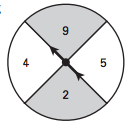
**10-1-10.3 Review**

\* Remember: if the order of objects matters, it’s a permutation. If the order of objects doesn’t matter, it’s a combination.

1. License plates in Italy consist of two letters, followed by three digits, followed by 2 letters.
   1. How many license plates can be made if the letters and digits can be repeated?
   2. How many license plates can be made if the letters and digits cannot be repeated?
2. How many 7-card hands can be made from a deck of 52 cards that contain:
   1. 4 spades and 3 hearts?
   2. 2 kings?
   3. all face cards?
3. How many ways can 1st prize, 2nd prize, and 3 prize be awarded to a group of 20 people.
4. How many groups of 4 students can be made from a class of 40?
5. You have 3 extra tickets to a concert and 5 friends that want to go. You decide to write your friends’ names on slips of paper and you will randomly select 3 of them. How many ways can you select the 3 friends to go with you to the concert.
6. How many different committees of 3 people can be chosen to work on a special project from a group of 9 people?
7. How many 2-topping pizzas can be made if there are 10 available toppings to choose from?
8. How many different four-letter passwords can be created for a software access if no letter can be used more than once?
9. You are selecting an outfit from 2 pairs of pants, 4 shirts, and 2 pairs of shoes. How many different outfits are possible?
10. 7 people are in a swim meet. If there are no ties, how many ways could the gold, silver, and bronze medals be awarded?
11. A four-person committee is chosen at random from a group of 16 people. How many different committees are possible?
12. How many ways can the letters of the word SCIENCE be ordered?
13. There are 8 finalists at a Quiz Bowl competition. The finalists must press a buzzer first in order to be eligible to answer a question.
    1. In how many different ways can the 8 finalists be seated at a table with 8 buzzers?
    2. Suppose the table has 12 buzzers. In how many different ways can the 8 finalists be seated at the 12 buzzers?
14. You have an equally likely chance of spinning any value on the spinner. Find the probability of spinning the given event.
    1. ****a shaded region
    2. a factor of 27
    3. a number less than 6 or a shaded region
    4. an even number or perfect square
    5. a prime number
    6. a two-digit number
15. In order to choose a mascot for a new school, 2755 students were surveyed: 896 chose a falcon, 937 chose a ram, and 842 chose a panther. The remaining students did not vote. A student is chosen at random.
    1. What is the probability that the student’s choice was a panther?
    2. What is the probability that the student’s choice was not a ram?
16. You are dealt 5 cards. Find the probability that you receive:
    1. all red cards
    2. 2 sixes and 3 sevens
17. Find the probability of choosing an E when selecting a letter from those in the word COLLEGE.
18. Seven letters are chosen, one at a time, at random from those in the word ENGLISH.
    1. Find the probability that they will be chosen in alphabetical order.
    2. Find the probability that the first letter will be a vowel.
19. Find the probability of randomly drawing the given card from a deck of cards:
    1. a club
    2. an ace
    3. a number less than 6

Expand: