**Definition of Chemistry**

**Chemistry is the study of:**

***first part*: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***second part*: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

***third part*: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

**Determine whether each of the following statements best relates to the first, second, or third part of the definition of chemistry.**

1. The chemical formula of *Splenda*, an artificial sweetener, is C12H19Cl3O8. \_\_\_\_\_
2. A chemist studies the amount of energy given off by the explosive trinitrotoluene, or TNT. \_\_\_\_\_
3. A chemist studies the chemical reaction between hydrogen peroxide and phenol oxalate ester that occurs within a glow stick. \_\_\_\_\_
4. A chemist studies the process by which copper oxidizes. \_\_\_\_\_
5. The three dimensional structure of DNA has the shape of a double helix. \_\_\_\_\_
6. A chemist examines the amount of energy that is released when a salt dissolves in water. \_\_\_\_\_
7. Ibuprofen, the pain reliever used in *Advil*, is an organic compound that contains 13 carbon atoms. \_\_\_\_\_
8. Hydrogen peroxide breaks down to form water and oxygen gas. \_\_\_\_\_
9. A hydrogen peroxide molecule has one more oxygen atom than a water molecule. \_\_\_\_\_
10. Caffeine, a chemical compound that Mr. Romano is far too familiar with, contains carbon, hydrogen, nitrogen, and oxygen atoms. \_\_\_\_\_

**Branches of Chemistry**

**branch… studied under each branch…**

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**Identify which branch(es) of chemistry is/are used in the following scenarios.**

1. A forensic scientist working for the FBI identifies a toxic chemical used in a poisoning.

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1. A chemist at Merck uses a computer model to see how an enzyme will function. (2 branches)

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1. A professor at the University of Maryland School of Medicine explores the complex reactions that take place in the human liver.

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1. A scientist at Exxon tries to design a better gasoline.

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1. A DuPont chemist tries to determine the amount of energy released by a chemical reaction.

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1. A researcher at the University of Delaware explores the role of metals in the human body.

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**Basic Research, Applied Research and Technological Development**

Define *basic* research.

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Define *applied* research.

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What is the *difference* between these two types of research?

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Identify each of the following as basic research or applied research.

1. A scientist researches the properties of bromine. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. A scientist researches to find a treatment for pancreatic cancer. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Define technological development.

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Give three examples of technological development. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_