12.1

Ex. How many possible outfits you can make with 2 pairs of jeans and 5 shirts?

$2 \cdot 5 = 10$

1. How may different 5-digit zip codes are there if any of the digits 0-9 can be used?

2. How many different ways can 4 friends stand in a cafeteria line?

3. Supose there are 12 seniors on the girls track team. How many different ways can three captains be picked?

$12 \cdot 11 \cdot 10 =$

4. Eight runners are competing in the 100-meter dash. In how many ways can the runners finishing if there are no ties?

12.3

Ex. You toss two six-sided dice. What is the probability the sum will be 4?

$\frac{3}{36} = .08$

5. In a standard deck of 52 playing cards, what is the probability of drawing an ace?

6. What is the probability of rolling a seven on a pair of six-sided dice?

7. In a standard deck of 52 playing cards, what is the probability of drawing a queen or a king?

$\frac{8}{52} = .15$

8. What is the probability of rolling six-sided die and rolling a number greater than 4?

12.4

Ex. A and B are two events and P(A) = 3/4 and P(B) = 2/5

$\cap$ = And (x)
$\cup$ = or (+)
P(A)+P(B)−P(A and B)

a. Find P(A ∩ B) $\frac{3}{4} \cdot \frac{2}{5} = \frac{3}{10} = .3$

b. Find P(A U B) $\frac{3}{4} + \frac{2}{5} - \left(\frac{3}{4} \cdot \frac{2}{5}\right) = \frac{17}{20} = .85$

c. Find P(B') $1 - \frac{2}{5} = \frac{3}{5} = .6$

9. P(A) = 0.25, P(B) = 0.2

   a. Find P(A ∩ B)

   b. Find P(A U B)

10. P(A) = 2/5, P(B) = 1/10

    a. Find P(A ∩ B)

    b. Find P(A U B)

11. A card is randomly selected from a standard deck of 52 cards. What is the probability that it is a diamond or a 10?

12. When two 6-sided dice are tossed, there are 36 possible outcomes. Find the probability that the sum is less than or equal to 4.

13. P(A) = 99%, Find P(A').

12.5

Ex. Nine slips of paper numbered 1-9 are placed in a hat. You randomly draw two slips. 1 2 3 4 5 6 7 8 ~~9~~

What is the probability that the first number is odd and the second number is even? $\frac{5}{9} \cdot \frac{4}{8} = \frac{5}{18} = .28$

14. Find the probability of randomly drawing the given marbles from a bag of of 4 red, 6 green, and 2 blue marbles (with and without replacement) (12)

   a. a red, then a green
      with repl: $\frac{4}{12} \cdot \frac{6}{12} = .17$
      w/o repl: $\frac{4}{12} \cdot \frac{6}{11} = .18$

   b. a blue, then a red
      with repl:
      w/o repl:

   c. a red, then a red
      with repl: $\frac{4}{12} \cdot \frac{4}{12} = .11$
      w/o repl: $\frac{4}{12} \cdot \frac{3}{11} = .09$

15. You randomly select 2 cards from a standard 52-card deck. What is the probability that the first card is a king or queen and the second card is a king, queen, or jack if you:

   a. replace the first card before selecting the second?

   b. do not replace the first card before selecting the second?