

# 5.1 Ratios & Rates p. 5 started 12/4

EQ: How to use Ratios & Rates in real life?

\* ratio: compares 2 different amounts through division  $\frac{\$8}{\$10}$   $\$8:\$10$   $\$8$  to  $\$10$   $\$8$  for every  $\$10$

\* rate: compare 2 different amounts w/ different units

special ratio

$\frac{80 \text{ miles}}{2 \text{ hours}}$

$\frac{6 \text{ cups sugar}}{3 \text{ TBS Baking Soda}}$

$\frac{50 \text{ mil}}{5 \text{ gal}}$

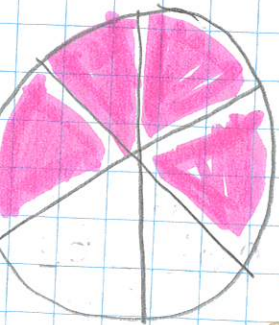
Unit Rate  $\rightarrow \frac{40 \text{ miles}}{1 \text{ hr}}$

$\frac{2 \text{ cups of Sugar}}{1 \text{ TBS Baking Soda}}$

$\frac{10 \text{ mile}}{1 \text{ gallon}}$

\* Unit rate: compare the amount of something to 1 (unit) of something else.  
denominator

## How Compare Ratios & Fractions



$\frac{\text{PART}}{\text{WHOLE}} = \frac{4 \text{ pink}}{6 \text{ total}} = \frac{2}{3} = \frac{2 \text{ pink}}{3 \text{ total}}$  Both Fractions & Ratios!

Fraction: two-thirds are pink  
Ratio: 2 pink for every 3 total

Ratios can also be PART to PART

The ratio of pink to white is!

$\frac{\text{PINK}}{\text{WHITE}} = \frac{4 \text{ pink}}{2 \text{ white}} = \frac{2 \text{ pink}}{1 \text{ white}}$

## x1 | Finding a Ratio

There are 45 kids & 60 adults on a plane.

What is the ratio of kids to TOTAL people?

TOTAL: Add all parts together.

$$\begin{array}{r} \text{PART 1} \\ 45 \\ \text{Kids} \end{array} + \begin{array}{r} \text{PART 2} \\ 60 \\ \text{Adults} \end{array} = \begin{array}{r} \text{TOTAL} \\ 105 \\ \text{Peeps} \end{array}$$
  
$$\frac{\text{Part}}{\text{Total}} = \frac{45 \text{ Kids}}{105 \text{ peeps}} = \frac{15}{15} = \frac{3K}{7 \text{ Adults}}$$

Ratio of Kids to Adults  
1st → Top  
2nd → bottom

$$\frac{45 \text{ Kids}}{60 \text{ adults}} \div \frac{15}{15} = \frac{3 \text{ Kids}}{4 \text{ adults}}$$

## x2 | Unit Rate

The plane travels 221 miles in 2 hours.  
How far will it go in 1 hr?

$$\frac{221 \text{ miles}}{2 \text{ hours}} \div \frac{2}{2} = \frac{110.5 \text{ miles}}{1 \text{ hr.}}$$

Speed:  $\frac{\text{Distance}}{\text{time}}$   
(rate)

$$\frac{110.5}{2 | 221}$$

## 2b. Convert Unit Conversions

What is the plane's speed in miles/minute

$$\frac{\text{conversion factor}}{60 \text{ min}} \div \frac{1 \text{ hr}}{1 \text{ hr}}$$

$$\frac{110.5 \text{ miles}}{1 \text{ hr}} \times \frac{\text{Conv. Fraction}}{60 \text{ min}} = \frac{110.5 \text{ miles}}{60 \text{ min}} \div \frac{60}{60}$$

cancel  
want

go bye bye!

$$\frac{1.84 \text{ miles}}{1 \text{ minutes}}$$

### Ex. 3 | Using a Ratio Table to Find Unit Rate

\* Find the unit rate for amount of points<sup>1st</sup> per time<sup>2nd</sup> played.

Time (min)	25	100	400	1600
Points	100	400	1600	6400

*(Red arrows labeled 'x4' point from 25 to 100, 100 to 400, 400 to 1600, and 1600 to 6400 in the Points row.)*

1. Does table show a Constant rate?

CHECK ALL pairs

② Choose any Pair to change into a Unit Rate  
(Points - 1st: goes on top) In question  
(Time - 2nd: goes on bottom) not in table.

$$\frac{\text{Points}}{\text{min}} = \frac{100 \text{ pts}}{25 \text{ min}} = \frac{4 \text{ points}}{1 \text{ min}}$$