It's Your Lucky Day

J. Beans, Inc. produces two different flavor mixes at their jelly bean factory. Their most popular J. Beans are the Original Juicy Beans, but they also sell a surprising large quantity of their Junk Beans as well. If you look at flavor guides for these two mixtures, you will see that the Juicy Bean coconut flavor and the Junk Bean soap flavor look identical. Likewise, buttered popcorn and rotten egg look the same.

Ms. Chievous makes two bowls of jelly beans with her own unique mixture of flavors.

The tables show how many jelly beans of each flavor Ms. Chievous placed in the two bowls:

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Three of your best friends give you some advice.

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Think this through carefully! Ms. Chievous will have the camera rolling as you eat each jelly bean. Whose advice should you follow?

Because you have a 66.6% chance then 66.6% chance which is a better chance. I think you should pick both jelly beans from bowl 2.

Explain your reasoning thoroughly enough to convince us that you are making the best out of your lucky day.

Because
\[ \frac{2}{6} \times 100\% = 33.3\% \]
\[ \frac{4}{5} \times 100\% = 80\% \]
\[ \frac{1}{6} \times 100\% = 16.6\% \]
\[ \frac{3}{5} \times 100\% = 60\% \]

Virginia Department of Education 2019

Grade 8 Task
Todd

\[
\frac{4}{6} \quad \frac{3}{5}
\]

66.6\% \quad 60\%

Susan

\[
\frac{3}{5} \quad \frac{2}{4}
\]

60.0\% \quad 50\%
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Explain your reasoning thoroughly enough to convince us that you are making the best out of your lucky day.
If youágina chances of getting another butter pop. = \frac{1}{2}

R = rotten egg

S = soap

C = coconut

Coconut = \frac{3}{2}

Soap = \frac{1}{2}

You could also pick buttered popcorn first from bowl 8 and have a better chance of getting coconut. Then you should go to bowl #7. If you get another butter pop, you have a great chance of getting your second acceptable bowl. If your second choice is not a greater bowl of soap, I advise you to bowl #2. Equal chances if you got soap. If you could follow Todd's advice, you might get the bowl you want. If Jamie's advice works, you might get the bowl you want. If you're getting another butter pop, you might get the bowl you want.
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Think this through carefully! Ms. Chievous will have the camera rolling as you eat each jelly bean. Whose advice should you follow? **Todd or Jamie**

Explain your reasoning thoroughly enough to convince us that you are making the best out of your lucky day. **They have the same odds**

Virginia Department of Education 2019  Grade 8 Task
Bowl 1

\[ \frac{6}{20} = 0.3 = 30\% \]

Bowl 2

\[ \frac{12}{30} = 0.4 = 40\% \]

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<td>[ \frac{3}{5} \cdot \frac{2}{4} = 0.3 = 30% ]</td>
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Explain your reasoning thoroughly enough to convince us that you are making the best out of your lucky day.
40% of picking soap  
60% of picking coconut  
33 1/3% of picking rotten egg  
66 2/3% of picking buttered popcorn  
36 2/3% of picking a bad jellybean  
63 1/3% of picking a good bean  

Bowl A would be the best to choose from, because you're least likely to pick a bad bean.
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Bowl 1
Total of 5
\[ \frac{3}{5} \times \frac{2}{4} = \frac{6}{20} = \frac{3}{10} = 30\% \]

↑
2 j.b. from
bowl 1 = susan

Bowl 1 + 2
\[ \frac{3}{5} \times \frac{4}{6} = \frac{12}{30} = \frac{2}{5} = 40\% \]

↑
1 from each
bowl = jamie

Bowl
Total of 6
\[ \frac{4}{6} \times \frac{3}{5} = \frac{12}{30} = \frac{4}{10} = \frac{2}{5} = 40\% \]

↑
2 j.b. from
bowl 2 = todd

You could follow jamie’s advice
or todd’s advice because you would
have the same chance.
This is similar to my thinking
before because I had the same
answer but I didn’t use the
best mathematical strategies.

The reason why the second
numbers we multiplied are lower
than the first is because it is
a dependent variable, which means
you don’t replace it. And you can’t
replace it because when you eat
something you can’t replace it.

You also have to focus on the
positive side of things in
probability.

Personally I would follow todd’s
because I don’t like coconut
and you have the highest chance
(the same as jamie’s) to get
a good jelly bean.

“it’s your
lucky day!”
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Todd

Explain your reasoning thoroughly enough to convince us that you are making the best out of your lucky day.

I would choose Todd because he has a 40% probability of getting a good jelly bean. But, so does Jamie! However, if you figure out who has a higher chance of getting a bad jelly bean, Jamie has a higher chance. Therefore, Todd is a better answer.
Susan: out
\[
\frac{3}{5} \cdot \frac{2}{4} = \frac{6}{20} = \frac{3}{10} = 30\%.
\]

Ollie:
\[
\frac{4}{6} \cdot \frac{3}{5} = \frac{12}{30} = \frac{4}{10} = \frac{2}{5} = 40\%.
\]

Jamie:
\[
\frac{5}{6} \cdot \frac{4}{6} = \frac{20}{36} = \frac{5}{9} = 40\%.
\]

Chance of getting a bad job:

Toad: \[
\frac{2}{6} \cdot \frac{1}{5} = \frac{2}{30} = \frac{1}{15} = 6.6\%.
\]

Jamie: \[
\frac{7}{5} \cdot \frac{2}{6} = \frac{14}{30} = \frac{7}{15} = 13.3\%.
\]