NCTM Indianapolis 2014 - October 30, 2014

#22 Progressing through Ratio and Proportion - Understanding the multiplicative relationships of ratios (Barb Lynch, Ryan Casey)

### TAPE DIAGRAM SCENARIOS

- Dane and Quinn collect sports cards. Dane has 4 cards for every 3 cards that Quinn has. If Dane gives Quinn ½ his cards, what will be the new ratio of Dane's cards to Quinn's?
- Mia and Nora each have a collection of mystery books. For every 3 mystery books Mia has, Nora has 5. Mia decides to give half of her books to Nora. What will the new ratio of Mia's mystery books to Nora's?
- The ratio of the ages of 3 children is 1:3:5. The oldest is 12 years older than the youngest. How old is the middle child?
- There are 3.5 times as many seventh graders at School A as School B. There are 115 more seventh graders at School A than at School B. How many seventh graders are there at School A and at School B?
- Yellow and blue paint are mixed in a ratio of 5 to 3 to make green paint. After 14 cups of blue paint were added, the amount of yellow and blue paint in the mixture is equal. How much green paint is in the mixture?

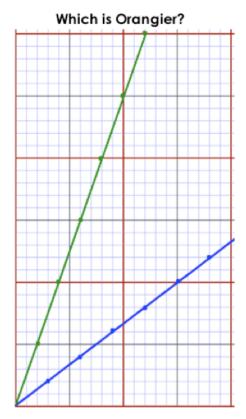
#### TAPE DIAGRAM TEMPLATE

## **DOUBLE NUMBER LINES SCENARIOS**

- For every three days, the plant grows 2 inches. Model this situation several ways.
- A store was selling 8 mangoes for \$10. Create a double number line and demonstrate how to find two unit rates.
- The temple at the top of the pyramid is approximately 24 meters above the ground, and there are 91 steps leading up to the temple. How high above the ground would you be if you were standing on the 50th step? Use a double number line to demonstrate your answer.
- If a snail travels 3 inches in 8 minutes, how far will it travel in 1 minute? How far will this snail travel in 20 minutes if it continues at the same rate of speed?

## **PROPORTIONAL GRAPH SCENARIOS**

 Interpret this graph. A solution is created from orange concentrate and water. (water – vertical axis; concentrate – horizontal axis).
Which solution is orangier?



# Graph/Table graph sorting activity can be found in:

Collins, Anne, and Linda Dacey. 2013. It's All Relative: Key Ideas and Common Misconceptions about Ratio and Proportion, Grades 6-7. Stenhouse Publishers.

#### Other concepts, ideas can be found in:

Lobato, Joanne, and Amy Ellis. 2010. Developing Essential Understanding of Ratios, Proportions, and Proportional Reasoning for Teaching Mathematics, Grades 6-8. NCTM.