Ratios and Proportions

The ratio of a to b is . The ratio of a to b can also be written as a:b. Because a ratio is a quotient, its denominator cannot be zero.

Example 1: A geometry class consists of 16 female students, 12 male students, and 2 teachers. Write each ratio in simplest form.

male students : female students

students : teachers

Example 2: Simplify the ratio.

A proportion is an equation showing that two ratios are equal. If the ratio is equal to the ratio , then the following proportion can be written:

The numbers a and d are the extremes of the proportion.

The numbers b and c are the means of the proportion.

Here are two properties that are useful when solving a proportion:

Cross Product Property - The product of the extremes equals the product of the means.

Reciprocal Property - If two ratios are equal, then their reciprocals are also equal.

Example 3: Solve the proportion.