

7-7: Simulate Compound Events

1. Sample answer: You can use a tool, such as a spinner, number cube, or coin, to simulate an event by assigning outcomes that model the probability of an event. The results of repeated trials of the simulation will approximate the probability of the event.
2. Sample answer: You must be able to replicate the probability of an event with the simulation tool. Based on the number of outcomes of a tool and their probabilities, you can assign the outcomes to outcomes in the actual event.
3. Sample answer: Simulations are devised using the theoretical probabilities of the events.
4. $\frac{5}{12}$
5. Margo makes 2 of every 3 shots, so $P(\text{goal}) = \frac{2}{3}$ and $P(\text{missed shot}) = \frac{1}{3}$. With the number cube, $P(1, 2, 3, 4) = \frac{4}{6} = \frac{2}{3}$ and $P(5, 6) = \frac{2}{6} = \frac{1}{3}$. The outcomes and probabilities of the model match the real-world situation.
6. Sample answer:
0; 6
7; 9
 $\frac{6}{20}$; 30%
7. Sample answer:
0; 7
8; 9
 $\frac{2}{10}$; 20%
8. a. Sample answer:
Voters: 0 to 5;
Non-Voters: 6 to 9

b. $\frac{7}{10}$, or 70%
9. a. Sample answer:
Defective: 0 to 4;
Non-Defective: 5 to 9

b. Sample answer: $\frac{4}{10}$, or 40%
10. $\frac{1}{8}$
11. Sample answer: The more trials there are in a simulation, the closer the results come, in general, to the theoretical probability of the actual event.
12. Sample answer:
034148, 972621, 337258
13. a. $\frac{19}{20}$, or 95%

b. Sample answer: You could use the numbers 0 to 6 to represent people who work for a small business, and the numbers 7 to 9 to represent people who do not.