Powerful Ways of Thinking: Blowing Things out of (or into) Proportion –Ted Coe
https://www.tedcoe.com/math/fusion22

1. You have three broomsticks…

   - The RED broomstick is three feet long 
   - The YELLOW broomstick is four feet long 
   - The GREEN broomstick is six feet long 

How much longer is the GREEN broomstick than the RED broomstick?

How much longer is the YELLOW broomstick than the RED broomstick?

2. A certain stock started at a value $74. One year later it was valued at $89.54. By what percent did the stock's value increase?

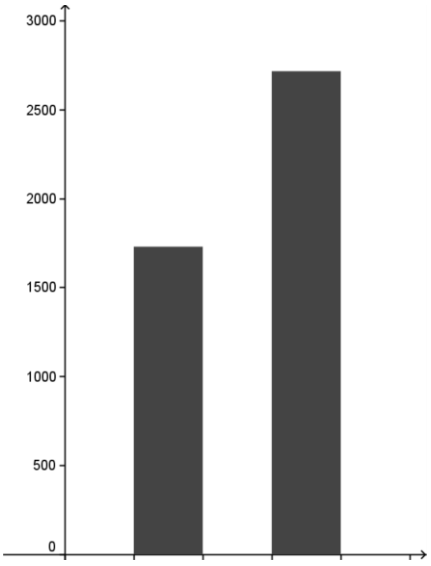
3. The Willis tower (formerly the Sears tower) is 1730 feet high.
   The Burj Khalifa (formerly Burj Dubai) is 2717 feet high.

   a. The Burj is _____ times as large as the Willis tower.

   b. The Willis tower is _____times as large as the Burj

   c. The Burj is _____ percent the size of the Willis tower.

   d. The Willis tower is _____ percent the size of the Burj.



4. How can you think about $\frac{a}{b} = c$?

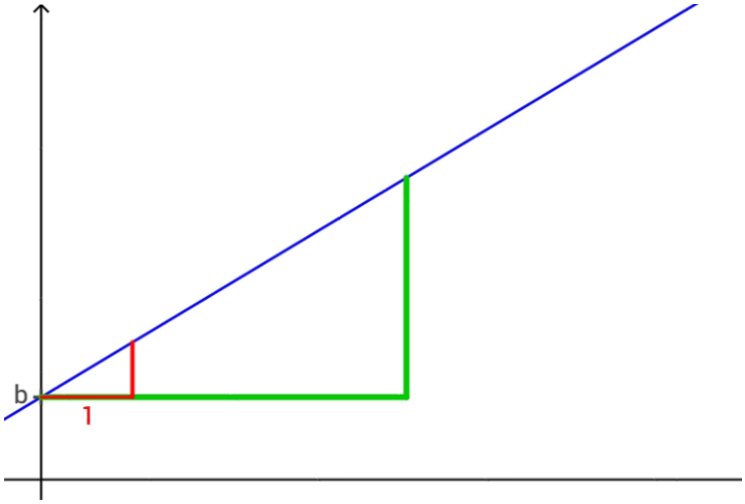
   Write two phrases that use *a*, *b*, and *c* and either "copies of" or "times as large as."

   - There are _____ copies of _____ in _____
   - _____ is _____ times as large as _____

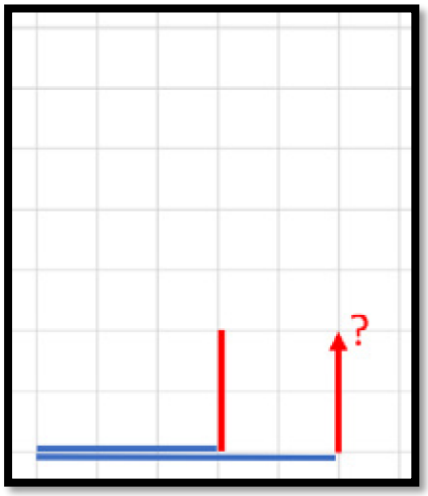
5. What terms and words come to mind when you hear the word “proportional?”?

6. What does it really mean to say something is out of proportion?

7.



8. In the image, the length of the blue line increased as shown. If the length of the red line is proportional to the length of the blue line, what is the length of the longer red line? Can you explain it without using a formula?



Are there any meaningful multiplicative comparisons in the diagram?

- What is meaningful about the number $\frac{5}{3}$ in the diagram?
- What is meaningful about the number $\frac{2}{3}$ in the diagram?
- If we imagine the blue line growing across all possible lengths, what happens with the red line? Are you sure?
- Can you write an equation that shows the relationship between the lengths of the blue and red lines?

Questions #1-4 from Ted Coe CC-by-SA (2018), #6 from Dick Stanley at http://blogs.ams.org/matheducation/2014/11/20/proportionality-confusion/. #7 adapted from: http://commoncoretools.me/wp-content/uploads/2013/07/ccss_progression_functions_2013_07_02.pdf (p.5). #8 from NWEA’s Formative Conversation Starters, Grade 7 (2022).