{27}
5. How many compounds of HCl are found on the reactant side?
6. Why is this unbalanced? (prove it)

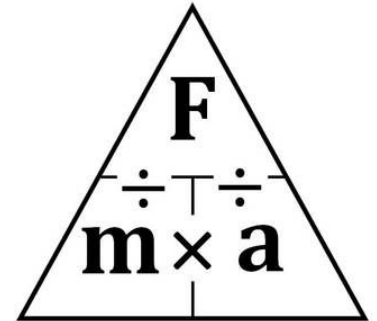


Explain how each of Newton's 3 laws of motion are demonstrated in this picture.



1. What element is this and how do you know?
2. Which group is this element found in?
3. Is this element reactive? Why or why not?
4. Name two elements that have similar properties. How do you know?
5. Which element has 3 less protons than this one?
6. Why is the entire atom neutral in its electrical charge?
7. Why is the nucleus positive in its electrical charge?
8. Describe the electrical charge of the electron cloud.

1. A force of 50 Newtons was exerted on an object that had a mass of 10 kg. What was its acceleration?
2. What is the force acting on an object if the mass is 60 kg and the acceleration is 15 m/s_2 ?
3. Find the mass of an object with a force of 150 N and an acceleration 30 m/s_2 .
4. Write out your own word problem and solve it.



The list includes six situations.

- A book sliding across a table at a constant speed
- A ball sitting on a shelf
- A can rolling down a ramp
- A swing moving back and forth
- A car traveling at a constant speed of 15 m/s
- A bird landing on a branch

Which objects in the list experience an unbalanced force?

- F** The book, the ball, and the car
- G** The ball, the car, and the bird
- H** The can, the swing, and the bird
- J** The book, the ball, the can, and the swing

All the following reactions are correctly balanced **except** —

- F** $2\text{C}_2\text{H}_2 + 5\text{O}_2 \longrightarrow 4\text{CO}_2 + 2\text{H}_2\text{O}$
- G** $4\text{Fe} + 3\text{O}_2 \longrightarrow 2\text{Fe}_2\text{O}_3$
- H** $\text{NaHCO}_3 \longrightarrow \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$
- J** $2\text{CH}_3\text{OH} + 3\text{O}_2 \longrightarrow 2\text{CO}_2 + 4\text{H}_2\text{O}$

Which of the following best describes the velocity of an object?

- A** 30 m/s
- B** 30 m east
- C** 30 m/s east
- D** 30 m/s^2

What is the difference between the velocity and the speed of an object?

- F** Velocity is the change in distance over time, while speed is the change in velocity over time.
- G** Velocity has a direction associated with it, while speed has no specific direction.
- H** Velocity has no direction associated with it, while speed has a specific direction.
- J** Velocity is the change in speed over time, while speed is the change in distance over time.

A teacher asks a student to write the chemical equation for photosynthesis. The student's response is shown below.



The equation is not balanced correctly. Which of these is a balanced equation for photosynthesis?

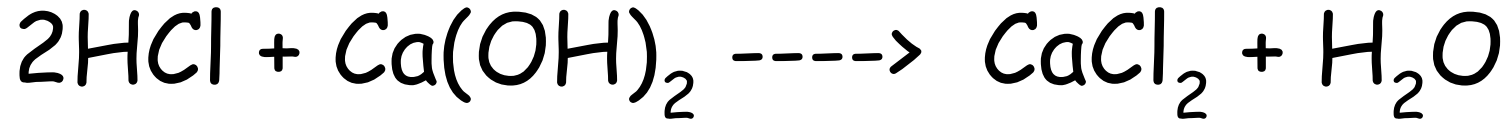
- A** $12\text{CO}_2 + \text{H}_2\text{O} \xrightarrow{\text{light}} \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$
- B** $\text{CO}_2 + 9\text{H}_2\text{O} \xrightarrow{\text{light}} \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$
- C** $\text{CO}_2 + \text{H}_2\text{O} \xrightarrow{\text{light}} 3\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$
- D** $6\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{\text{light}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$

Brain Dump!

1. Get with a partner
2. Get an expo marker and plastic sleeve with a periodic table in it
3. Write and label everything that you can remember that we have learned about the periodic table
 - a. We have written stuff on ours in the back of our journals...but don't peek! See what you can remember
 - b. Work together as a team and see how much you can come up with!

Chemistry and Physics Review

Answers!



1. Write out the products: $\text{CaCl}_2 + \text{H}_2\text{O}$
2. How many total elements are on the reactants side?: 4- H, Cl, Ca, O
3. How many total atoms are on the product side?: 6
4. Which of the following has 3 times as many atoms of Hydrogen on the product side:
a. H_6 b. H_3 c. H_9 d. H_{27}
5. How many compounds of HCl are found on the reactant side?: 2
6. Why is this unbalanced? (prove it): There are 4 atoms of Hydrogen on the reactant side and only 2 on the product side. There are 2 oxygen atoms on the reactants side and only 1 on the product side. Therefore, it is not balanced because the atoms are not the same on both sides.

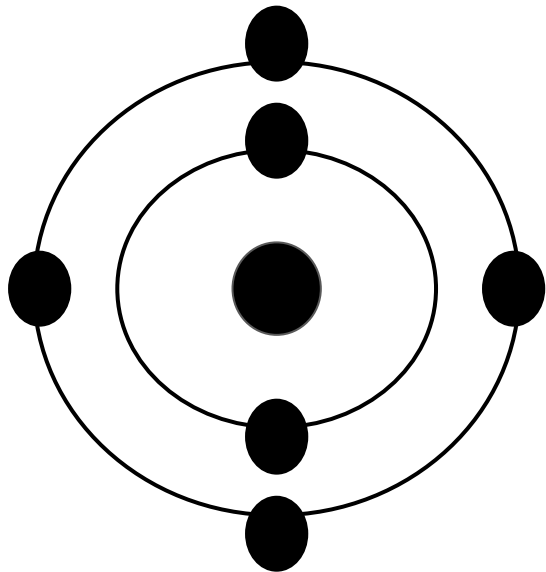


Explain how each of Newton's 3 laws of motion are demonstrated in this picture.

Possible answers: 1st law because the swimmer will stay in motion until an unbalanced force stops him. The unbalanced force would be the friction between the water and swimmer. Gravity will also pull him to the bottom.

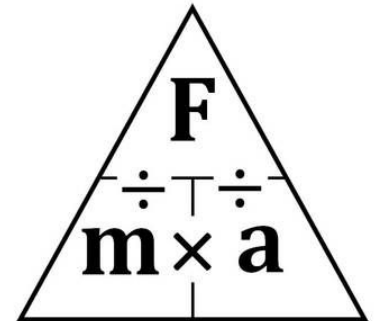
2nd law because the swimmer will accelerate faster if he uses more force backwards to propel him forward. The more force he uses to swim, the faster he will accelerate.

3rd law because for every action there is an equal and opposite reaction. The swimmer must push backwards (action) which will then cause him to go forward (reaction).



1. What element is this and how do you know? This element is Carbon because it has 6 electrons which means it has 6 protons. The number of protons is the atomic #. Carbon has an atomic number of 6
2. Which group is this element found in? 14. It has 4 valence electrons, therefore it is in group 14.
3. Is this element reactive? Why or why not? Yes, because its outer shell is not full
4. Name two elements that have similar properties. How do you know? Silicon and Germanium because they are in the same group.
5. Which element has 3 less protons than this one? Lithium
6. Why is the entire atom neutral in its electrical charge? Because the number of protons (positive) and electrons (negative) are the same. They cancel out making it neutral.
7. Why is the nucleus positive in its electrical charge? It has protons which are positive and neutrons which are neutral. It has to be positive.
8. Describe the electrical charge of the electron cloud. It is negative because it holds electrons, which are negative.

1. A force of 50 Newtons was exerted on an object that had a mass of 10 kg. What was its acceleration? 5 m/s^2
2. What is the force acting on an object if the mass is 60 kg and the acceleration is 15 m/s_2 ? 900 N
3. Find the mass of an object with a force of 150 N and an acceleration 30 m/s_2 . 5 kg
4. Write out your own word problem and solve it.



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- G $4Fe + 3O_2 \longrightarrow 2Fe_2O_3$
- H $NaHCO_3 \longrightarrow Na_2CO_3 + H_2O + CO_2$
- J $2CH_3OH + 3O_2 \longrightarrow 2CO_2 + 4H_2O$

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- A $12CO_2 + H_2O \xrightarrow{\text{light}} C_6H_{12}O_6 + O_2$
- B $CO_2 + 9H_2O \xrightarrow{\text{light}} C_6H_{12}O_6 + O_2$
- C $CO_2 + H_2O \xrightarrow{\text{light}} 3C_6H_{12}O_6 + O_2$
- D $6CO_2 + 6H_2O \xrightarrow{\text{light}} C_6H_{12}O_6 + 6O_2$