5.9 Blank Note

Tuesday, December 8, 2015   1:47 PM

<u>Unit 5: Percent, Ratio, and Rate</u>
5.9 Exploring Rates   *Name*_____ _____

A <u>rate</u> is a comparison of two quantities measured in different units.

Some examples:

Car Travelling at 80 km/h

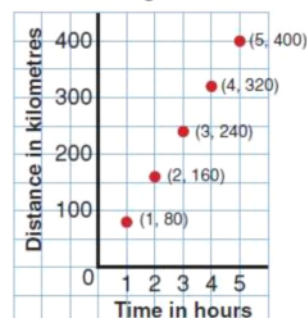Apples are on sale for $1.45 for 10.
{ There are 500 sheets in one roll of paper towel.
{ Stephanie earns $5.00 an hour for baby-sitting.

The last two are ___unit___ ___rates___.

Each rate compares a quantity to __one__ unit.

Distance in kilometres — points: (1, 80), (2, 160), (3, 240), (4, 320), (5, 400)
Time in hours 1 2 3 4 5

We can use diagrams, tables and graphs to find unit rates.

Example

Time (min)	5	10	15	20	25
Sheets printed	200	400	600	800	1000

A printing press prints 120 sheets in 3 minutes.
a) Express the printing as a unit rate.
b) How many sheets are printed in 1 hour?

a) First write the rate.
(Use the idea of equivalent ratios to help find the unit rate.)

$$120 \text{ sheets} / 3 \text{ min} = \frac{120 \text{ sheets}/3\text{min}}{3 \; 40} = 40 \text{ sheets}/\text{min}$$

b) We know that there are 40 sheets/min printed.
There is 60 minutes in 1 hour.

$$40 \text{ sheets}/\text{min} = \frac{(40 \times 60)}{(1\text{min} \times 60)} = \frac{2400 \text{ sheets}}{1 \text{ hour}}$$

$$\frac{40 \text{ sheets}}{1 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hour}} = 2400 \text{ sheets}/\text{hr.}$$

OR 60 min.

(diagram: 120 Sheets ÷3 → ? Sheets; in 3 min ÷3 → 1 min)
(diagram: 40 Sheets ×60 → ? Sheets; in 1 min ×60 → 60 min)

Try This:

1. Leo types 180 words in 3 minutes. Express as a unit rate.

$$180 \text{ words}/3\text{ min} = \frac{180 \text{ words}/3\text{min}}{3} = 60 \text{ words}/\text{min}$$