

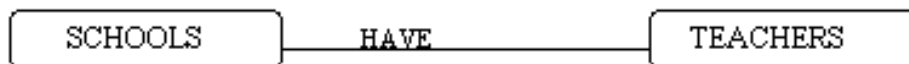
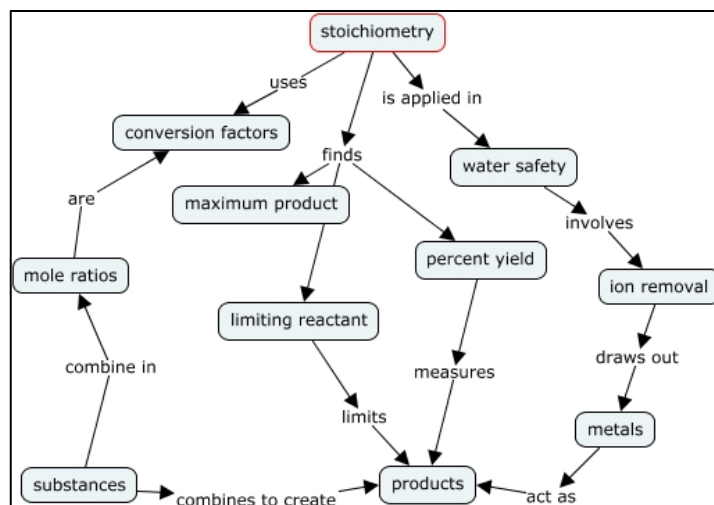
Concept Map Instructions

A helpful tool in the development of understanding a broad topic is to create a concept map illustrating how separate ideas are related. Here is an example of a concept map about “stoichiometry”:

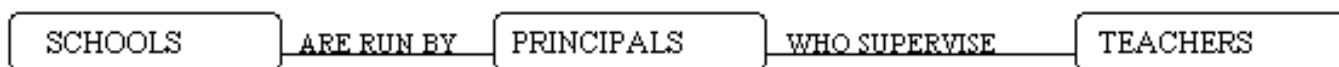
WHAT ARE CONCEPT MAPS?

Concept maps show relationships between concepts. Concept maps have the following characteristics:

1. They include a number of different concepts and show the relationships between the concepts.
2. They are a hierarchical arrangement of concepts which show degrees of generality and inclusiveness. The concepts found at the top of the map are the most general and will include the concepts which are found further down in the concept map. (See Figure 1 at the end of this document). For example, the concept SCHOOL, includes the concepts, PRINCIPALS, TEACHERS, TESTS, LEARNING, etc. and the concept TEACHER, includes the concepts, TEST, HOMEWORK, LESSONS, etc.
3. Concepts are placed inside of circles, rectangles or ellipses.
4. Concepts are linked by **LINKING WORDS**. Linking words are usually verbs, verb phrases, adverbs, or prepositions. When the concepts plus their linking words are read together, they form a proposition. For example from Figure 1. We could read the proposition that:



OR the proposition that:



5. Concept maps have several levels in the hierarchy. For example in figure 1, there are four levels as follows:
 - Level 1 = Schools
 - Level 2 = Principals, Teachers, and Students
 - Level 3 = Lessons, Tests, and Homework
 - Level 4 = LearningLinking words connect these vertical levels of the hierarchy.
6. There are also **CROSS-LINKAGES** in concept maps. These occur horizontally between concepts in the map. For example, the relationship between teacher and student is a cross-link. Also the connections between student and test and student and lesson are cross linkages. The best concept maps will always have both links and cross-links.
7. Under each of the lowest level concepts we might also list specific examples for those concepts. For example, in Figure 1, under the concept lessons, we find, lectures as an example of a type of lesson and under the concept homework we find textbook reading assignment as an example.
NOTE: examples are not enclosed in an ellipse.

SOME THINGS TO REMEMBER THAT WILL HELP YOU GET STARTED:

Practice is the key to good concept mapping.

1. A concept map does not have to be symmetrical. It can be lopsided, or have more concepts on the right side than on the left, or vice versa.
2. Remember that a concept map is a short cut way of representing information. Do not try to include every last detail. Only the major ideas are necessary.
3. There are no perfect, or "most correct" concept maps. There are only maps that come closer to the meanings of those concepts the map maker has.
4. Do not expect one person's map to be exactly like another's map. Everyone thinks a little differently and may see different relationships between certain concepts. Other's maps may appear in a different format although both yours and theirs may be correct.
5. At first, mapping is time consuming, but it becomes easier and faster after your first few maps are made.

CHARACTERISTICS OF A GOOD CONCEPT MAP:

Although there is no such thing as the 'right' concept map for a given topic, there are several characteristics that well constructed maps have in common.

1. A concept map usually stems from one main idea.
2. The main idea branches into related general concepts.
3. General concepts can be subdivided into more specific concepts branching from them in several tiers.
4. Specific concepts are elaborated by example.
5. Concepts are usually nouns, representing objects or events. **Each concept** should be a single idea and **appear only once in the map.**
6. Relationships between concepts are shown by linking words (usually verb, verb phrases, adverbs, or prepositions). **ALL** concepts should be linked.

7. Cross-linkages are used to connect concepts in two different paths of the map. The more cross-linkages, the better, since they demonstrate an increased depth of understanding. Lines for linkages may hop over each other.

8. Any two concepts and their linking word taken in isolation should form a complete thought.

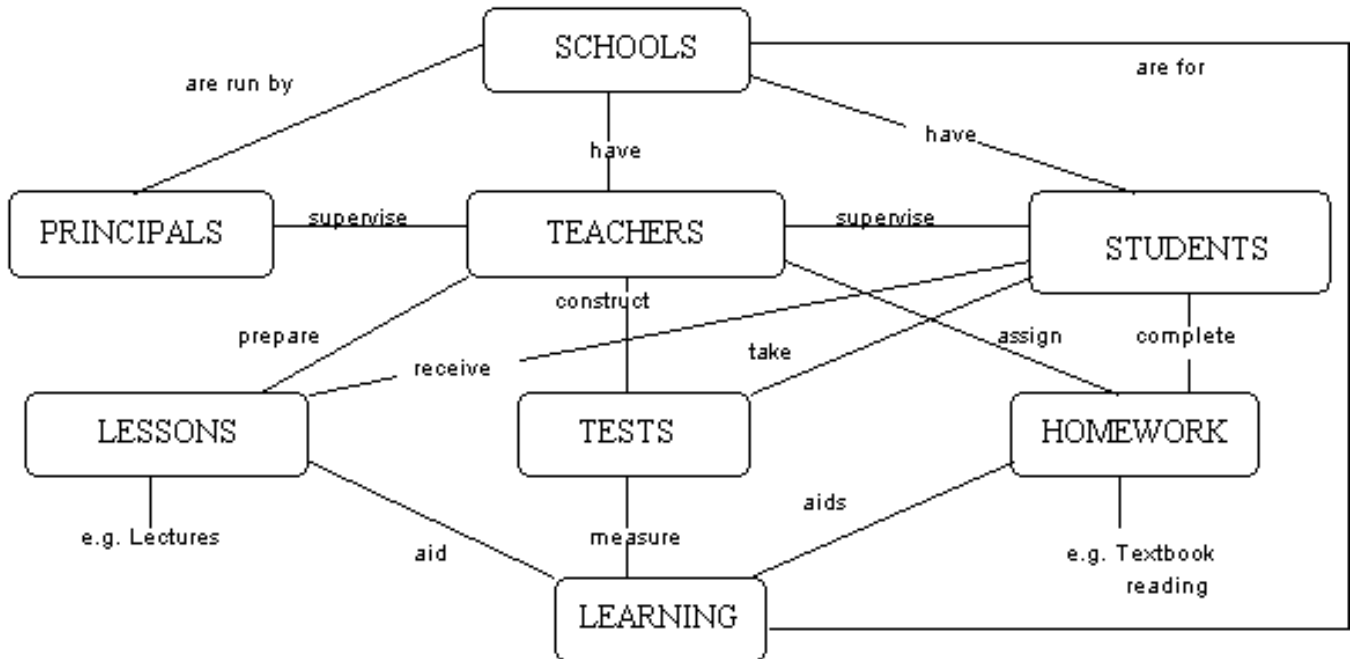


Figure 1. A sample concept map.