Name: _____

Factor-Label (Dimensional Analysis) Worksheet:

Question 1:
Commercial airlines fly at 35,000 feet. How many miles from sea level is this?

$$35{,}000\ \text{ft} \times \square \times \square \times \square \times \square \times \square = 6.6\ \text{mi}$$

Unit factors

$\frac{2.54\ \text{cm}}{1\ \text{in}}$	$\frac{1\ \text{ft}}{12\ \text{in}}$	$\frac{1\ \text{m}}{100\ \text{cm}}$	$\frac{16\ \text{oz}}{1\ \text{lb}}$	$\frac{1000\ \text{m}}{1\ \text{km}}$	$\frac{5280\ \text{ft}}{1\ \text{mi}}$	$\frac{453.6\ \text{g}}{1\ \text{lb}}$
$\frac{3600\ \text{s}}{1\ \text{hr}}$	$\left(\frac{1\ \text{in}}{2.54\ \text{cm}}\right)^3$	$\frac{1\ \text{mg}}{1000\ \mu\text{g}}$	$\frac{1\ \text{g}}{1000\ \text{mg}}$	$\frac{1\ \text{L}}{1000\ \text{mL}}$	$\frac{1\ \text{m}}{1000\ \text{mm}}$	$\frac{1000\ \text{g}}{1\ \text{kg}}$

Question 2:
An Olympic swimming pool is 25 meters long. How long is an Olympic swimming pool in feet?

$$25\ \text{m} \times \square \times \square \times \square \times \square \times \square = 82\ \text{ft}$$

Unit factors

$\frac{2.54\ \text{cm}}{1\ \text{in}}$	$\frac{1\ \text{ft}}{12\ \text{in}}$	$\frac{1\ \text{m}}{100\ \text{cm}}$	$\frac{16\ \text{oz}}{1\ \text{lb}}$	$\frac{1000\ \text{m}}{1\ \text{km}}$	$\frac{5280\ \text{ft}}{1\ \text{mi}}$	$\frac{453.6\ \text{g}}{1\ \text{lb}}$
$\frac{3600\ \text{s}}{1\ \text{hr}}$	$\left(\frac{1\ \text{in}}{2.54\ \text{cm}}\right)^3$	$\frac{1\ \text{mg}}{1000\ \mu\text{g}}$	$\frac{1\ \text{g}}{1000\ \text{mg}}$	$\frac{1\ \text{L}}{1000\ \text{mL}}$	$\frac{1\ \text{m}}{1000\ \text{mm}}$	$\frac{1000\ \text{g}}{1\ \text{kg}}$

Question 3:
The density of white ash used in making wooden baseball bats is listed as $0.025\ \text{lb/in}^3$. The density of aluminum used in making aluminum baseball bats is $2.70\ \text{g/cm}^3$. What is the density of white ash in g/cm^3?

$$\frac{0.025\ \text{lb}}{\text{in}^3} \times \square \times \square \times \square \times \square \times \square = 0.69\ \frac{\text{g}}{\text{cm}^3}$$

Unit factors

$\frac{2.54\ \text{cm}}{1\ \text{in}}$	$\frac{1\ \text{ft}}{12\ \text{in}}$	$\frac{1\ \text{m}}{100\ \text{cm}}$	$\frac{16\ \text{oz}}{1\ \text{lb}}$	$\frac{1000\ \text{m}}{1\ \text{km}}$	$\frac{5280\ \text{ft}}{1\ \text{mi}}$	$\frac{453.6\ \text{g}}{1\ \text{lb}}$
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