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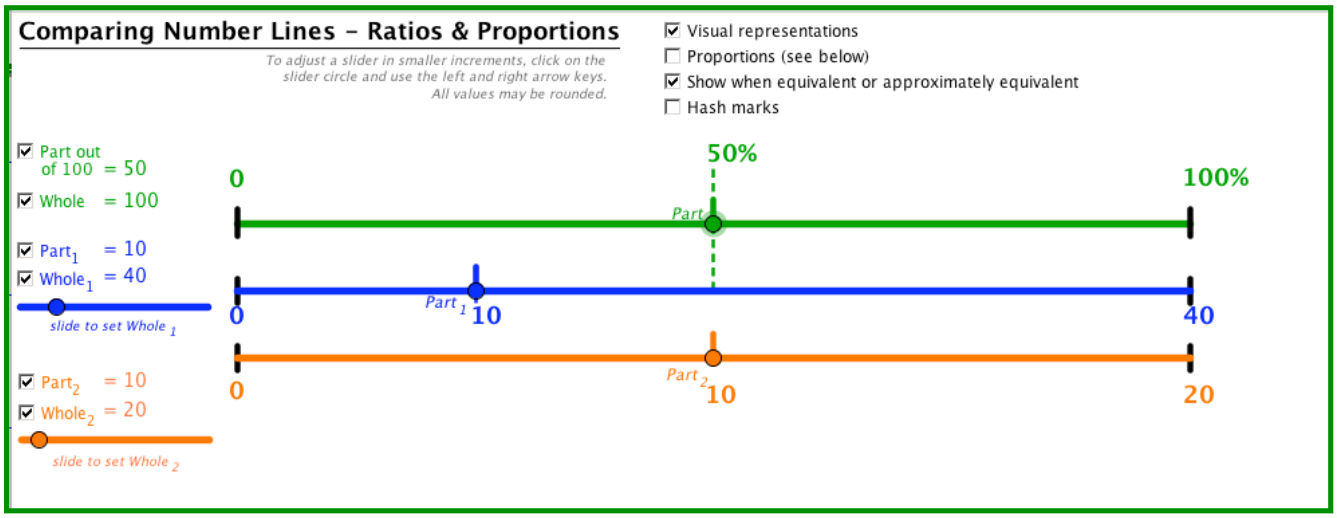
Exploration: Ratio & Proportion

Step 1: Launch the *Comparing Number Lines: Ratios & Proportions* applet.



- The first line (green) represents the whole. 50% of the whole 100% is shown by the dotted line.
- The second line (blue) represents the ratio 10 out of 40.
- The third line (orange) represents the ratio 10 of 20.

Step 2: Set up the following proportion $\frac{3}{5} = \frac{9}{15}$

a) First, ***uncheck*** the top part and whole. (Next to the green number line.)

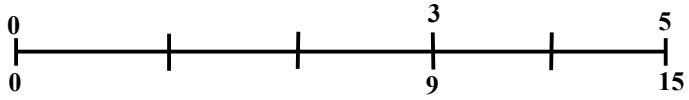
b) Next, click on ***blue dot*** below the **Whole$_1$** and adjust it to **5**. (Note-if you click on the dot on the slider, you can adjust the size with more precision with the right and left arrows.)

b) Then, adjust the **Part$_1$** to be **3** by clicking on the ***blue dot*** and dragging until the value is 3

c) Next, click the ***orange dot*** below **Whole$_2$** and adjust it to be 15.

d) Then, click on the checkbox to show the **Part$_2$** to be lining up with the blue **Part$_1$**.
(The red line shows up when the two ratios are equivalent and make a true proportion.)

Step 3: Show the proportion on the number line representation



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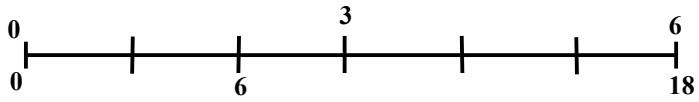
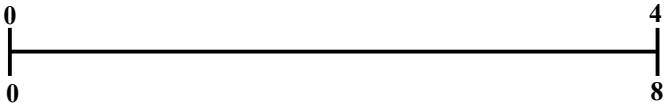
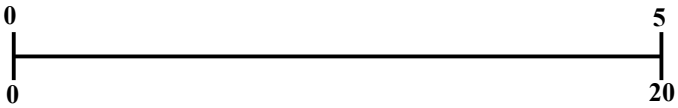
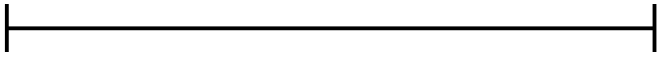
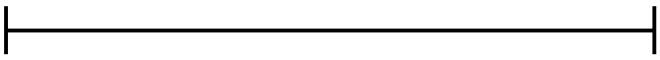
Are these ratios proportional?

Explain if these ratios are equivalent and justify your answer. Use the double number line to support your explanation. Check your prediction on the applet.

1.	$\frac{3}{6} \stackrel{?}{=} \frac{6}{18}$ Make 6 equal intervals. Top count by 1's, bottom count by 3's.	 No, these are not equivalent so they are not proportions. 3 is half of 6 so it is half way on the number line. 6 is only a third of 18 so they are not the same proportion of the line.
2.	$\frac{3}{4} \stackrel{?}{=} \frac{6}{8}$ Make 4 equal intervals.	
3.	$\frac{1}{5} \stackrel{?}{=} \frac{5}{20}$ Make 5 equal intervals.	
4.	$\frac{12}{15} \stackrel{?}{=} \frac{4}{5}$ Make 5 equal intervals.	
5.	$\frac{7.5}{15} \stackrel{?}{=} \frac{4}{8}$ Make 4 equal intervals.	

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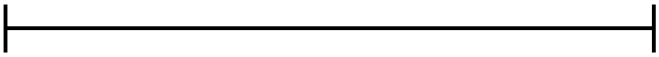
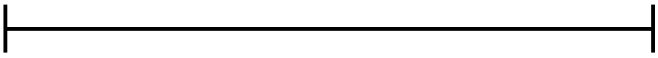
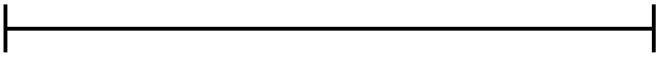
6.	$\frac{1}{3} \stackrel{?}{=} \frac{2}{4}$ Make 3 equal intervals	
7.	$\frac{3}{6} \stackrel{?}{=} \frac{6}{18}$ Make 3 equal intervals.	
8.	$\frac{50}{200} \stackrel{?}{=} \frac{5}{20}$ Make 10 equal intervals.	
9.	$\frac{1}{2} \stackrel{?}{=} \frac{.5}{1}$ Make 2 equal intervals.	
10.	$\frac{102}{150} \stackrel{?}{=} \frac{12}{15}$ Make 4 equal intervals.