

# Proportionality Part 2

## Proportional Graph

- \* must be linear (straight line)
- \* must start at the origin (0,0)

## Continuous Graph

- \* connect the dots
- \* x & y values can be partial amounts (ex: mi, hr...)

## Discrete Graph

- \* don't connect the dots
- \* x or y values can't be partial amounts (ex: shoes, people, tickets...)

## Unit Rate

- \* on a graph (1, #)
- \* fraction  $\frac{y}{x} = \frac{\text{unit rate}}{1}$

\* if it is a rate it must have units

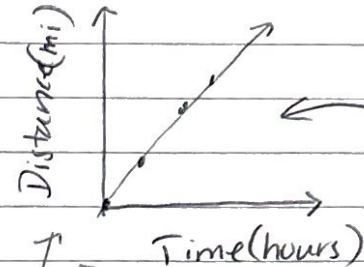
## Proportional Equation

$$y = kx$$

- \* k is the constant of proportionality
- \* k is the unit rate

Traveling 200 miles in 5 hours

| x   | y   |
|-----|-----|
| 0   | 0   |
| 1   | 40  |
| 2   | 80  |
| 3   | 120 |
| ... | ... |



Unit rate:  $\frac{40\text{mi}}{1\text{hr}}$

Label

Equation:  $y = 40x$

## Proportional Relationships

|    |   |    |     |
|----|---|----|-----|
| -2 | 0 | 0  | -16 |
|    | x | y  |     |
|    | 2 | 16 |     |
|    | 3 | 24 | +8  |
| +1 | 4 | 32 |     |
|    | 5 | 40 |     |

|                |                |                |                |
|----------------|----------------|----------------|----------------|
| $\frac{16}{2}$ | $\frac{24}{3}$ | $\frac{32}{4}$ | $\frac{40}{5}$ |
|----------------|----------------|----------------|----------------|

$$\frac{8}{1}$$

Proportional

$$k = 8$$

$$y = 8x$$

|    |   |    |    |
|----|---|----|----|
| -2 | 0 | 2  | +2 |
|    | x | y  |    |
|    | 2 | 4  |    |
| +2 | 4 | 6  | +2 |
|    | 6 | 8  |    |
|    | 8 | 10 |    |

|               |               |               |                |
|---------------|---------------|---------------|----------------|
| $\frac{4}{2}$ | $\frac{6}{4}$ | $\frac{8}{6}$ | $\frac{10}{8}$ |
|---------------|---------------|---------------|----------------|

Not Proportional

- There is no (0,0) and the ratios are not equal. Linear but not proportional