Worksheet 9-3
**"With" or "Without" Replacement**   Unit 9

Meg flipped a penny the given number of times. What is the probability of the following? (Give your answer as a simplified fraction and as a percent.)

1. P(heads, heads)

2. P(tails, tails)

3. P(tails, tails, tails)

4. P(tails, tails, tails, tails, tails, tails)

Two students randomly select a book from a shelf holding 3 novels, 2 biographies, and 1 history book. If the first student does NOT replace the book they choose, what is the probability that the students choose each of the following situations? (Give your answer as a simplified fraction and as a percent.)

5. Both choose novels.

6. Both choose biographies.

7. First student chooses a history book, second student chooses a novel.

8. Both students choose a history book.
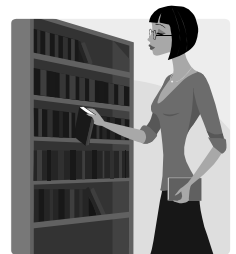
In the shelf of books above, two students choose a book. The first student chooses a book, and then returns that book to the shelf. Then the second student chooses a book. What is the probability that the students choose the following? (Give your answer as a simplified fraction and as a percent.)

9. Both choose novels.

10. Both choose biographies.

11. First student chooses a history book, second student chooses a novel.

12. Both students choose a history book.

You are choosing gumballs from a jar. There are 7 green, 6 red, 4 white, 2 pink, and 1 blue. You choose the first gumball, look at the color, and then put it back. You then choose a second gumball. What is the probability that you choose the following? (Give your answer as a simplified fraction and as a percent.)

13. P(red, green)

14. P(blue, blue)

15. P(pink, green)

16. P(white, blue)

What if you keep the first gumball, and then you choose a second gumball? What is the probability that you choose the following? (Give your answer as a simplified fraction and as a percent.)

17. P(red, green)

18. P(white, white)

19. P(green, red)

20. P(blue, blue)

21. P(pink, white)