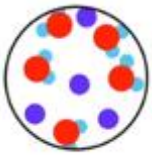
Name:_____
Period: _____
Date: _____

8th Grade Science December Review

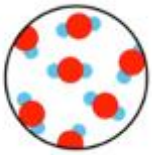
Chemistry, Units 1 & 2

1. Identify each image as: *Element, Compound, Homogenous Mixture or Heterogenous Mixture*. Then define each.

_____
Definition:



_____
Definition:



_____
Definition:

_____
Definition:

2. When making Kool-Aid: Start with 2 quarts of cold water. Mix 1 (3.9 gram) packet of Kool-Aid into the water. Next, add 1 cup of sugar to the solution. Stir until Kool-Aid and sugar is completely dissolved. Based on the instructions, what type of mixture was created and what type of reaction has occurred? How do you know?

A. Homogeneous Mixture; Chemical Reaction, because the color changed and particles dissolved.
B. Heterogeneous Mixture; Chemical Reaction, because the color changed and particles dissolved.
C. Homogeneous Mixture; Physical Reaction, because the color changed and particles dissolved.
D. Heterogeneous Mixture; Physical Reaction, because the color changed and particles dissolved.

3. How many **elements** are in the following compounds?

a. H_2SO_4 - _____

b. H_2O - _____

c. C_2H_6O - _____

d. O_2 - _____

4. Count the **atoms**.

$2H_2SO_4$	H:	S:	O:	Total:	# of Molecules:
$C_2(H_4O_2)_3$	C:	H:	O:	Total:	# of Molecules:

5. **Label** the chemical equation. Word Bank: Coefficient, Product, Reactant, Subscript

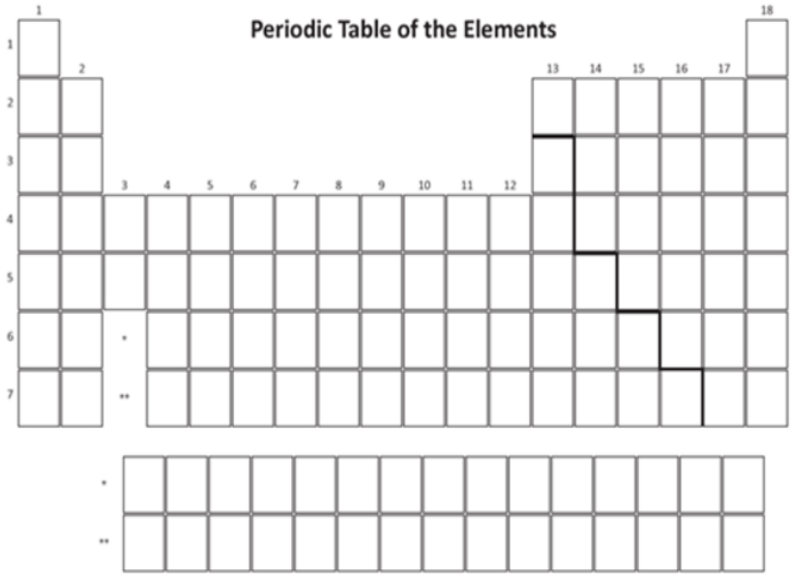
$$2H_2 + O_2 \rightarrow 2H_2O$$

6. **<u>List the physical properties</u>** of metals, nonmetals, and metalloids and label where they are found on the table to the right.

Metals:

Nonmetals:

Metalloids:



Characteristics of Four Substances

Substance 1	Substance 2	Substance 3	Substance 4
• Poor conductor of heat and electricity • Brittle when solid • Dull appearance with no luster	• Forms crystals when solid • Conducts electricity when dissolved in water • Hard and brittle when solid • High melting and boiling points	• A mixture • Contains particles that cannot be seen with the naked eye • Cannot be separated by filtration	• High luster • Good conductor of heat and electricity • Malleable • Ductile

7. A student creates a chart listing some characteristics of four substances. Which substance is most likely a **<u>non-metal</u>** element?

A. Substance 1
B. Substance 2
C. Substance 3
D. Substance 4

8. Define Conservation of Mass:

9. Count the number of **<u>atoms on each side</u>** of the chemical equation.

$$C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O + \text{energy}$$

Reactant atoms:_____ Product atoms:_____

10. Predict the mass of oxygen that will be left over after the reaction of 48.6 grams of magnesium with 50.0 grams of oxygen.

REACTANT(S) PRODUCT(S)

Magnesium + Oxygen ------> Magnesium Oxide + Oxygen

48.6 g + 50.0 g -----> 80.6 g + ?

11. **Define each** evidence of a chemical change then **Identify** each as Physical (P) or Chemical (C).

Bad - _____

Puppies - _____

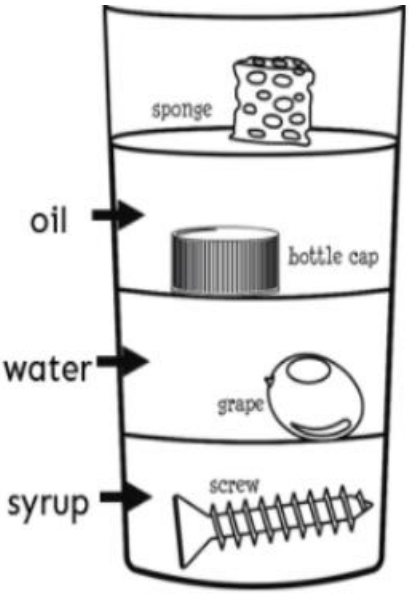
Like - _____

To - _____

Chew - _____

Stuff - _____

1. ____ stirring lemonade mix into water
2. ____ rotting eggs
3. ____ baking cookies
4. ____ dissolving salt in water
5. ____ two substances are combined, producing bubbles
6. ____ cutting paper
7. ____ molding clay from a ball into a cube
8. ____ two clear liquids are combined, producing a purple color



12. Which list shows the order from the most dense to the least dense?

A. Screw, grape, sponge, bottle cap

B. Sponge, bottle cap, grape, screw

C. Screw, bottle cap, grape, sponge

D. Screw, grape, bottle cap, sponge

13. Which of the following items are likely DENSER than water?

Wood Pencil	Plastic Ball	Glass Bead
Penny	Cork	Bottle Cap

14. Students sorted items by their ability to sink or float. Which student organized the items correctly?

	less dense in water	**more dense in water**
Alex	wood block, glass marble	paper clip, oil
Aaron	paper clip, oil	wood block, glass marble
Leslie	glass marble, oil	paper clip, wood block
Phillipa	wood block, oil	paper clip, glass marble

A. Alex

B. Aaron

C. Leslie

D. Phillipa

Physics, Unit 3

15. Calculate each runner's speed **at 10 seconds**.

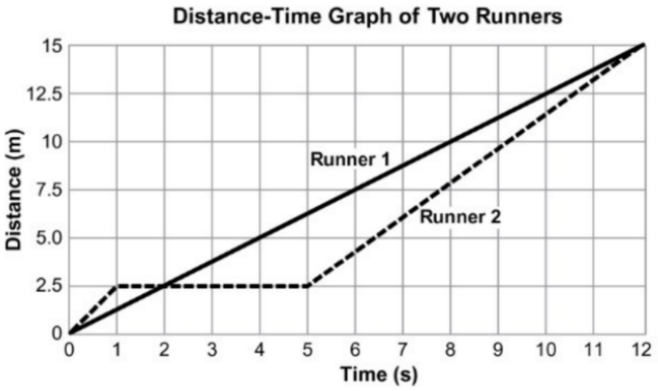
    Runner 1:_____

    Runner 2:_____

16. Calculate each runners **average speed**?

    Runner 1:_____

    Runner 2:_____



17. **Define** each type of Potential and Kinetic Energy

_____ Potential

_____ Potential

_____ Potential

_____ Energy

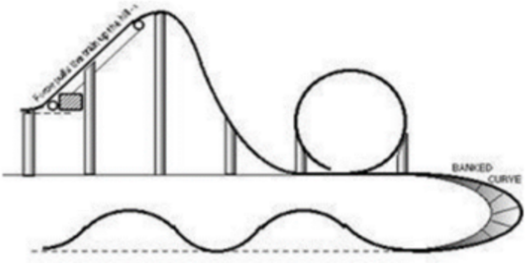
_____ Energy

_____ / Radiant Energy

_____ Energy

_____ Energy

For the following questions circle the correct answer in the parenthesis.



18. As you move up to the first hill on a roller coaster the distance between the coaster and the Earth *(increases /decreases)* resulting in an increase of *(potential / kinetic)* energy.
19. At the top of the first hill you have the most *(potential / kinetic)* energy.
20. As you begin your trip down the hill your speed *(increases / decreases)* resulting in a transformation from (*potential / kinetic)* energy to *(potential /kinetic)* energy.
21. At the bottom of the hill right before it goes up the loop, your speed is at its greatest and therefore you have the most *(potential / kinetic)* energy but the least *(potential / kinetic)* energy.

22. A battery switched on to power a flashlight(3 types of energy).

23. A plant absorbs the suns energy and uses it to create it's food. This is called photosynthesis. (2 types of energy).

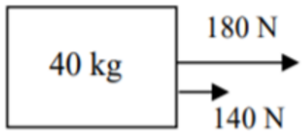
24. Define Newton's 3 laws:

1st Law

2nd Law

3rd Law

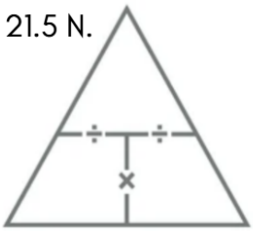
25. Find the Net Force. Then, solve for the acceleration.



Net Force:_____

Acceleration:_____

26. A bowling ball is accelerated down the lane at 5 m/s2 with a force of 21.5 N. Find the mass of the bowling ball.



27. A car accelerates faster than a truck. Which law applies? Explain why.

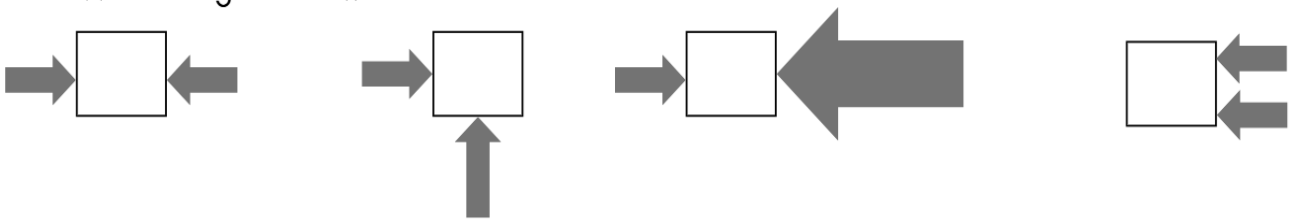
28. A boy pulls a wagon with a force of 6N east as another boy pushes it with a force of 4N east. **Draw** the free body diagram **and calculate** the net force.

Net Force:_____

Balanced Unbalanced

Direction:_____

29. Arrows represent force applied. The size and length of the arrow represents the magnitude of the force. Which diagram shows a balanced force?



30. How does pushing a ball represent all 3 of Newton's Laws?

1st law - _____

2nd law - _____

3rd law - _____

31. A girl runs 6 miles in 1.5 hours. She the runs an additional 3 miles in 0.5 hours. Calculate her average speed.

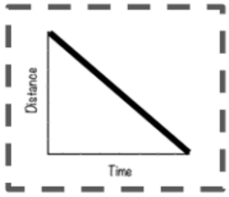
Total Distance: _____
Total Time: _____

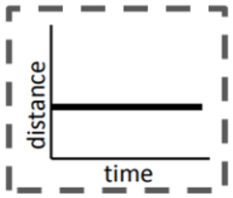
Average Speed:_____

32. What is the average speed of a bicycle rider who can ride 40 km in 0.5 hours?

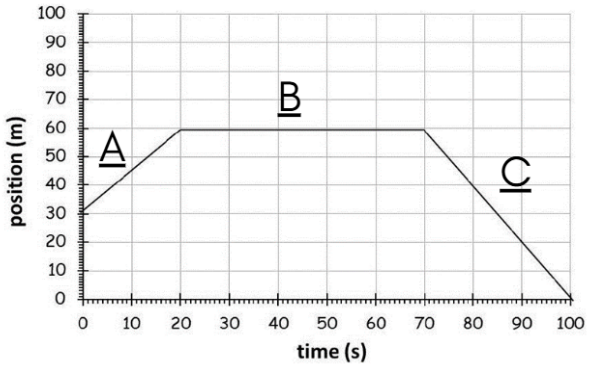
Average Speed:_____

33. **Identify** the motion in each graph.





34. **Describe** the **slope** of **each section** of the graph as: *Positive, Negative or None.*



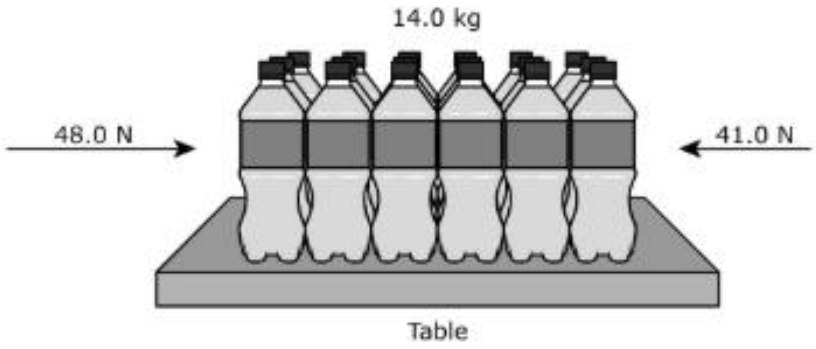
A:_____

B:_____

C:_____

35.

A force of 48.0 newtons pushes a 14.0-kilogram case of water bottles across the surface of a table. The friction between the case of water bottles and the table surface is 41.0 N, as shown in the diagram.



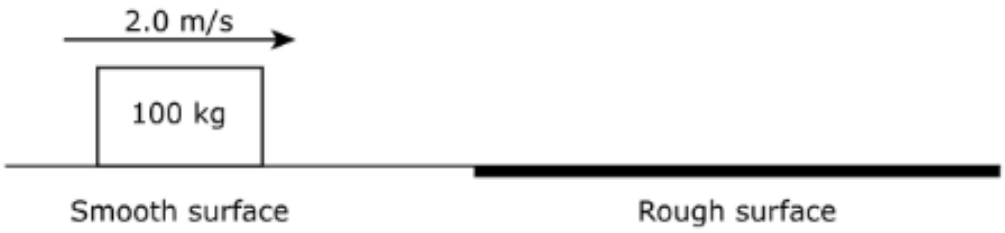
What is the acceleration of the case of water bottles?

36. A ball rolls along a flat surface and slowly comes to a stop. Which statement best describes the reason for the ball's change in motion?

A. The force that keeps the ball rolling slowly decreases.
B. The force of gravity gets stronger as the ball slows down.
C. The ball's velocity decreases because of the force of friction.
D. The ball's inertia is greater than the force applied to the ball.

37.

The diagram shows a 100-kilogram box moving at a constant velocity of 2.0 meters per second (m/s) across a smooth surface. As the box continues to move, it will enter an area with a rough surface.

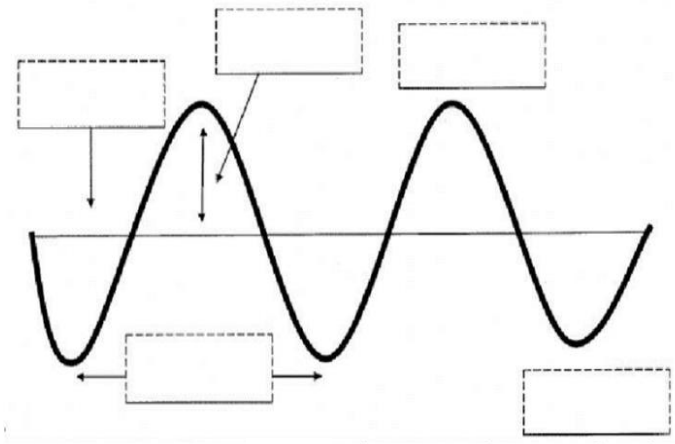


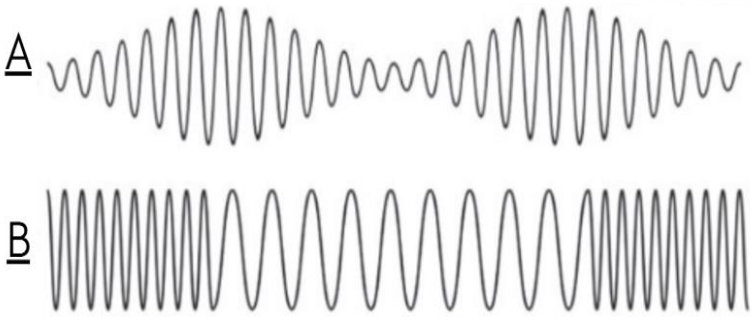
When the box slides onto the rough surface, that surface applies a frictional force of 0.5 newtons (N) to the box.

What is the net force on the box before and after the box encounters the rough surface **AND** what is the effect of the net force on the motion of the box?

Earth and Space, Units 4 & 5

38. Label the parts of a wave
Word Bank: *Frequency, Amplitude, wavelength, crest, trough*



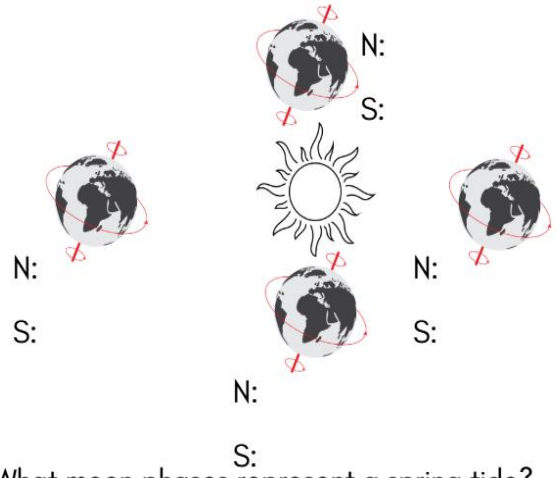


39. What part of a wave has been changed in wave A?

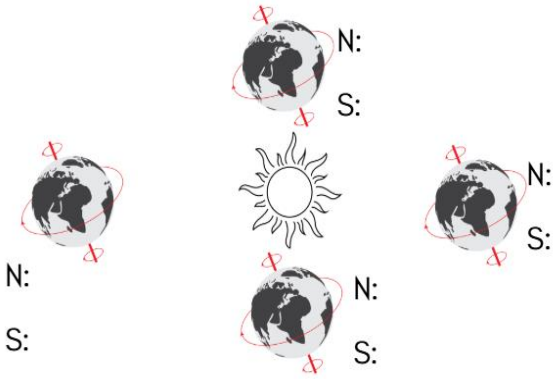
40. What part of a wave has been changed in wave B?

Word Bank: *frequency, amplitude, wavelength*

41. **Label** the **seasons** for Northern and Southern and **draw** the **orbital arrows**.

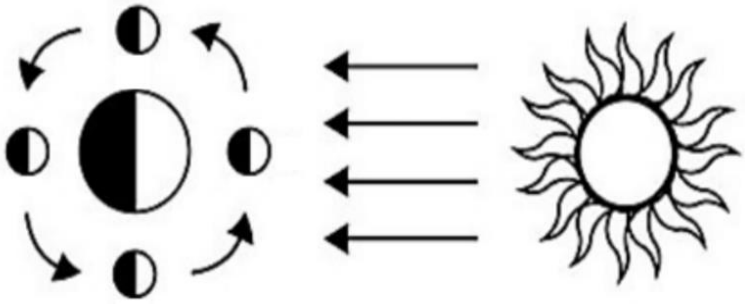


42. **Label** the **seasons** for Northern and Southern and **draw** the **orbital arrows**.



43. What moon phases represent a spring tide?

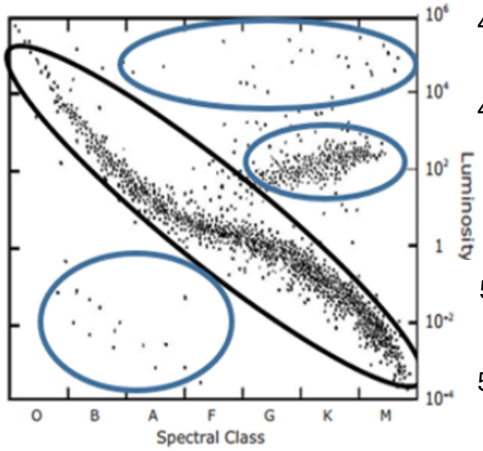
44. What moon phases represent a neap tide?



45. Use the word bank to fill in the blank in the paragraph below.
Word Bank: *force*, *gravity*, *mass*, *inertia*

Gravity is a(n)_____ –a push or a pull measured in newtons. Newton found that the strength of the gravitational attraction between two objects depends on the _____of each object and the distance between them. All objects have a tendency to remain at rest or in uniform motion in the same straight line unless acted upon by an unbalanced force–this is known as _____ . In space, gravity must partially overcome the inertia of each object in order to pull it into an orbital path.

46. What type of galaxy is the Milky Way? _____



47. Using the picture to the right, answer the following questions:

48. Which group of stars belongs to spectral class A and has the lowest luminosity? _____

49. Which group of stars belongs to spectral class G and has the highest luminosity? _____

50. Which group of stars has the hottest, most luminous stars? _____

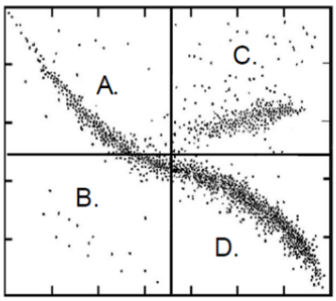
51. What is the spectral class of the Sun? _____

52. Which quadrant will have the HOTTEST and BRIGHTEST stars? _____

53. Which quadrant will be the same temperature as D, but BRIGHTER? ____

54. Which quadrant will be the same brightness as D, but HOTTER? ____

55. Would a star in quadrant A be hotter or colder than the Sun? ____



56. Draw a picture of each type of galaxy.

_____ _____ _____

57. Define galaxy

58. Label the life cycles of average and massive stars.

Average Star

_____ _____ _____ _____

NEBULA

_____ _____ _____

Massive Star