Student: _____ Class: _____ Date:_____

Patterns in proportional relationships

Block 2 Student Activity Sheet

1. Consider a shade of green paint made by using 1 cup of blue paint for every 2 cups of yellow paint.

   a. Write a rule you can use to find the number of cups of yellow paint you will need for any number of cups of blue paint. Write your rule in words.

   b. The table represents the relationship between cups of blue paint and cups of yellow paint needed to make this shade of green. Complete the table. What process did you use to find the number of cups of yellow paint?

Cups of blue paint	Process	Cups of yellow paint
1		
2		
3		
4		

   c. What is the **coefficient** in the algebraic rule?

   d. Does this algebraic rule make sense for the scenario? Why or why not?

   e. What would happen if you had 0 cups of blue paint? How many cups of yellow paint would you have?

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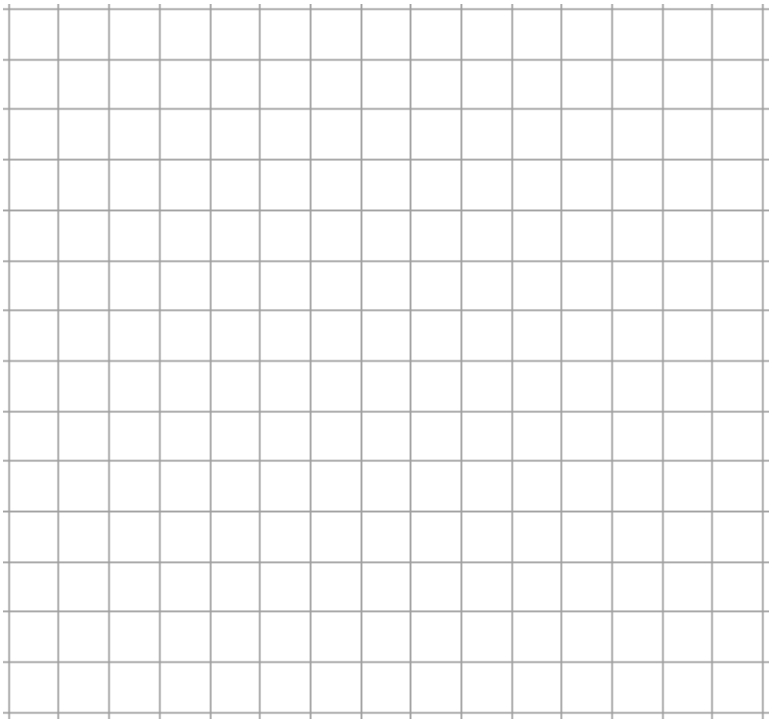
f. How are the representations related?

2. Now consider a different mixture for making green paint. This paint mixture requires 3 cups of yellow paint for every cup of blue paint.

   a. Complete the table and graph for this paint mixture.

Cups of blue paint	Process	Cups of yellow paint
1		
2		
3		
4		



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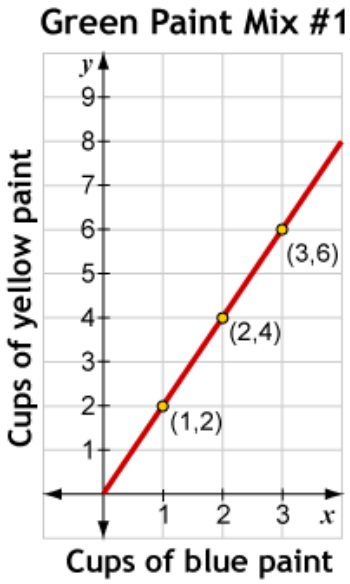
b. Write an algebraic rule that represents the relationship between the cups of blue paint, ***b***, and the cups of yellow paint, ***y***.

3. **REINFORCE** Use your work in question 2 to answer the following questions.

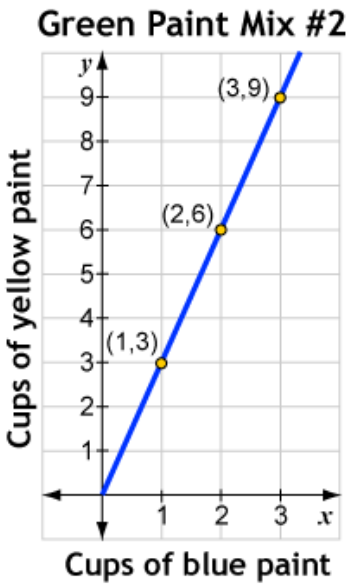
   a. Using the algebraic rule you wrote, calculate how much yellow paint should be added for 8 cups of blue paint.

   b. If you used 21 cups of yellow paint, how many cups of blue paint did you need?

4. Compare the graphs and algebraic rules for the two paint mixtures. Record similarities and differences.



y*=2*b



y*=3*b

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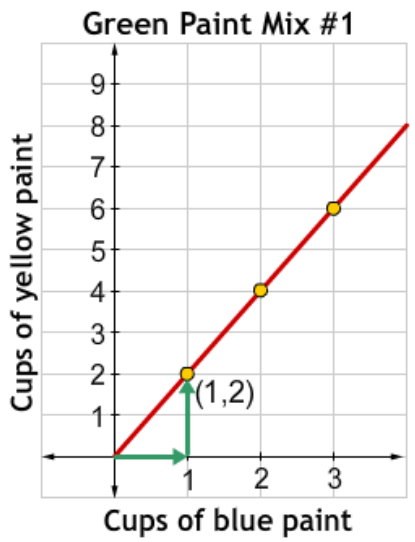
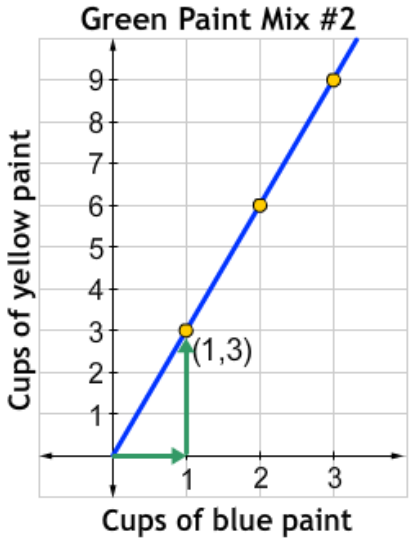
5. In a proportional relationship, the **constant of proportionality** is the unit rate. Consider the two paint scenarios.



$y = 2b$



$y = 3b$

a. How can you identify the constant of proportionality in a graph?

b. How can you identify the constant of proportionality in an algebraic rule?

c. How can you identify the constant of proportionality in a table?

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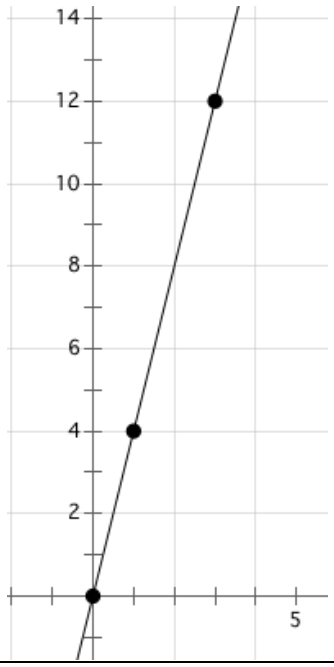
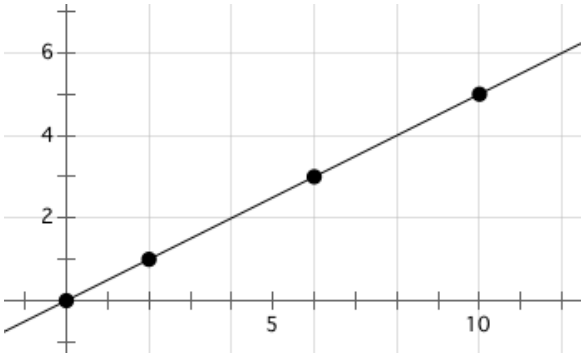
6. **REINFORCE** These representations show the relationship between blue paint and yellow paint for different shades of green. For each representation, determine the constant of proportionality and write an algebraic rule.

a.



b.



c.

Cups of blue paint	Cups of yellow paint	Ratio
3	2	
6	4	
9	6	
12	8	

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