Ratios

Ratios are comparisons of two quantities.
There are 3 different ways to write ratios:

- Fraction $\left(\frac{A}{B}\right)$
- Colon (A:B)
- Word Form (A to B)

Ratios can be simplified just like fractions.

ex: write the ratio of triangles to circles in 3 ways: ▲ ▲ ▲ ▲ ○ ○

$$\frac{4}{2} = \boxed{\frac{2}{1}, \quad 2:1, \quad 2 \text{ to } 1}$$

Rates & Unit Rates

Rates are ratios that compare quantities measured in different units.
A unit rate is a rate with a denominator of 1.

To convert a rate to a unit rate:

1. Divide the numerator by the denominator

2. Either write your answer as a fraction with a label for the both the numerator and denominator OR as one number labeled with the first unit "per" the second unit

ex: express as a unit rate:
125 miles in 4 hours

$$\frac{125 \text{ mi}}{4 \text{ hr}} \qquad 125 \div 4 = 31.25$$

$$\boxed{\frac{31.25 \text{ mi}}{1 \text{ hr}}} \text{ or } 31.25 \text{ miles per hr}$$

Fractions, Decimals, & Percent

To convert a:

- <u>Decimal to Percent</u>: move the decimal point 2 places to the right

  ex: $0.345 = \boxed{34.5\%}$

- <u>Percent to Decimal</u>: move the decimal point 2 places to the left

  ex: $7\% = \boxed{0.07}$

- <u>Decimal to Fraction</u>: write the decimal over the place value of the last digit and then simplify

  ex: $0.008 = \frac{8}{1000} = \boxed{\frac{1}{125}}$

- <u>Fraction to Decimal</u>: divide the numerator by the denominator

  ex: $\frac{1}{5} = 5\overline{)1.0}^{\boxed{0.2}}$

- <u>Percent to Fraction</u>: write the percent over 100 and then simplify

  ex: $45\% = \frac{45}{100} = \boxed{\frac{9}{20}}$

- <u>Fraction to Percent</u>: convert the fraction to a decimal and then convert the decimal to a percent

  ex: $\frac{3}{10} = 0.3 = \boxed{30\%}$

Percent of a Number

1. Turn the percent to a fraction or decimal.

2. Multiply the fraction/decimal by the number.

ex: Find 18% of 40

$$0.18 \cdot 40 = \boxed{7.2}$$

Write each ratio in 3 ways.

29. A bank contains 15 pennies and 12 nickels. Write the ratio of nickels to pennies.	30. A bowl contains 6 apples and some bananas. If there are a total of 10 pieces of fruit, find the ratio of apples to bananas.

Convert each rate to a unit rate.

31. $4.25 for 64 fluid ounces	32. 297 miles on 11 gallons of gas	33. 124 feet in 10 seconds

Complete the chart by converting each number to a percent, fraction, and/or decimal.

Fraction	Decimal	Percent
34. $\frac{3}{8}$		
35.	0.45	
36.		72%
37.	0.1	
38. $\frac{3}{200}$		

Find each percent of a number.

39. 30% of 90	40. 15% of 38	41. 50% of 86
42. 75% of 160	43. 24% of 35	44. 2% of 74