Ratios and Rates and Proportions

Learning Goal:

By the end of today,

(i) I will be able to recognize the difference between a ratio and rate,

(ii) be able to change the setup of a ratio

(iii) recognize and solve a proportion (two ratios set equal to each other)

Feb 11-8:49 AM

<u>Ratios</u> compare quantities with the same units or no units at all.

$$1:2$$

<u>Rates</u> show how one quantity changes with respect to another.

$$\frac{50km}{1hr}$$

A <u>proportion</u> is an equation that states two ratios or rates are equivalent.

$$3:4=6:8$$

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The ratio of cats to dogs in a pet store was 14 cats to 16 dogs.

This <u>ratio</u> can be expressed in different forms.

14 to 16   or   14 : 16   or $\dfrac{14}{16}$

Solving Proportions - Find the missing value

$4 : 5 = \boxed{} : 35$

the missing term could also be replaced with a variable

$4 : 5 = n : 35$

and then rewritten in fraction form to solve

$$\frac{4}{5} \div \frac{n}{35}$$

Feb 11-9:01 AM

Solve

(arrows)

(solving)

$$5 : 9 = x : 81$$

$$5 : 9 = x : 81$$

Feb 11-9:26 AM

Your lawn mower needs a gas to oil mixture of 50:1.

If you want to mix 10ml of oil with gas, how much gas do you need?

A <u>rate</u> is recognizable because it usually has different units.

For example, $\frac{5km}{2hr}$,

A "unit rate" is created by performing the division operation and ending up with a "1" in the denominator position.

For example, $\frac{200km}{4hr}$ becomes $\frac{50km}{1hr}$ and is written 50km/hr.

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Rates

Eating 14 bananas a week results in a rate of:

$$\frac{14 \text{ bananas}}{7 \text{ days}} \text{ or a unit rate of } \frac{2 \text{ bananas}}{\text{day}}$$

Feb 11-9:13 AM

Some rates make more sense than others:

For example, travelling 120km in 2 hours can be expressed as,

$$\frac{120km}{2\ hrs} \quad or \quad \frac{60km}{hr}$$

Task - Ratios, Rates, Proportions

Sep 15-1:54 PM