

7-1: Understand Likelihood and Probability

1. Sample answer: Probability describes the likelihood that a chance event will occur.
2. Sample answer: The higher the probability of something, the more likely it will occur.
3. Sample answer: Probability is shown using a ratio of the number of favorable outcomes to the total number of possible outcomes. The number of favorable outcomes could be as low as 0, so the probability would be 0. The number of favorable outcomes could be the same as, but not greater than, the total number of possible outcomes, so the probability would be 1.
4. 2; 20%
5. equal
6. certain
7. impossible
8. a. 6; $\frac{3}{4}$; 75%
b. likely
9. a. 0
b. impossible
10. a. 2; 7; $\frac{2}{7}$
b. unlikely
11. The second bag;
Sample answer:
 $\frac{3}{20} = \frac{15}{100} = 15\%$ and
 $\frac{170}{500} = \frac{34}{100} = 34\%$.
So it is more likely to pick a tile that is labeled Y from the second bag. If a tile is selected and then replaced before selecting the next tile, and 100 tiles are selected this way, you can expect to draw about 34 tiles labeled Y in the second bag, compared to about 15 tiles labeled Y in the first bag.
12. Sample answer: The probability is $\frac{20}{40}$, or $\frac{1}{2}$. This means the likelihood of choosing a white marble can be described as neither likely nor unlikely.
13. a. $\frac{6}{25}$
b. Unlikely
14. a. 0 out of 4, or 0, or 0%
b. 3 out of 4, or $\frac{3}{4}$, or 75%
c. 4 out of 4, or 1, or 100%
15. No; Sample answer: There will be more purple sections than orange sections. Henry can color 5 sections orange and 5 sections purple to make the spinner fair.
16. Sample answer: It is possible that one or more students in a class would have the same birthday, but it is highly unlikely, though not impossible, that all 21 students would share the same birthday.
17. C

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18. No; Sample answer: There are not equally many tiles labeled with each letter, because there are more tiles labeled C than any other letter.