

How can I change the probability?

1-75. Your team will be given a bag containing a set of colored blocks or counters. Each team will receive a bag that is identical to yours.

a. Look at the blocks in your bag. If you were to reach into the bag and select one block without looking, what is the likelihood that it would be:

i. Red?  $\frac{2}{12}$

ii. Green?

$$\frac{4}{12}$$

iii. Blue?

$$\frac{5}{12}$$

iv. ~~Orange?~~

Yellow  $\frac{1}{12}$



b. Do your answers for part (a) represent theoretical or experimental probabilities? Justify your response.

Theoretical probability, since we used our math to find the answers.

If you were to select one block from the bag 12 times, replacing the block you drew between each selection, how many of those times would you expect to have selected a blue block? What if you drew 24 times? Discuss both situations with your team and explain your answers.

12 times  

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5 blue

24 times  

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10 blue

1-77. DOUBLING BAGS

Now imagine that you and another team have combined the blocks from both of your bags into one bag.



- a. Do you think the larger sample space will change the likelihood of drawing blocks of different colors? Discuss this with your team and be ready to explain your ideas to the class. *No, since portions don't change*
- b. Get a second bag of blocks from your teacher and combine the contents of both bags. How many total blocks are there in the bag now? How many are there of each color? *24 total: 2Y, 4R, 8G, 10B*
- c. Work with your team to find the theoretical probability for selecting each color of block in the combined bags. *2/24 4/24 8/24 10/24*
- d. Has the probability for drawing each different-colored block changed? How do your answers for part (c) above compare to the theoretical probabilities that you calculated for the original bag in problem 1-75? With your team, make sense of how the probability for drawing a blue block compares before and after combining the bags. *No change, fractions*
- e. If you were to make 12 draws from the combined bag, replacing the block between draws, how many times would you expect to draw a blue block? Explain why your answer makes sense. *simplify*

→ Expect 5 Blue, Same as last time,  
 since  $\frac{10}{24} \div \left[ \frac{2}{2} \right] = \frac{5}{12}$

*to same probabilities as 12 total*

① Double bag Probabilities

Blue      Yellow    Green    Red

$\frac{10}{24} \div \left[ \frac{2}{2} \right] = \frac{5}{12}$  ✓

1-78. Do you think the probabilities would change if you combined three bags? Why or why not?

No since new probabilities would  
Simplify to previous ones.

1-79. What change do you think you could make to increase the chances of picking a blue block?

Add more blue blocks  
(79) Take out some green, yellow or red blocks.

Please put half your blocks back in baggie.

1 yellow

4 green

2 red

5 blue

Find the perimeter and area of each figure below.



