Define:

<u>Rate</u>: A quantity (amount) of one thing considered in relation to another thing; usually associated with speed or interest.

eg. km/hour ... the speed we drive our vehicle on the road.

eg. $\frac{m}{s} = \left(\frac{\text{meters}}{\text{second}}\right)$ = meters per second

... the speed a rocket might travel

eg. $\frac{\text{blue eyed boys}}{\text{total students in the class}}$ → this is a <u>ratio</u>

Have you ever heard of bank interest rates or tax rates?

In Canada we have a Government (Federal) Sales Tax of 5% $\therefore$ GST = 5%

$\therefore$ we have to multiply the cost of an item by 0.05 to calculate the tax; then we have to add that tax to the cost of the item to get the total we must pay.

eg. A sandwich cost \$5

$$GST = 5 \times 0.05$$

$$= \frac{5}{1} \times \frac{5}{100}$$

$$= \frac{25}{100}$$

$$= 25 \text{ cents}$$

$$= 0.25$$

$\therefore$ The sandwich will cost us \$5.25 (The price + GST).

How much will a bicycle that costs \$189 be including GST?

$$GST = 189 \times 0.05$$

$$= \frac{189}{1} \times \frac{5}{100}$$

$$= \frac{945}{100} = 9.45$$

\$189 + \$9.45

$= \underline{\underline{\$198.45}}$

If a space ship is travelling at 69,500 meters per second, how long will it take to travel 2000 km. (in hours)

$$\frac{69\,500\,\cancel{m}}{\cancel{s}} \times \frac{60\,\cancel{s}}{\cancel{min}} \times \frac{60\,\cancel{min}}{hour} \times \frac{1\,km}{1000\,\cancel{m}} =$$

$$\frac{69\,500\,m}{s} \times \frac{60\,sec}{min} = \frac{4170000\,m}{min}$$

Rates & Ratios

$$\frac{417\,000\,\cancel{m}}{min} \times \frac{1\,km}{1000\,\cancel{m}} = \frac{4170\,km}{min}$$

$$\frac{4170\,km}{min} \times \frac{60\,min}{hour} = \frac{250\,200\,km}{hr}$$

$$\frac{2000\,km}{250\,200\,km/hr} = 0.0079936 \text{ hours}$$

(x60)

$$= 0.479616 \text{ minutes}$$

(x60)

$$= 28.777 \text{ seconds.}$$

— to here 12/06/17

Define:

A <u>ratio</u> is just a comparison of values ...

how much of one thing compared to another

$\frac{\text{apples}}{\text{oranges}}$ or $\frac{\text{vehicles}}{\text{drivers}}$ or $\frac{\text{students}}{\text{class}}$ or $\frac{\text{schools}}{\text{city}}$

to practice sheet — 12/12/17