January 23, 2012

Math 7

Is there anything that needs to be corrected?

1/23 - Ratios, Rates and Unit Rates

A **ratio** is a comparison of two quantities using division.

$\frac{3}{4}$, 3 to 4, 3 : 4

Boys to Girls

15 16

$\frac{15}{16}$

A **rate** is a ratio of two quantities with different units.

$\frac{60 \text{ miles}}{2 \text{ hours}}$

$\frac{ft}{sec}$

$\frac{pounds}{in^2}$

$\frac{miles}{gallon}$

A rate with a denominator of 1 is called a **unit rate**.

$\frac{30 \text{ miles}}{1 \text{ hour}}$

Examples running cup

1 ACTIVITY: Finding Reasonable Rates

	Description	*Verbal Rate*	*Numerical Rate*
a	Your pay rate for washing cars	inches per month d	e $\frac{\text{m}}{\text{sec}}$
b	The average rainfall rate in a rain forest	pounds per acre h	f $\frac{\text{people}}{\text{yr}}$
c	Your average driving rate along an interstate	meters per second e	h $\frac{\text{lb}}{\text{acre}}$
d	The growth rate for the length of a baby alligator	people per year f	c $\frac{\text{mi}}{\text{h}}$
e	Your running rate in a 100-meter dash	dollars per hour a	b $\frac{\text{in.}}{\text{yr}}$
f	The population growth rate of a large city	dollars per year g	d $\frac{\text{in.}}{\text{mo}}$
g	The average pay rate for a professional athlete	miles per hour c	$\$$ a $\frac{}{\text{h}}$
h	The fertilization rate for an apple orchard	inches per year b	$\$$ g $\frac{}{\text{yr}}$

Turn to page 56 in your RED Journal...

2 ACTIVITY: Unit Analysis

Work with a partner. Some real-life problems involve the product of an amount and a rate. Find each product. List the units.

a. $\frac{6\text{ h}}{1} \times \frac{\$12}{1\text{ h}} = \frac{72}{1} = \$72$

b. $6\text{ mo} \times \frac{\$700}{\text{mo}} = \$4200$

c. $10\text{ gal} \times \frac{22\text{ mi}}{\text{gal}} = 220\text{ mi}$

d. $9\text{ lb} \times \frac{\$3}{\text{lb}} = \$27$

e. $13\text{ min} \times \frac{60\text{ sec}}{\text{min}} = 780\text{ sec}$

Write the given ratio as a fraction in simplest terms.

25 to 45

$\frac{25}{45} = \boxed{\frac{5}{9}}$

63:28

$\frac{63}{28} = \boxed{\frac{9}{4}}$ leave improper

35 boys to 25 girls

$\frac{35}{25} = \boxed{\frac{7}{5}}$

2 feet : 8 feet

$\frac{2}{8} = \boxed{\frac{1}{4}}$

Find the unit rates of each…

$74.75

$\frac{\$74.75 \div 5}{5\text{ gal} \div 5} = \frac{\$14.95}{1\text{ gal}}$

$5\overline{)74.75}$ → 14.95

$1.19

$\frac{\$1.19}{12\text{oz}} = \frac{\$.10}{1\text{oz}}$

$2.35

$\frac{\$2.35}{12\text{ eggs}} = 0.1958\overline{3}$

$\$.20$

180 miles in 3 hours

$\frac{180\text{ miles}}{3\text{ hours}} = 60\text{ mph}$

mi/hr

256 miles per 8 gallons

$\frac{256\text{ mi}}{8\text{ gal}} = 32\text{ mpg}$

HOMEWORK

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all

DUE Tuesday