A1 w4d4 2-6 Ratios, Rates, Conversions

Alg 1 Warm Up Friday Week 4

Skill 2: Set up a proportion and solve:

1. Mr. Wilkes graded 12 Algebra quizzes in 30 minutes. If he keeps grading at this rate, how long will it take him to grade the remaining 20 quizzes?

2. Solve: $\frac{x+2}{3}=\frac{2x-3}{4}$

3. Solve for y: $4x-5y=15$

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Algebra I Week 4 **2-6 Ratios, Rates, and Conversions** Name_____

Essential Understanding: You can write ratios and find unit rates to compare quantities. You can also convert units and rates to solve problems.

Problem 1: Comparing Unit Rates

You are shopping for T-shirts. Which stores offers the best deal?

Store A	Store B	Store C
$\frac{\$25}{2\ shirts} = \frac{\quad}{1\ shirt}$	$\frac{\$45}{4\ shirts} = \frac{\quad}{1\ shirt}$	$\frac{\$30}{3\ shirts} = \frac{\quad}{1\ shirt}$

Got it? If store B lowers its price to $42 for 4 shirts, does the solution to the problem change? Explain in a full sentence.

Problem 2: Converting Units

Set up a proportion to convert each amount to the given units.

A. 330 minutes; hours B. 15 kg; grams C. 5 ft 3 in; inches

Got it? What is 1250 cm converted to meters?

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Problem 3: Converting Units Between Systems

The CN Tower in Toronto, Canada, is about 1,815 ft tall. About how many meters tall is the tower? Set up a proportion using the fact that $1m \sim 3.28\ ft$.

Got it? Set up a proportion to solve each problem:

A. A building is 1,450 ft tall. How many meters tall is the building?

B. Monetary exchange rates change from day to day. On a particular day, the exchange rate for dollars to euros was about 1 dollar=0.63 euro. About how many euros could you get for $325 on that day?

Problem 4: Converting Rates. Converting rates is more difficult than converting units, and cannot be solved with a single proportion. Let's try this one first:

A student ran the 50 yd dash in 5.8 s. At what speed did the student run in miles per hour? Round your answer to the nearest tenth.

Know: *The running speed in yards per second*

Need: *The running speed in miles per hour*

Plan: *Write the speed as a ratio. Choose conversion factors to multiply by so that the original units (yards and seconds) divide out, leaving you with the units you need (miles and hours).*

Got it?

A. An athlete ran a sprint of 100 ft in 3.1s. At what speed was the athlete running in miles per hour? Round to the nearest mile per hour.

B. **Reasoning**. In problem 4, one student multiplies by these three conversion factors to find the speed: $\frac{1\ mi}{1760\ yd}$, $\frac{60s}{1\ min}$, and $\frac{60\ min}{1\ h}$. Can this method work? Why or why not. Answer in a complete sentence.

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HW p 119: 11, 13, 15, 17, 21, 23, 28, 29, 34

Use proportions to convert each amount to the units given. Show all your work clearly!

11. 63 yd; feet

13. 2.5 lb; ounces

15. 4 min; seconds

17. 9 yd; meters

21. 89 cm; inches

Copy and complete each statement.

29. 75 cents/h = ■ dollars/day

23. **Maintenance** The janitor at a school discovered a slow leak in a pipe. The janitor found that it was leaking at a rate of 4 fl oz per minute. How fast was the pipe leaking in gallons per hour?

34. A college student is considering a subscription to a social-networking site that advertises its cost as "only 87 cents per day." What is the cost of membership in dollars per year?