Conversions

1. Perform the conversions by multiplying by the appropriate conversion factor. Round all answers to the nearest thousandth.

12 in = 1 ft 3 ft = 1 yd 5280 ft = 1 mi 2.54 cm = 1 in

a) Convert 3,000,000 inches to miles.

b) Convert 12 yards to centimeters.

c) Convert 1 mile to yards.

d) Convert 55 miles per hour to feet per second.

2. Perform the conversions by multiplying by the appropriate conversion factor. Round all answers to the nearest thousandths.

a) Convert $10{,}000\ cm^2$ to ft^2.

b) Convert $12\ yd^2$ to cm^2.

c) Convert $4\ m^3$ to ft^3.

d) Convert $12\ yd^3$ to in^3.

e) Convert 65 mph to km per hour.

f) How many ounces are in 1 gallon?

g) How many cups are in 2 Liters?

h) Convert 0°C to Fahrenheit?

i) Convert 104°F to Celsius.

Conversions

1. Perform the conversions by multiplying by the appropriate conversion factor. Round all answers to the nearest thousandth.

$12\text{in} = 1\text{ft}$ $3\text{ft} = 1\text{yd}$ $5280\text{ft} = 1\text{mi}$ $2.54\text{cm} = 1\text{in}$

a) Convert 3,000,000 inches to miles.

$$\left(\frac{3{,}000{,}000\text{ in}}{1}\right)\left(\frac{1\text{ ft}}{12\text{ in}}\right)\left(\frac{1\text{ mi}}{5{,}280\text{ ft}}\right) = 47.348\text{ mi}$$

b) Convert 12 yards to centimeters.

$$\left(\frac{12\text{ yd}}{1}\right)\left(\frac{3\text{ ft}}{1\text{ yd}}\right)\left(\frac{12\text{ in}}{1\text{ ft}}\right)\left(\frac{2.54\text{ cm}}{1\text{ in}}\right) = 1{,}097.280\text{ cm}$$

c) Convert 1 mile to yards.

$$\left(\frac{1\text{ mi}}{1}\right)\left(\frac{5280\text{ ft}}{1\text{ mi}}\right)\left(\frac{1\text{ yd}}{3\text{ ft}}\right) = 1{,}760.000\text{ yds}$$

d) Convert 55 miles per hour to feet per second.

$$\left(\frac{55\text{ mi}}{1\text{ hr}}\right)\left(\frac{5{,}280\text{ ft}}{1\text{ mi}}\right)\left(\frac{1\text{ hr}}{60\text{ min}}\right)\left(\frac{1\text{ min}}{60\text{ sec}}\right) = 80.667\ \frac{\text{ft}}{\text{sec}}$$

2. Perform the conversions by multiplying by the appropriate conversion factor. Round all answers to the nearest thousandths.

a) Convert $10{,}000\ cm^2$ to ft^2.

$$\left(\frac{10{,}000\ cm^2}{1}\right)\left(\frac{1^2\ in^2}{2.54^2\ cm^2}\right)\left(\frac{1^2\ ft^2}{12^2\ in^2}\right) = 10.764\ ft^2$$

b) Convert $12\ yd^2$ to cm^2.

$$\left(\frac{12\ yd^2}{1}\right)\left(\frac{3^2\ ft^2}{1^2\ yd^2}\right)\left(\frac{12^2\ in^2}{1^2\ ft^2}\right)\left(\frac{2.54^2\ cm^2}{1^2\ in^2}\right) = 100{,}335.283\ cm^2$$

c) Convert $4\ m^3$ to ft^3.

$$\left(\frac{4\ m^3}{1}\right)\left(\frac{100^3\ cm^3}{1^3\ m^3}\right)\left(\frac{1^3\ in^3}{2.54^3\ cm^3}\right)\left(\frac{1^3\ ft^3}{12^3\ in^3}\right) = 141.259\ ft^3$$

d) Convert $12\ yd^3$ to in^3.

$$\left(\frac{12\ yd^3}{1}\right)\left(\frac{3^3\ ft^3}{1^3\ yd^3}\right)\left(\frac{12^3\ in^3}{1^3\ ft^3}\right) = 559{,}872.000\ in^3$$

e) Convert 65 mph to km per hour.

$$\left(\frac{65\text{ mi}}{1\text{ hr}}\right)\left(\frac{5{,}280\text{ ft}}{1\text{ mi}}\right)\left(\frac{12\text{ in}}{1\text{ ft}}\right)\left(\frac{2.54\text{ cm}}{1\text{ in}}\right)\left(\frac{1\text{ m}}{100\text{ cm}}\right)\left(\frac{1\text{ km}}{1{,}000\text{ m}}\right) = 104.607\ \frac{\text{km}}{\text{hr}}$$

f) How many ounces are in 1 gallon?

$$\left(\frac{1\text{ gal}}{1}\right)\left(\frac{4\text{ qt}}{1\text{ gal}}\right)\left(\frac{2\text{ pt}}{1\text{ qt}}\right)\left(\frac{2\text{ cups}}{1\text{ pt}}\right)\left(\frac{8\text{ oz}}{1\text{ cup}}\right) = 128.000\text{ oz}$$

g) How many cups are in 2 Liters?

$$\left(\frac{2\text{ L}}{1}\right)\left(\frac{1.06\text{ qt}}{1\text{ L}}\right)\left(\frac{2\text{ pt}}{1\text{ qt}}\right)\left(\frac{2\text{ cups}}{1\text{ pt}}\right) = 8.480\text{ cups}$$

h) Convert 0°C to Fahrenheit?

$$F = \frac{9}{5}C + 32 = \frac{9}{5}(0) + 32 = 32^\circ F$$

i) Convert 104°F to Celsius.

$$C = \frac{5}{9}(104 - 32) = \frac{5}{9}(72) = 40^\circ C$$