

Example 1:

Convert 22 gallons to quarts.

Example 2:

How many fluid ounces does a 2-L bottle of soda hold?

Example 3:

Including the end zone, what is the length of a football field, in inches? (Hint: A football field is 120 yards long)

Example 4:

A model airplane flies 22 feet in 2 seconds. What is the airplane's speed in miles per hour?

Example 5:

Convert 110 mi per hour to feet per second.

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dimensional Analysis

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Example 1:

Convert 22 gallons to quarts.

$$\frac{22 \cancel{\text{gallons}}}{1} \times \frac{4 \text{ quarts}}{1 \cancel{\text{gallon}}} = 88 \text{ quarts}$$

Example 2:

How many fluid ounces does a 2-L bottle of soda hold?

$$\frac{2 \cancel{\text{liters}}}{1} \times \frac{4.23 \cancel{\text{cups}}}{1 \cancel{\text{liter}}} \times \frac{8 \text{ fl oz}}{1 \cancel{\text{cup}}} = 67.68 \text{ fl oz}$$

Example 3:

Including the end zone, what is the length of a football field, in inches? (Hint: A football field is 120 yards long)

$$\frac{120 \cancel{\text{yards}}}{1} \times \frac{3 \cancel{\text{feet}}}{1 \cancel{\text{yard}}} \times \frac{12 \text{ inches}}{1 \cancel{\text{foot}}} = 4320 \text{ inches}$$

Example 4:

A model airplane flies 22 feet in 2 seconds. What is the airplane's speed in miles per hour?

$$\frac{22 \cancel{\text{feet}}}{2 \cancel{\text{seconds}}} \times \frac{1 \text{ mile}}{5280 \cancel{\text{feet}}} \times \frac{60 \cancel{\text{seconds}}}{1 \cancel{\text{minute}}} \times \frac{60 \cancel{\text{minutes}}}{1 \text{ hour}} = \frac{79200 \text{ miles}}{10560 \text{ hour}} = 7.5 \text{ mi/h}$$

Example 5:

Convert 110 mi per hour to feet per second.

$$\frac{110 \cancel{\text{miles}}}{1 \cancel{\text{hour}}} \times \frac{5280 \text{ feet}}{1 \cancel{\text{mile}}} \times \frac{1 \cancel{\text{hour}}}{60 \cancel{\text{minutes}}} \times \frac{1 \cancel{\text{minute}}}{60 \text{ seconds}} = \frac{580800 \text{ feet}}{3600 \text{ seconds}} = 161.3 \text{ ft/s}$$

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