C.1 Concept Maps

Purpose

Concepts maps are used to

- organize and reflect on the content learned.
- provide a tool for self-assessment and review.
- visualize and make explicit the connections between various concepts.
- record the development of richer understandings built on previously learned content.

Definition: Concept maps are a visual language for integrating thinking, learning, teaching, and assessment.

A concept map provides a visual picture of a whole topic or concept and shows how different ideas and/or processes are related to the main topic.

Students create concept maps by following a trail of thoughts from an initial idea and mapping these thoughts out on paper.

The concept map requires that students think about specific connections in their knowledge of a concept.

Students use concept maps

- to visualize connections between newly-acquired knowledge and previously-learned content.
- to organize and reflect on the content learned.
- for review.

The process of creating a concept map helps the student

- recall details.
- identify main points of topics discussed.
C.2 Creating a Concept Map

- On a piece of paper, write down the main topic of the concept map, then list all of the words that you associate with that topic. Concepts, procedures, your feelings about the topic, previous knowledge and other representations such as function machines, graphs and/or tables can also be included on your list.

- Think in terms of making an outline, with a Main Idea, supporting ideas, and details. Making your list of concepts and procedures is kind of like making an outline of a book you’ve been assigned in English class.

  ![Concept Map Diagram]

- Working from your list, use a highlighter and identify what you think are the most important supporting ideas for your topic. Under each of your main sub-groups, identify those words, representations, and procedures you associate with each of your main supporting categories.

- After you have finished analyzing your list, write each word on a separate post-it.

- Post the main topic in the middle of a piece of paper. Arrange the post-it for each key word or idea you’ve listed around the main topic.

- Near each key word, arrange post-it notes with the words, representations, and procedures you associate with that key word. Writing the words on post-it notes allows you to rearrange the words so that you can indicate the connections among words in that group and between words in other groups that you see as related.

- Build from the main topic in a way that makes sense to you.

- When you’ve posted and arranged all of your words, draw in the linkages and connections between words and between groups of words. Use arrows to indicate the direction of each link. Wherever possible, write in the relationship along the connecting link.

- Sometimes, you have a word that you connect with more than one key word. Arrange your key words so that the shared connecting word is located between them so you can draw connections to both key words.

- Be creative and personalize your map.
Figure C. 2. MC(S2): Preliminary Notes: Concept Map Week 15

[Hand-drawn concept map showing various mathematical concepts and relationships, including equations, representations, methods of solving systems, and graphical interpretations.]

Final concept map in function
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*Note: Table values are not a function if input produces more than 1 output.
FIGURE C.3. MC (S2): Schematic Diagrams of Weeks 4, 9, & 15 Concept Maps