

8th Grade Science Fact Sheet

This fact sheet belongs to:

Please return it to Mr. Erickson if found!!!

General Science

1	An observation is something that you see, feel, hear, smell or taste.
2	Evidence is an observable fact that is used to support a theory.
3	An inference is a prediction of what happened or what will happen based on your observations.
4	A Claim is a statement you feel to be true. It is usually supported by evidence.
5	Reasoning is an explanation of why you make a certain claim.
6	A unit is used to identify how you measured something.
7	A quantitative observation is one that deals with numbers, measurements and/or counting.
8	A qualitative observation cannot be measured. It deals with colors, textures, smells, taste, etc.
9	A linear relationship occurs when any change in one variable will always produce a change in the other variable. When you plot a linear relationship you get a straight line.
10	Mass is a measurement of the amount of matter in an object.
11	A triple beam balance is a tool used to measure the mass of an object in grams.
12	Volume is a measurement of the amount of space an object takes up.
13	A graduated cylinder is a tool used to measure the volume of a liquid in liters.
14	Meniscus the downward curve on the surface of water commonly seen in a graduated cylinder. You always measure the bottom of the meniscus.

Particles

15	Matter is anything that has mass and takes up space.
16	Models are used in science to represent something we cannot experience directly.
17	The kinetic theory of matter is the theory that all matter is made of particles that are constantly in motion.
18	Matter can be in different phases (or states), such as solid, liquid or gas, depending on the movement of the particles.

19	Temperature depends on the speed at which the particles of the matter are moving.
20	Energy can be transferred from object to object through direct contact.
21	Absolute zero is the theoretical temperature at which particles stop moving. (-273.15°C or 459°F)
<u>Density</u>	
22	Density is a property of matter that measures the mass for a given volume.
23	You find the density of an object by dividing the mass of the object by its volume. ($D = \frac{m}{v}$)
24	Displacement is the amount of fluid that is pushed out of the way when an object is placed in the fluid.
25	The density of water is 1 g/cm^3 .
26	A fluid is any substance that flows; it can be gas or liquid.
27	Buoyant force is the upward force that a fluid exerts on an object.
28	An object will sink if it has a greater density than the fluid it is in.
<u>Elements & Atoms</u>	
29	Elements are pure substances that cannot be broken down into simpler parts. They combine to form all matter.
30	All the elements currently known are organized by atomic number in The Periodic Table of the Elements .
31	An atom is the smallest component of an element having the chemical properties of the element. It is made of a protons, neutrons and electrons.
32	Matter can be classified by its properties , including melting temperature, density, hardness, and how well it conducts heat and electricity.
33	A proton has a positive charge and is found in the atom's nucleus.
34	A neutron has no charge and is found in the atom's nucleus.
35	An electron has a negative charge and is found in a cloud surrounding the atom's nucleus (these are called electron shells in the Bohr Model).
36	An ion is a charged atom that has a different number of protons and electrons. It can be positive (+) or negative (-).
37	Isotopes are different types of atoms of the same element, each having a different number of neutrons.
38	An atom's atomic number is determined by the number of protons in that atom.
39	An atom's atomic mass is determined by the number of protons and neutrons in that atom.
40	A metal is an element that tends to be shiny, easily shaped and a good conductor of electricity and heat.

41	A nonmetal is an element that is not shiny, very brittle and a poor conductor of electricity and heat.
42	A metalloid is an element with properties of metal and a nonmetal.
<u>Chemical Reactions</u>	
43	A molecule is a group of 2 or more atoms that are held together by bonds and move as a single unit.
44	Compounds are formed by combining two or more <u>different</u> elements.
45	Properties of compounds are different from the elements that make up the compound.
46	Chemical reactions are processes in which atoms are rearranged into different combinations of molecules.
47	In a chemical reaction you start with a one or more reactants and yield (or produce) one or more products .
48	The Law of Conservation of Mass states that the total mass always stays the same in a chemical reaction. This means that the number of atoms stays the same, they just get rearranged.
49	There are many things that give evidence of a chemical reaction such as, <ul style="list-style-type: none"> • Change in temperature • Changes State (turns solid, liquid or gas(fizzing or bubbling)) • Giving off an odor • Color change
50	Exothermic reactions give off heat (gets hot).
51	Endothermic reactions absorb heat (gets cold).
52	pH is the measurement of free hydrogen ions in a solution. It can be identified as an acid or a base using an indicator .
53	An acid has a pH below 7.
54	A base has a pH above 7.
55	A solution with a pH of 7 is neutral .
56	Carbon is very important to the chemistry of living organisms because of its ability to combine in many ways with itself and other elements.
57	Living organisms are made of molecules consisting largely of carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur.
<u>Forces & Motion</u>	
58	Motion is a change of position of an object relative to other objects.
59	The distance an object moves can be found by subtracting the object's final position from its initial position.

60	Average speed is the total distance traveled divided by the total time it took to travel that distance. ($s = \frac{d}{t}$)
61	The velocity of an object must be described by specifying both the direction and the speed of the object.
62	Acceleration is when the speed of an object changes. It can be positive (speeding up) or negative (slowing down).
63	A Force is a push or pull on an object. It has a magnitude and a direction.
64	When an object is subject to two or more forces at once, the net force is the sum of all the forces.
65	When the forces on an object are balanced, the motion of the object does not change.
66	Gravity is a downward force caused by the mass of an object.
67	Contact force is a force caused by direct contact with an object such as when you push an object.
68	Elastic Force is a force caused by the squeezing or stretching of an object.
69	Friction is a force that causes objects to slow down due to direct contact with other objects.
70	Air resistance (wind resistance) is a friction force caused by an object moving through air.

The Universe & Solar System

71	Galaxies are clusters of billions of stars and may have different shapes.
72	Stars may differ in size, temperature, and color.
73	A light year is the distance that light travels in one year. It is used to measure the distance between the stars.
74	The Milky Way galaxy is 100,000 light years wide and 1000 light years thick. It contains about 200 billion stars.
75	An astronomical unit (AU) is the distance between the earth and the sun. It is used to measure objects in our solar system.
76	The sun is one of many stars in the Milky Way galaxy.
77	There are 8 planets in our solar system.
78	Pluto is a dwarf planet . It is the second largest known dwarf planet in our solar system (Eris is the largest).
79	The light we see from objects in our solar system is reflected light from the Sun.
80	A comet is a small icy object in our solar system with a very elliptical orbit. When it gets close to the sun it produces a visible coma (sometimes called a tail).
81	An asteroid is a small rocky body that orbits the sun. Most asteroids in our solar system are in the "asteroid belt" between Mars and Jupiter.

