Quizzes for the Rainbow Curriculum

The following resources are courtesy of Carol Rhodebeck of Hartland, Wisconsin. Clearly a lot of thought and effort went into them for which we are most grateful.

Suggested Science Field Trip Ideas in Year 1 of the Rainbow:

Date	Lesson #	Description
	R 7	Playground (see-saw)
	R 16	Fuel burning Electrical Energy Plant
	R 18	Nuclear Power Plant
	R 22	Space Center
	R 23	This is a Heavy Lesson! Do something extracurricular!
	R 25	Film presentation on Albert Einstein or "relativity"
	R 26	Museum of Science and Technology
	Y 1	Greenfield Village (near Detroit, MI) Thomas Edison lab, Henry Ford Museum
	Y 5	Chemical Manufacturing Plant
	Y 8	Active Mine (copper, table salt, etc.)
	Y 13	Interview someone in a chemistry related job or visit their work place
	Y 15	Petroleum Refinery
	Y 17	Visit with a health or nutrition advisor
	Y 18	A "Biotechnology" company - genetic engineering
	Y 19	Detergent Manufacturer - enzyme producer
	Y 20	Wood Pulping Plant, Arboretum, Potato Processing Plant
	Y 21	Rendering Plant (in association with a meat processing plant)
	Y23	Ocean
	Y25	Desalinization Plant
	Y27	Red Cross Chapter

Physics Quiz 1

1) Objects at _____, remain at rest unless they are acted upon by some _____. Objects in motion, remain in _____ at the same _____ and in the same _____ unless acted upon by some _____. These two rules make up Newton's first _____ (3 words).

2) An increase in velocity is known as _____.

3) If you know how massive an object is, you can determine its acceleration by knowing how much _____ was applied.

4) Newton's third law of motion states that for every _____, there is an equal _____ in the _____ direction.

5) What will be the shape of the path of travel taken by a baseball thrown from outer space directly toward the sun if it comes close enough to Jupiter to be affected by its gravitation?
A. Straight line B. Curve C. Orbit D. Wave

6) What property of a substance is responsible for wave motion?
A. Hardness B. Fluidity C. Mass D. Sterility

7) Stored energy is called _____ energy.

8) In order to determine the amount of work (W) being done, we need to know 2 other things, the amount of force applied (F) and the _____(X).
Write a mathematical expression to show how to calculate this.

9) If you want to lift a heavier object with a lever, do you move the fulcrum
A. Closer to you B. Closer to the object

Match the following:

_____ A solid object with a single force placed on it in a single direction

_____ A solid object that has two forces on it in different (but not opposite) directions

_____ Objects with many forces on them in many different directions

_____ When force is placed on a fluid, it

1) will result in waves.
2) will move in complex patterns.
3) will move in the shape of a curve.
4) will accelerate in a straight line.
5) will move in a circle.

Bonus:
Two standing waves are separated by a _____.

Two objects of different masses would have the same rate of _____ under gravity.

What is that rate?

Physics Quiz 2

There are three natural forces (treating the nuclear forces as one). The third is the nuclear force. What are the other two?

Any time work is done:

A) Energy is consumed B) Energy is created
C) A magnetic field is created D) Energy is converted from one form to another

Atoms are made up of smaller particles: _____ and _____ form the center, or nucleus, of the atom, and _____ constantly circle that nucleus at a high velocity.

When work is done, the amount of energy stored up in one object is (the same as, greater than, less than) the amount of energy given up by the other object.

Electrons are (attracted, not attracted, repelled) by other electrons.

Electrons are (attracted, not attracted, repelled) by protons.

Electrons are (attracted, not attracted, repelled) by neutrons.

What does the statement "Energy is like an Oofglork" mean?

An object with more mass has (more, less, same) amount of (potential, kinetic) energy.

An object with more velocity has (more, less, same) amount of (potential, kinetic) energy.

Work can be calculated by multiplying _____ by _____.

According to this science program, protons are (positively, negatively) charged particles.

Gravity is a force of attraction. It pulls, but it does not push. The strength of the pull is related to the _____ of the objects.

Bonus:
Atoms are the smallest stable form of _____.

A compromise between _____ and the force of _____ keeps the moon in continual orbit around the Earth.

Chemistry Quiz 1

1) A _____ is a pure substance made up of a single type of atom, all of those atoms having the same number of protons. The number of protons, also called the _____ _____, is the basis for the arrangements of these substances in the _____ table.

The three phases of matter are:
_____ _____ _____

3) The opposite of evaporation is _____

4) AMU stands for _____.

5) To determine the density of something, you must know the _____ and _____.

6) (T / F) One AMU is the density of one proton.

7) (T / F) Oxygen has an atomic weight of 14 AMU. Therefore 14 grams of oxygen contain 6.022 x10 (23 power) atoms of oxygen.

8) (T / F) Protons and electrons make up most of the mass of an atom.

When atoms of one or more elements combine, a single unit of the new substance that forms is called a _____.

Two or more elements joined together make up a _____.

When an element loses an electron, it takes on a _____ charge and becomes a _____.

Name two types of chemical bonding. _____ _____

_____, _____, and _____ combine to form atoms.

Match the following:
_____ -20 degrees C
_____ 0 degrees C
_____ 4 degrees C
_____ 20 degrees C
_____ 100 degrees C

1) approximate freezer temperature
2) approximate refrigerator temperature
3) the boiling point of water
4) the freezing point of water
5) approximate comfortable room temperature

Bonus:
What is the huge number called that says how many atoms of an element are in one gram of it?

What is that number?

Chemistry Quiz 2

Why is the periodic table of elements arranged the way it is?

Match the group numbers of the periodic table with their group names:

_____1A	a.	transition metals
_____2A	b.	alkaline earth metals
_____B	c.	alkali metals
_____3A to 7A	d.	noble gases
_____8A	e.	halogens
_____7A	f.	post-transition elements

The group numbers of reacting elements tend to add up to what number?

Circle one. A metal is a (good, poor) electrical conductor and a (good, poor) heat conductor.

Circle one. A metal (is, is not) malleable (able to be pounded into shapes) and ductile (able to be stretched thin).

In order for humans to burn fuel for energy, _____ is required. This results in the production of _____ _____.

T / F A semiconductor is neither a really good nor a really poor conductor.

T / F Chemical bonds have mass.

T / F A polar molecule is one in which one part of the molecule has more of a negative charge while another part has more of a positive charge.

T / F Water is non-polar.

T / F Polyatomic ions are groups of atoms that act as though they are a single element.

T / F Blood is both a suspension and a solution.

T / F One substance dissolved in another is called a suspension.

T / F The weight of a molecule, or molecular weight, is the added AMU's of all the atoms that make up the molecule.

T / F The two major types of nucleic acids are DNA and RNA.

T / F Collagen is a structural protein found in abundance in the human body.

T / F Generally, a solution will appear cloudy, while a suspension will be clear.

T / F A peptide is a portion of a sugar molecule.

T / F The wood in trees and other woody plants is made up of cellulose.

Which two choices are types of chemical bonds:
a. ionic d. integral
b. monovalent e. covalent
c. disjointed f. soluble
We show the chemicals that go into a chemical reaction (called _____) on the left, with an arrow pointing to the chemicals that result from a reaction (called _____) on the right.

Carbon chemistry is called:
a. aliphatic chemistry c. improbable chemistry
b. biochemistry d. organic chemistry

Which of the following materials come from petroleum:
a. petrolatum e. gasoline
b. paraffin f. asphalt
c. kerosene g. natural gas
d. motor oil h. all of the these

Two types of molecules often used by living things (including humans) to fuel their bodies' activities are:
a. sugars c. beryllium
b. gasoline d. fats

Match the following biomolecules with the units from which they are made:
_____ lipids a. fatty acids
_____ nucleic acids b. amino acids
_____ polysaccharides c. nucleotide bases
_____ proteins d. sugars

What is the rule of solubility? (hint: "_____ dissolve _____")

Unscramble: Syrup is more _____ (siosvuc) than water.

Unscramble: One easy way to separate the liquids from the solids in a suspension is to _____ (irtlef) the liquid.

Solutions are:
a. tiny clumps of one chemical spread out within another.
b. mixtures of two chemicals.
c. tiny drops of snoutoil.
d. individual molecules of one chemical randomly spread out within another.

Balance these equations:
_____ CH_4 + _____ O_2 → ____ CO_2 + ____ H_2O
_____ NO + _____ O_2 → ____ NO_2

Bonus:
____ NH_3 + ____ O_2 → ____ NO_2 + ____ H_2O
____ P_4O_{10} + ____ H_2O → ____ H_3PO_4

What is a cracking tower?

What does DNA stand for?