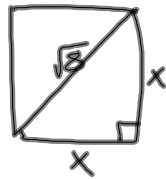


Warm-Up:

1) The following data shows the average number of hours a person said he or she wears contacts during one day. Find the mean, median, mode, and range of the numbers.

{9, 12, 16, 16, 16, 17, 17, 18, 24}

16.1 - mean
16 Median $24 - 9 = 15$ range
16 - mode



$$\begin{aligned}x^2 + x^2 &= \sqrt{8}^2 \\2x^2 &= 8 \\x^2 &= 4 \\x &= 2 \text{ ft}\end{aligned}$$

Section 12-1: Sampling and Bias

A **sample** is a portion of a **population**, or a large group.

Sample data is used to estimate opinions and characteristics among the whole population.

A **random sample** is a selection of the population so it is representative of the entire population.

Random samples are unbiased. In a **biased sample**, one specific part of a population is favored over another.

Examples:

1) Each day, a department store chain selects one male and one female shopper randomly from each of its 57 stores and asks them survey questions about their shopping habits. Identify the sample and suggest a population from which it was selected.

Population: Shoppers from all 57 stores.

Sample: 57 males + 57 females

Examples:

Identify each sample as biased or unbiased.

2) The student council surveys the students in one classroom to decide the theme for the spring dance.

Biased

3) The Parent Association surveys the parents of every fifth student to decide whether to hold a fundraiser.

Unbiased

Section 12-2: Counting Outcomes

1) A company allows you to design your own teddy bear. You may choose from five different fur colors (white, black, brown, yellow, and dark blue) and three different nose colors (pink, black, and brown). How many different combinations of fur color and nose color exist?

$$5 \cdot 3 = 15 \text{ combinations}$$

Fundamental Counting Principle:

If Event M can occur in m different ways and is followed by Event N that can occur n ways, then the event M followed by N can occur in $m \cdot n$ possible ways.

Examples:

2) When you rent ski equipment at Bridger Peaks Ski Resort, you choose from four different types of ski boots, 5 lengths of skis, and 2 types of poles. How many different outfits are possible?

$$4 \cdot 5 \cdot 2$$

40 outfits

Examples:

3) There are 8 students on the yearbook staff at MHS. The students want to stand in line for their yearbook photo. In how many ways can the 8 students stand for their picture?

$$8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$$

40,320 ways

The expression $n!$ is read n **factorial** and is the product of all the positive integers between 1 and n .

Example: $4! = 4 \cdot 3 \cdot 2 \cdot 1 = 24$

Examples:

Find the value of each expression.

4) $9!$

362,880

5) $12!$

479,001,600

Homework: pg. 645-648 #6-18 even, 22, 32
pg. 653-654 #8-14 even, 20, 24