

Ratios, Probability, and Rates

A comparison between two quantities using a quotient is called a _____.

ex: If there are 12 males and 18 females in a team, then...

ratio of males to females =

Ex 1.

The steepness of a roof (called the pitch, or slope) is the ratio of the vertical rise to horizontal length. What is the slope of a roof with 8 inches of vertical rise for every 12 inches of horizontal length?



Ex 2.

A recipe calls for $2\frac{1}{2}$ cups of water and $\frac{3}{4}$ of a cup of oatmeal. Write the ratio of water to oatmeal in simplest form.

Ex 3.

The screen of a typical movie theater is 1.85 units of length for every 1 unit of height. Write this ratio of length to height as a fraction in simplest form.

A _____ is a number from 0 to 1 that represents the chances that something will happen. 0 means it is impossible. 1 means it is certain to happen.

ex: If you flip a coin, the probability of getting a heads is ____.

Why? _____

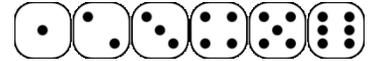
In general, the **theoretical probability of equally likely outcomes** is the following ratio:

$$\frac{\text{\# of favorable outcomes}}{\text{total \# of possible outcomes}}$$

Ex 4.

Write the following probabilities in simplest form.

What is the probability of rolling a 3 on a six-sided die?



What is the probability of rolling an odd number on a six-sided die?



What is the probability of rolling a 7 on a six-sided die?

A ratio in which the denominator is 1 is called a _____.

ex: $\frac{1.3}{1}$ 0.27 \$1.19 per pound \$4.25/gallon 24 students per professor

Ex 5.

A family has a total debt of \$7842 and a gross income of \$34,240. Write the debt-to-income ratio as a unit ratio, and interpret the result.

Ex 6.

Which of the following is a better buy?

Option A: 10.5-ounce can of soup for 79¢

Option B: 16-ounce can of soup for \$1.29



Another commonly used word for ratio is _____. For example, interest rate, exchange rate (0.8 euros per dollar), going rate of gasoline (\$4.25 per gallon), rate at which you are moving (70 miles per hour). Typically rates are written as unit ratios.