Day 7: Multi-Step Dimensional Analysis

Measurement	Time	Capacity	Weight
1 foot = 12 inches	1 minute = 60 seconds	1 cup = 8 fl. oz	1 ton = 2.000 lbs
1 yard = 3 feet	1 hour = 60 minutes	1 pint = 2 cups	1 10 = 10 oz
1 mile = 5,280 feet	1 day = 24 hours	1 quart = 2 pints	
1 mile = 1,160 yards	1 week = days	1 gal = 4 quarts	
	1 year = 52 weeks		

How many seconds are in a day?

Most of us do not know how many seconds are in a day or hours in a year. However, most of us know that there are 60 seconds in a minute, 60 minutes in an hour, and 24 hours in a day. Some problems with converting units require multiple steps. When solving a problem that requires multiple conversions, it is helpful to create a flowchart of conversions you already know, set up your conversion factors, and solve your problem.

Sec day

Flowchart:

Days→ Hours → Minutes → Seconds

Conversion Factors: 60 sec = 1 min, 60 min = 1 hr 24 hours = 1 day

1 min x 60 min x 24 hours = 60x60x24 sec

Scenario: How many inches are in 3 miles?

INCHES

Flowchart: miles -) feet -> inches MILES

Possible Conversions: 12 inches = | foot , | mik = 5,280 feet

Scenario: How many centimeters are in 900 feet? (2.54 cm = 1 in)

<u>cm</u> FT

Flowchart: feet -) inches -> certimeters

Possible Conversions: 2.54 cm = lin, 12 in = 1 foot

21,432 cm

Foundations	of	Algebra
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convert to mL

Scenario: How many gallons are in 250 mL? (1 gal = 3.8 liters)

Flowchart: mL -> gallons

19al = 3, 800

Possible Conversions:

$$\frac{3800 \times = 250}{3800}$$

$$\times = 0.066 \text{ gallons}$$

cm

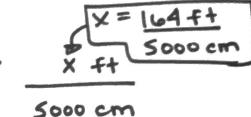
250

Scenario: How many feet are in 5000 centimeters? (1 in = 2.54 cm)

Flowchart: Centimeters -) inches -> feet

Possible Conversions: | f+ = |2 in lin = 2.54 cm

$$\frac{1 + + \times 1 \text{ irr}}{12 \text{ irr}} \times \frac{1 \text{ irr}}{2.54 \text{ cm}} = \frac{1 + + \times 1}{30.48 \text{ cm}}$$



Real World Applications

Scenario: One cereal bar has a mass of 37 grams. What is the mass of 6 cereal bars? Is that more or less the

Scenario: A rectangle has a length of 5 cm and 100 mm. What is the perimeter of the rectangle in millimeters?

KHUBDCM

50 mm

P = 2(50) + 2(100)= 100 + 200 = 300

Scm = 50 mm = 22+2w loomm

How many pizzas do you need for your party?

cost: 5 pizzas x
$$\frac{$14.78}{1 \text{ pizzar}} = 5 \times $14.78 = $73.90$$

Scenario: a. You find 13,406,190 pennies. How many dollars did you actually find?

b. If each penny weighs 4 grams, how much did all that loot weigh in lbs? (2.2 lbs = 1 kg)—) Convert to grams

$$\frac{2.2 \text{ lbs}}{1.000 \text{ g}} = 117,974.$$

c. Assume a movie ticket costs \$9. How many movie tickets could you buy with the pennies you found in part a?

Scenario: Mrs. Dombrowski is approximately 254,040 hours old. How many years old is she?