

## Section 1.1: Rise Over Run

### Ratios and Rates:

#### What is a ratio?

A ratio is a comparison between two numbers measured in the same units (pg. 9).

Ex. If a recipe calls for 3 cups of flour and 2 cups of water, the ratio of flour to water is 3 to 2, and can be written:

#### How do you simplify or reduce a ratio?

A ratio with whole numbers can be reduced in the same way a fraction can be reduced:

\_\_\_\_\_ both numbers by a common factor.

Ex. 35 : 15

A ratio that contains decimals can be simplified by changing the decimal numbers into whole numbers: \_\_\_\_\_ both numbers by 10 (or 100, etc) to move the decimal point, then reduce (if possible).

Ex. 0.4 : 3.6

A ratio that contains fractions can be simplified by changing the fractions into whole numbers: \_\_\_\_\_ both numbers by the lowest common denominator of the fractions involved, then reduce (if possible).

Ex.  $\frac{2}{3} : 4$

## Section 1.1: Rise Over Run

### What is a rate?

A rate is a comparison between two numbers measured in different units.

Ex. If a person walked 10 km in 90 minutes, their rate would be:

### What is a proportion?

A proportion is a statement of equality between two ratios (pg. 9).

Ex. If tripling the recipe, you would now need 9 cups of flour and 6 cups of water. The ratio of flour to water is still the same, as shown in this proportion:

A proportion can also be a statement of equality between two rates.

Ex. If you can drive 40 km in 1 hour, you can drive 200 km in 5 hours:

### Solving a Proportion:

- One value from one ratio is unknown
- Cross-multiply and divide

### Example

Solve for x in this proportion:  $\frac{4}{14} = \frac{12}{x}$

## Section 1.1: Rise Over Run

**You try:**

Solve for x in this proportion:  $\frac{30}{4} = \frac{x}{18}$

**Example - Set up and solve a proportion**

If 5 cm on a map represents 150 km of actual distance, how many cm would 60 km be on the map?

**You try:**

A certain recipe calls for 2 teaspoons of salt for every 2.5 cups of water. If the water is increased to 8 cups, how many teaspoons of salt will be required?

**Check your understanding:**

*Build your Skills, pg. 11-12, #1, 2, 3, 4, 5, 6*