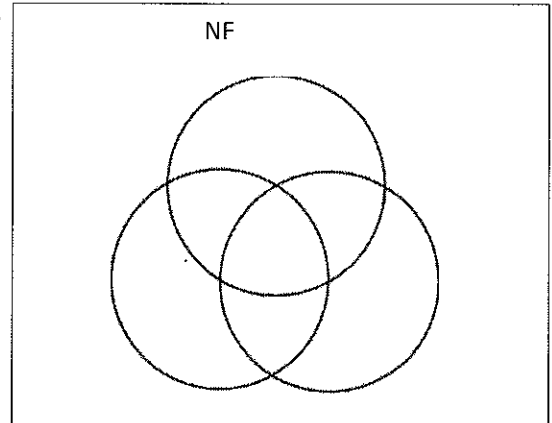




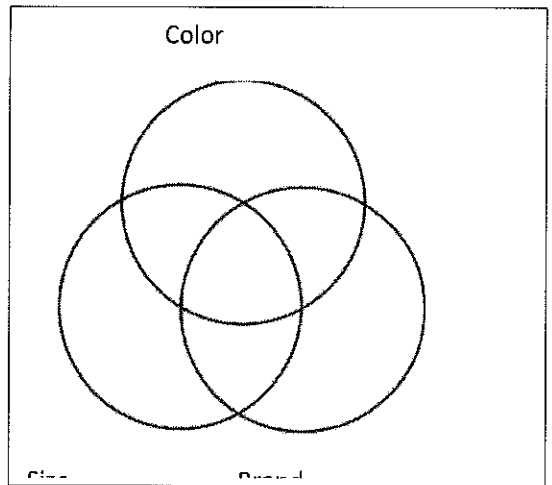
20. A survey was given asking whether they watch movies at home from Netflix, Redbox, or a video store. Use the results to determine how many people use Redbox.

- 52 only use Netflix
- 62 only use Redbox
- 24 only use a video store
- 16 use only a video store and Redbox
- 48 use only Netflix and Redbox
- 30 use only a video store and Netflix
- 10 use all three
- 25 use none of these



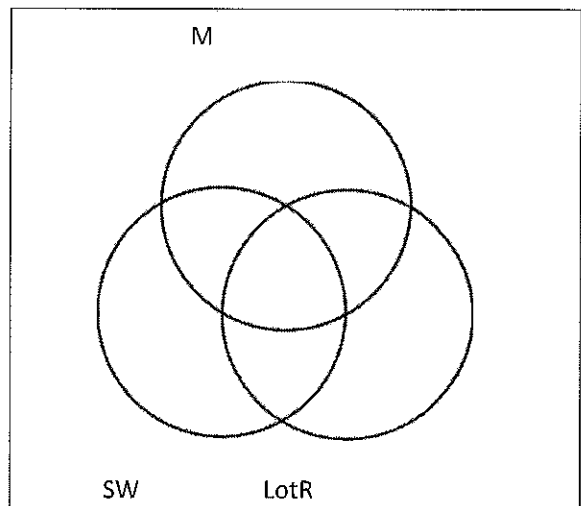
21. A survey asked buyers whether color, size, or brand influenced their choice of cell phone. The results are below. How many people were influenced by brand?

- 5 only said color
- 8 only said size
- 16 only said brand
- 20 said only color and size
- 42 said only color and brand
- 53 said only size and brand
- 102 said all three
- 20 said none of these



22. Use the given information to complete a Venn diagram, then determine: a) how many students have seen exactly one of these movies, and b) how many had seen only *Star Wars*.

- 18 had seen *The Matrix* (*M*)
- 24 had seen *Star Wars* (*SW*)
- 20 had seen *Lord of the Rings* (*LotR*)
- 10 had seen *M* and *SW*
- 14 had seen *LotR* and *SW*
- 12 had seen *M* and *LotR*
- 6 had seen all three



## Set Theory and Venn Diagrams

For Exercises 1–12, find each union or intersection. Let  $A = \{2, 5\}$ ,  $B = \{5, 7, 9\}$ ,  $C = \{x \mid x \text{ is an odd number less than } 9\}$ , and  $D = \{x \mid x \text{ is an even number less than } 9\}$ .

- |                |                |                |
|----------------|----------------|----------------|
| 1. $A \cup B$  | 2. $A \cup C$  | 3. $A \cup D$  |
| 4. $B \cup C$  | 5. $B \cup D$  | 6. $C \cup D$  |
| 7. $A \cap B$  | 8. $A \cap C$  | 9. $A \cap D$  |
| 10. $B \cap C$ | 11. $B \cap D$ | 12. $C \cap D$ |

For Exercises 13–16, draw a Venn diagram to represent the union and intersection of the given sets.

- 13. Pets** Alex has cats, rabbits, and fish as pets. Becky has cats and dogs. Cory has cats, birds, fish, and turtles. Let  $A = \{\text{cats, rabbits, fish}\}$ ,  $B = \{\text{cats, dogs}\}$ , and  $C = \{\text{cats, birds, fish, turtles}\}$ .
- Let  $X = \{x \mid x \text{ is a letter in the word ALGEBRA}\}$ ,  $Y = \{y \mid y \text{ is a letter in the word GEOMETRY}\}$ , and  $Z = \{z \mid z \text{ is a letter in the word CALCULUS}\}$ .
- Let  $P = \{x \mid x \text{ is a prime number less than } 10\}$ ,  $C = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ , and  $O = \{a \mid a \text{ is an odd number less than } 10\}$ .
- Let  $L = \{a, b, c, 1, 2, 3, \text{horse, cow, pig}\}$ ,  $M = \{-1, 0, 1, b, y, \text{pig, duck, } \Delta\}$ , and  $N = \{c, 3, \text{duck, } \Delta\}$ .
- Of 75 people with cell phones, 42 take pictures with their cell phone and 36 use their cell phone to take pictures and send text messages. How many use their phones to send text messages?
- Of 100 people in a band, 70 members said they play a sport and 50 members play a sport and take music lessons. How many take music lessons?
- An ice cream shop owner surveys 200 people who eat chocolate and vanilla ice cream. If 154 people like both flavors, and 196 people like vanilla, how many people like chocolate?

20.

6. Dale conducted a survey of the students in his classes to observe the distribution of eye color. The table shows the results of his survey.

Eye color	Blue	Brown	Green	Hazel
Number	12	58	2	8

- a. Find the experimental probability distribution for each eye color.

$P(\text{blue}) = \underline{\hspace{2cm}}$      $P(\text{brown}) = \underline{\hspace{2cm}}$      $P(\text{green}) = \underline{\hspace{2cm}}$      $P(\text{hazel}) = \underline{\hspace{2cm}}$

- b. Based on the survey, what is the experimental probability that a student in Dale's class has blue or green eyes?
- c. Based on the survey, what is the experimental probability that a student in Dale's class does not have green or hazel eyes?
- d. If the distribution of eye color in Dale's grade is similar to the distribution in his classes, about how many of the 360 students in his grade would be expected to have brown eyes?

**Exercises 17 - 24: A single die is rolled. Find the theoretical probability of each.**

17.  $P(3) = \underline{\hspace{2cm}}$                       18.  $P(9) = \underline{\hspace{2cm}}$                       19.  $P(\text{even } \#) = \underline{\hspace{2cm}}$
20.  $P(a \# > 1) = \underline{\hspace{2cm}}$                       21.  $P(a \# < 1) = \underline{\hspace{2cm}}$                       22.  $P(a \# < 7) = \underline{\hspace{2cm}}$
23.  $P(a \# \text{ divisible by } 4) = \underline{\hspace{2cm}}$                       24.  $P(a \# 3 \text{ or greater}) = \underline{\hspace{2cm}}$

- 1.) What is the theoretical probability that an even number will be rolled on a number cube?
- 2.) What was the experimental probability of how many times an even number was actually rolled using the table?
- 3.) Theoretically if you roll a number cube 36 times, how many times would you expect to roll the number one?

# on Cube	Frequency
1	8
2	3
3	9
4	6
5	4
6	6

- 4.) How many times did you actually roll the number one in the experiment?
- 5.) What is the theoretical probability for rolling a number greater than 4?
- 6.) What was the experimental probability of rolling a number greater than 4?
- 7.) What is the difference between theoretical and experimental probability?