Lecture Notes – Chapter 1

Definition: A **quantity** is anything (an object, event, or quality) that can be measured or counted. The value of a quantity is its measure of the number of items that are counted. A value of a quantity involves a number and a unit of measure or number of units.

> *Pro Tip - A quantity is never just a number or unit. You can often begin using "amount of" or "number of" or etc. Certain quantities are more specific and start with "distance" or "area" or "time that" or etc. The quantity should also be specific to the situation and not "amount of cookies" but not include the value "37 cookies."*

*Consider: "*How big is your bedroom?"

- The quantity could be _____
- The value could be _____
- The units could be _____

Quantitative Analysis

1. Name as many quantities as you can that are involved in the situation. Some essential quantities may not be explicitly stated. Also, even if the value of the quantity is not known or given, the quantity is still a part of that situation's quantitative structure.
2. Make a list of the quantities identified in the problem. If the value is not given, indicate that the value is unknown and write down the unit you would use to measure it.
3. Make a drawing that illustrates the problem. The drawing can be unique. It is meant to assist you in solving the problem.
4. Use your drawing to solve the problem.

Group Activity #1: Use quantitative analysis to solve the following question in your group.

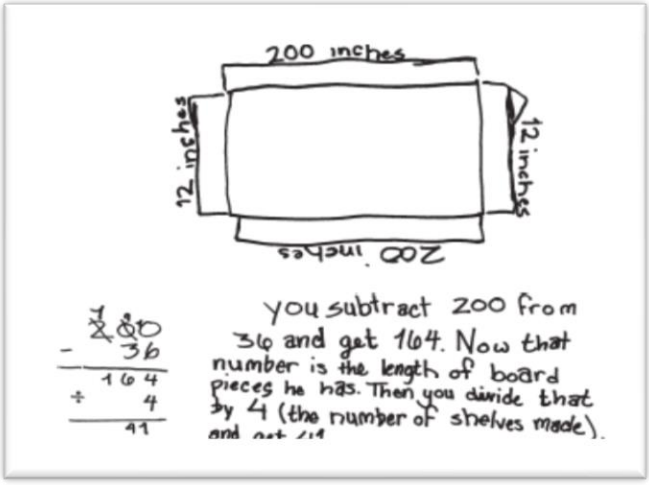
> Two women, Laura and Gloria, each have a brother, Ben and Jerry, respectively. The two women argued about which woman stood taller over her brother. It turned out that Laura won the argument by a 17-cm difference. Laura is 186 cm tall. Ben is 87 cm tall. Gloria is 193 cm tall. How tall is Jerry?

Group Activity #2: Use quantitative analysis to solve the following question in your group.

Ethel walks into Best Buy to purchase a whirligig for her grandson. The whirligig costs $20. She dumps a pile of coins consisting of dimes and nickels on the counter claiming to be exactly $20. You count 240 coins in total on the counter. Assuming Ethel is giving you the correct amount, how many nickels did she give you? How many dimes?

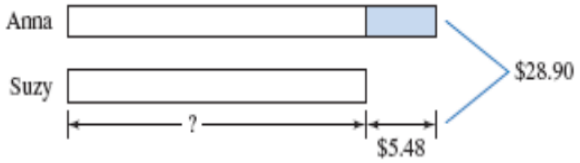
Definition - A **diagram** is a visual representation that displays information in a spatial layout.

- *Example:* A carpenter has a board 200 inches long and 12 inches wide. He makes 4 identical shelves and still has a piece of board 36 inches long left over. How long is each shelf?



Below is one more case of using a "strip diagram":

▶ Anna and Suzy have $28.90 all together. Anna has $5.48 more than Suzy. How much money does Suzy have? ◀



2 units = $28.90 − $5.48 = $23.42
1 unit = $ _____
Suzy has $ _____

Group Activity #3: Solve the following using quantitative analysis. Compare drawings with your classmates.

Roger spent 1/3 of his tax refund on a jet board and then spent ½ of what was left on a mountain bike. He then bought a $400 engagement ring for his girlfriend. If he has $100 remaining, how much was his original refund?