

## Lesson 11: Ratios

A **ratio** compares two numbers. Ratios can be written in the following ways.

2 to 3    2:3     $\frac{2}{3}$

### ▶ Example

What is the ratio of stars to moons? What is the ratio of moons to stars?

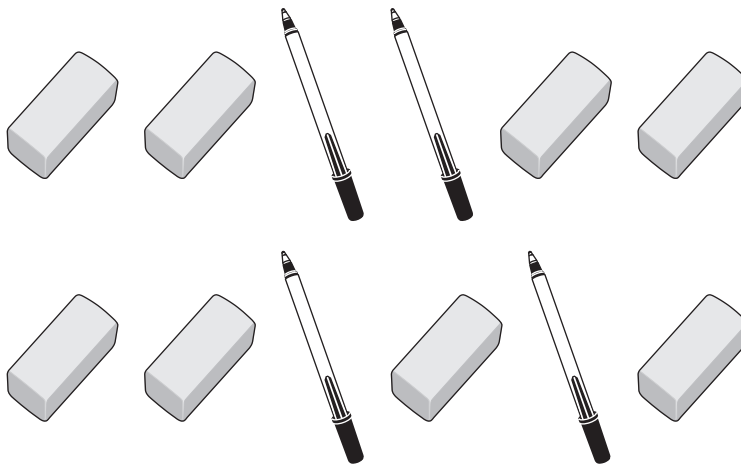


There are 5 stars and 3 moons. The ratio of stars to moons is 5 to 3, since there are 5 stars for every 3 moons. This is written as  $\frac{5}{3}$  or 5:3.

The ratio of moons to stars is 3 to 5, because there are 3 moons for every 5 stars. This is written as  $\frac{3}{5}$  or 3:5.

### ▶ Example

What is the ratio of pens to erasers?

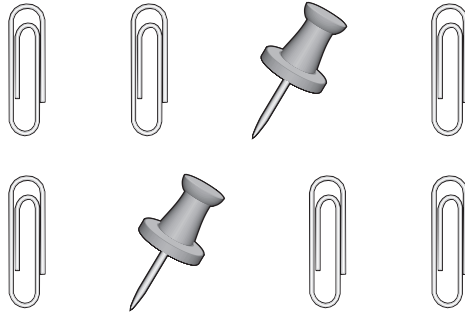


There are 4 pens and 8 erasers. The ratio of pens to erasers can be written as 4 to 8, 4:8, or  $\frac{4}{8}$ . The ratio can also be written in simplest form as 1 to 2, 1:2, or  $\frac{1}{2}$ .

Ratios can also be expressed with words. Ratios can be used to describe the relationship between two quantities.

### ▶ Example

Zander has paper clips and pushpins in his desk drawer. Describe the relationship between paper clips and pushpins.



There are 6 paper clips and 2 pushpins. The ratio of paper clips to pushpins in Zander's drawer is, therefore, 6:2, or 3:1. This means that for every 3 paper clips, there is 1 pushpin.

You can also use ratios to compare the items to a whole. For every 4 items in Zander's desk drawer, there are 3 paper clips and 1 pushpin. You can write the ratio of items in the desk drawer to paper clips as 4 to 3, 4:3, or  $\frac{4}{3}$ . The ratio of items in the desk drawer to pushpins is 4 to 1, 4:1, or  $\frac{4}{1}$ .

### ▶ Example

The following table shows the results of a small town's election for mayor. Describe the relationship between the candidates' votes using ratio language.

Candidate	Number of Votes
Natalie Mallot	300
James Porter	200

Natalie Mallot received 300 votes compared to 200 votes for James Porter. The ratio of votes for Mallot to votes for Porter is 300:200, or 3:2. For every 3 votes Mallot received, Porter received 2 votes. For every 5 votes in the election, Mallot received 3 votes and Porter received 2 votes.