3.5/3.6: Write and Solve Ratios and Proportions

Goals: *Write ratios in simplest form
*Solve proportions using cross-products
*Write and solve proportions from real-world situations

Ratio:

Ex: Derek and his brother decide to combine their CD collections. Derek has 44 CDs and his brother has 52 CDs.

a) Find the ratio of Derek's CDs to his brother's.

b) Find the ratio of Derek's CDs to the entire collection.

Ex: A volleyball team plays 14 home matches and 10 away matches.

a) Find the ratio of home matches to away matches.

b) Find the ratio of home matches to all matches.

Ex: At a carwash fund raiser, 18 ninth grade students and 14 tenth grade students worked the first shift.

a) Find the ratio of ninth grade students to tenth grade students.

b) Find the ratio of ninth grade students to all students.

Proportion:

To solve a proportion:

Solve:

Ex: $\frac{w}{35} = \frac{4}{7}$

Ex: $\frac{9}{2} = \frac{m}{12}$

Ex: $\frac{z}{54} = \frac{5}{9}$

Ex: $\frac{m+3}{8} = \frac{40}{64}$

Ex: A recipe for tomato salsa calls for 30 tomatoes to make 12 pints of salsa. How many tomatoes are needed to make 4 pints?

Ex: The elevator that takes passengers from the lobby of the John Hancock Center in Chicago to the observation level travels 150 feet in 5 seconds. The observation level is located on the 94th floor, at 1029 feet above the ground. How long does it take to get from the lobby to the observation deck?

Ex: When two full moons occur in the same month, the second full moon is called a "blue moon." On average, 2 blue moons occur every 5 years. How many are likely to occur in the next 25 years?

Ex: $\frac{4}{x} = \frac{8}{x-3}$

Ex: $\frac{3}{x} = \frac{9}{x-4}$

Scale Drawing (or model):

Scale:

Ex: 1 in: 12 feet means:

Ex: A map's scale is 1 cm : 85 km. Using a meter stick, the distance between Cleveland and Cincinnati is about 4.2 cm.

a) How many kilometers apart are they?

b) Use your reference to determine how many miles apart they are.