10.1 Ratios

A ratio is a way to compare two numbers or quantities, *a* and *b*, by division.

The numbers *a* and *b* are called the terms of the ratio.

A ratio can be written in three forms. Each form is read "the ratio of *a* to *b*".

Word Form:	Ratio Form:	Fraction Form:
a to *b*	*a* : *b*	$\dfrac{a}{b}$

Ricardo grows plants on the balcony of his apartment. He plants three tomatoes, two peppers, and five carrots.

The table describes three types of ratios:

Type	Comparison	Word Form	Ratio Form	Fraction Form
Part to Part	the number of tomatoes to the number of carrots	3 to 5	3 : 5	$\dfrac{3}{5}$
Part to Whole	the number of peppers to the total number of plants	2 to 10	2 : 10	$\dfrac{2}{10}$
Whole to Part	the total number of plants to the number of tomatoes	10 to 3	10 : 3	$\dfrac{10}{3}$

Example: Write each statement as a ratio in three forms.

1.) For every vote Candidate A received, Candidate B received three votes.

word: ratio: fraction:

1 to 3   1:3 $\dfrac{1}{3}$

2.) For every twelve students, there are five wearing a blue shirt.

12 to 5   12:5 $\dfrac{12}{5}$

3.) For every touchdown, the team earns six points.

1 to 6   1:6 $\dfrac{1}{6}$

Example: An author has written 7 novels, 5 short stories, and 3 plays. Write each ratio.

4.) novels to plays   5.) short stories to novels

7 to 3   5 to 7

7:3   5:7

$\dfrac{7}{3}$ $\dfrac{5}{7}$