Foundations of Algebra   Unit 2: More Complex Number Systems   Practice
Day 7: Multi-Step Dimensional Analysis   Name: answer key

Practice Assignment   0   25   50   75   100

1. How many ounces are in 1 ton? (2,000 pounds = 1 ton, 16 ounces = 1 pound)

$$\frac{1 \text{ ton}}{1} \cdot \frac{2,000 \text{ lbs}}{1 \text{ ton}} \cdot \frac{16 \text{ oz}}{1 \text{ lb}} = \boxed{3200 \text{ oz}}$$

2. How many pints are in 3 gallons? (2 pints = 1 quart, 4 quarts = 1 gallon)

$$\frac{3 \text{ gal}}{1} \cdot \frac{4 \text{ qts}}{1 \text{ gal}} \cdot \frac{2 \text{ pts}}{1 \text{ qt}} = \boxed{24 \text{ pts}}$$

3. How many inches are in 2 miles? (5,280 feet = 1 mile, 12 inches = 1 foot)

$$\frac{2 \text{ mi}}{1} \cdot \frac{5280 \text{ ft}}{1 \text{ mi}} \cdot \frac{12 \text{ in}}{1 \text{ ft}} = \boxed{126,720 \text{ in}}$$

4. How many fluid ounces are in 2 pints? (8 fl oz = 1 cup, 2 cups = 1 pint)

$$\frac{2 \text{ pts}}{1} \cdot \frac{2 \text{ cups}}{1 \text{ pts}} \cdot \frac{8 \text{ fl oz}}{1 \text{ cup}} = \boxed{32 \text{ fl. oz}}$$

5. How many inches are in 3 kilometers? (use 1 in = 2.54 cm, 1 kilometer = 1000 meters, 1 meter = 100 centimeters)

$$\frac{3 \text{ km}}{1} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{100 \text{ cm}}{1 \text{ m}} \cdot \frac{1 \text{ in}}{2.54 \text{ cm}} = \boxed{118,110.2 \text{ in}}$$

6. How many liters are in 10 pints? (use 1 quart = .95 liters, 2 pints = 1 quart)

$$\frac{10 \text{ pts}}{1} \cdot \frac{1 \text{ qt}}{2 \text{ pts}} \cdot \frac{.95 \text{ L}}{1 \text{ qt}} = \boxed{4.75 \text{ L}}$$

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7. Keenan wants to make sure he has enough homemade iced tea for everyone. He makes 2 gallons of iced tea. He wants to have enough for 40 cups of tea. Did he make enough? (4 quarts = 1 gallon, 2 cups = 1 pint, 2 pints = 1 quart)

$$\frac{2\ gal}{1} \cdot \frac{4\ qt}{1\ gal} \cdot \frac{2\ pt}{1\ qt} \cdot \frac{2\ cup}{1\ pt} = \boxed{32\ cups}$$

$$\underline{32\ cups} \quad < \quad \underline{40\ cups}$$

Keenan did not make enough tea.

$*2pt = 1qt$

8. You are making fruit smoothies for a school party. You need 1,500 milliliters of blueberries. However, blueberries only come in pints. How many pints do you need? (use 1 quart = .95 liters, 1000 milliliters = 1 liter)
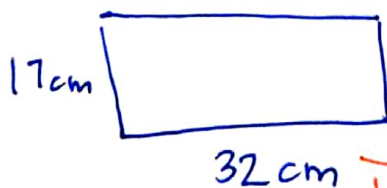
$$\frac{1,500\ mL}{1} \cdot \frac{1\ L}{1000\ mL} \cdot \frac{1\ qt}{.95\ L} \cdot \frac{2\ pt}{1\ qt} = 2.85\ pts$$

I would need $\boxed{3\ pts}$

9. A tin of mints has a mass of 50 grams. How many ounces is that? (use 1 pound = 453.6 grams, 16 ounces = 1 pound)

$$\frac{50\ g}{1} \cdot \frac{1\ lb}{453.6\ g} \cdot \frac{16\ oz}{1\ lb} = \boxed{1.76\ oz}$$

10. The length of a rectangle is 32 cm and the width is 170 mm. What is the area and perimeter of the rectangle in centimeters and millimeters? (10 millimeters = 1 centimeter)

17 cm

32 cm

$A = L \cdot w = 17\ cm \times 32\ cm = \boxed{544\ cm^2}$

$A = L \cdot w = 170\ mm \times 320\ mm = \boxed{54400\ mm^2}$

K H D $*$ d cm

$P = (17 + 17 + 32 + 32)\ cm$

$P = \boxed{98\ cm}$

$P = 170\ mm + 170\ mm + 320\ mm + 320\ mm$

$P = \boxed{980\ mm}$