9.2 Homework Name Key

Round all answers to the nearest thousandths.

1-4, USCS Units. Answer the following questions involving conversions within the USCS system.

82" 1. What is the height in inches of a 6'10" basketball player?

$(6\ ft)\left(\frac{12\ in}{1\ ft}\right) = 72" + 10 = 82"$

62.308 lb 2. One cubic foot holds 7.48 gallons of water, and one gallon of water weighs 8.33 pounds. How much does a cubic foot of water weigh in pounds? In ounces?

996.93 oz

$(7.48\ gal)\left(\frac{8.33\ lb}{1\ gal}\right) = 62.308\ lb\left(\frac{16\ oz}{1\ lb}\right) = 996.93\ oz$

52.936 mph 3. A speed boat has a top speed of 46 knots (nautical miles per hour). What is this speed in miles per hour?

$46\ knots = \left(\frac{46\ Nmile}{hour}\right)\left(\frac{6076.1\ ft}{1\ Nm}\right)\left(\frac{1\ mile}{5280\ ft}\right) = 52.936\ mph$

6.75 cord 4. How many cords of wood could you fit in a room that is 4 yards long, 4 yards wide, and 2 yards high? (See table 2.4)

$(4\ yd)(4\ yd)(2\ yd)\left(\frac{27\ ft^3}{1\ yd^3}\right)\left(\frac{1\ cord}{128\ ft^3}\right) = 6.75\ cord$

5-7, Metric Prefixes. Complete the following sentences with a number. All answers should be greater than 1.

5. A meter is 1000 times as large as a millimeter. $1\ mL = .001\ L$

6. A liter is 1000 times as large as a milliliter.

7. A square meter is 10000 times as large as square centimeter. $\times 100$ m → cm

8-12, USCS-Metric Conversions. Convert the following quantities to the indicated units. Convert the following quantities to the indicated units.

48.51 lb 8. 22 kilograms to pounds $22\ kg\left(\frac{2.205\ lb}{1\ kg}\right) =$

15.137 L 9. 16 quarts to liters $16\ qt\left(\frac{1\ L}{1.057\ qt}\right) = 15.137\ L$

88.510 kph 10. 55 miles per hour to kilometers per hour

$\left(\frac{55\ miles}{hour}\right)\left(\frac{1\ km}{0.6214\ mi}\right) = 88.5098$

40.267 mph 11. 18 meters per second to miles per hour

$\left(\frac{18\ m}{sec}\right)\left(\frac{0.6214\ mi}{1000\ m}\right)\left(\frac{3600\ sec}{hour}\right) = 40.267\ mph$

4916.12 cm^3 12. 300 cubic inches to cubic centimeters

$\left(300\ in^3\right)\left(\frac{2.540\ cm}{1\ in}\right)^3 = 4916.119\ cm^3$

13, Celsius-Fahrenheit Conversions. Convert the following temperatures from Fahrenheit to Celsius or vise versa.

13. 7.2 C a. $\frac{45°F - 32}{1.8}$ 68°F b. $(20°C)(1.8) + 32$ 5°F c. -15°C

-22°F d. -30°C 21.1 C e. $\frac{70°F - 32}{1.8}$

14, Celsius-Kelvin Conversions. Convert the following temperatures from Kelvin to Celsius or vise versa.

14. -223.15 °C a. 50 K - 273.15 −33.15 °C b. 240 K 283.15 K c. 10°C + 273.15

15-20, Currency Conversions. Use the currency exchange rates in Table 2.1 to answer the following questions. State all of the conversion factors that you use.

$1.42/lb 15. Apples in a French market cost 2.50 euros per kilogram. What is the price in dollars per pound?

$\left(\frac{2.50\ euro}{kg}\right)\left(\frac{1\ \$}{.7965\ euro}\right)\left(\frac{.4536\ kg}{1\ lb}\right) = \$1.42/lb$

$6.65/gal 16. Gasoline at a Belgian gas station costs 1.4 euros per liter. What is the price in dollars per gallon?

$\left(\frac{1.4\ euro}{1\ L}\right)\left(\frac{1\ L}{.2642\ gal}\right)\left(\frac{1\ \$}{.7965\ euro}\right) = \$6.65/gal$

$ 21.73 17. Suppose that a new fuel-efficient German car travels an average of 26 kilometers on 1 liter of gasoline. If gasoline costs 1.50 euros per liter, how much will it cost in dollars to drive 300 kilometers?

$\frac{26\ km}{1\ L}$ $\frac{1\ L}{1.50\ euro}$

$\left(\frac{1.50\ euro}{L}\right)\left(\frac{1\ L}{26\ km}\right)(300\ km)\left(\frac{\$1}{.7965\ euro}\right) = \$21.73$

$20.69/yd² 18. Carpet at a British home supply store sells for 16 pounds (currency) per square meter. What is the price in dollars per square yard?

$\left(\frac{16\ BP}{m^2}\right)\left(\frac{1\ \$}{.7072\ BP}\right)\left(\frac{.9144\ m}{1\ yd}\right)^2 = \$20.69/yd^2$

$0.24/oz 19. An 0.8-liter bottle of Mexican wine costs 100 pesos. What is the price in dollars per ounce?

$\left(\frac{.8\ L}{100\ pesos}\right)\left(\frac{15.19\ pesos}{1\ \$}\right)\left(\frac{1.057\ qt}{1\ L}\right)\left(\frac{4\ C}{1\ qt}\right)\left(\frac{8\ oz}{1\ C}\right) = \left(\frac{4.11029\ oz}{dollar}\right)^{-1}$

Nice 20. The monthly rent on an 80-square-meter apartment in Nice, France, is 1040 euros. The monthly rent on a 500-square-foot apartment in Santa Fe, New Mexico, is $800. In terms of price per area, which apartment is less expensive?

$\left(\frac{1040\ euro}{80\ m^2}\right)\left(\frac{1\ \$}{.7965\ euro}\right)\left(\frac{1\ m}{3.28\ ft}\right)\left(\frac{1\ m}{3.28\ ft}\right) = \$1.52/ft^2$

$\frac{\$800}{500\ ft^2} = \$1.6/ft^2$