## Math Problem solving with Strip Diagrams Day 2

In this activity you will practice how to use **strip diagrams** to solve Ratios and Proportions problems. This strategy provides a thoughtful approach to problem solving, that does not rely on plucking numbers from word problems and blindly applying rules and operations.

Work on a separate piece of paper.

1. Suppose a certain shade of green paint is made by mixing blue paint and yellow paint in a ratio of 2 to 3. Below is a *strip diagram* that represents this situation.



For each problem below, use the same shade of green paint as above and solve the problem using the strip diagrams. It is recommended that you re-draw the diagram for each case.

a. If you use 40 pails of blue paint, how many pails of yellow paint will you need?

b. If you will use 48 pails of yellow paint, how many pails of blue paint will you need?

c. If you want to make 100 pails of green paint, how many pails of blue paint and how many pails of yellow paint will you need?

- 2. At lunch there was a choice of pizza or a hot dog. Three times as many students chose pizza as chose hot dogs. All together, 160 students got lunch. How many students got pizza and how many students got a hot dog? Draw a strip diagram to help you explain your reasoning.
- 3. The ratio of boys to girls in a classroom was 9:8. Half of the girls left the classroom, and then there were 15 more boys than girls.
  - a. How many children were in the classroom in the beginning?
  - b. How many girls left the classroom?
- 4. David spent 2/5 of his money on a storybook. The storybook cost \$20. How much money did he have at first?
- 5. The difference between 2 numbers is 2184. If the bigger number is 3 times the smaller number, find the sum of the two numbers.
- 6. The ratio of Mary's cards to Jessica's cards is 5 to 3. After Mary gives Jessica 15 cards, both girls have the same number of cards. How many cards does each one of them have now? Draw a strip diagram to help you solve this problem. Explain your reasoning.

7. Now, try this problem using your own approach Jacqui, Karen, and Lynn all collect stamps. Jacqui has 12 more stamps than Karen, and Karen has three times as many as Lynn. Together they have 124 stamps. How many does each person have?

8. Solve the previous problem using strip diagrams. Explain similarities and differences.

9. Will the strip diagram approach work for any situation involving proportional reasoning? Compare with the "cross-multiplying" method? Which method is 'better'?

10. Compare the methods mathematically, developmentally, and by difficulty level.