

The Rule of Four: A G.I.F.T for a Math Class

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Purpose: Many schools of thought support the notion that mathematical concepts can be presented in four ways: verbally, numerically, algebraically and graphically, hence the "rule of four". Many students are more comfortable with one of these forms over the others. It is important as math instructors that we lead students to recognize and use the other presentations for a more global and inclusive approach to learning mathematics.

Materials: Laminated cards in sets of four to be passed out to a class in random order. The goal here is two-fold: recognize the various displays of the same thing and to divide the class up into groups for a specific activity. For example, one set of cards might include a card that has a word problem describing the total purchase of gas, another would show the graph of this linear situation, a third card would only have the equation on it that would help us calculate the total cost of this purchase and finally, a card that has a table of values where one column is the number of gallons purchased versus the cost of that purchase listed on four separate index cards, shuffled and distributed in class.

Directions:

- Before class:
 1. Ideally, the class size is a multiple of four. Regardless, before class create cards using the rule of four outline. Six to seven problems usually does the trick; 24-28 students/class.
 2. Be sensitive to the level of the class in which you are using this activity. For instance, what is appropriate for an elementary algebra class might only be linear models; whereas a calculus class could involve the full complement of families of functions.
 3. If you have a class that is smaller than that a previous level, sort out one or more of those sets or partial sets of four. Since this is designed to create groups, groups should not be less than 3 in a group.
 4. Laminate these cards for longer use.

- During class:
 1. Shuffle these cards and pass them out to the students.
 2. On your command, they are to stand up and compare cards with each other until they find their set of four. This can take several minutes the first time.
 3. This is designed to force students to recognize the other forms of a given mathematical scenario and talk with each other.
 4. Once the groups are formed, go around the room as a class and discuss why each of these cards belongs together. If an error is discovered, discuss it and correct the placement of that member.
 5. Then it is time to put the actual group project before them and get to work.
 6. Students usually catch on quicker, if you continue to use this to divide up for group work, the next time.
 7. Informal observations say that this is much more effective in demonstrating these four presentations than for the instructor to be the *talking head* in front of the class.