Physics Sample Problems on Unit Conversion

Given: 1 in = 2.54 cm	12 in = 1 ft	1000 m = 1 km
100 cm = 1m	5280 ft =1 mile	1 mile = 1.6 km
10 mm = 1cm	60 s = 1 min	60 min = 1H

1. Convert 10 miles to kilometers.
2. Convert 1.000 foot to centimeters.
3. Convert 10.000 feet to millimeters.
4. Convert 100.0 km/H to mi/H.
5. Convert 50.0 inches/sec to mi/H.
6. Convert 88 ft/sec to mi/H.

Other problems on Scientific Notation

7. Express 53200 g in scientific notation.
8. Express 599245 miles in scientific notation
9. Express 0.0053 inches in scientific notation
10. Express 0.00001 meters in scientific notation

SOLUTIONS: You ***must*** have tried the above problems on your own first before looking at the solutions!

1. $10mi = \left(\frac{10mi}{1}\right) * \left(\frac{1.6km}{1mi}\right) = 16km$

2. $1.000ft = \left(\frac{1.000ft}{1}\right) * \left(\frac{12in}{1ft}\right) * \left(\frac{2.54cm}{1in}\right) = 30.5cm$

3. $10.000ft = \left(\frac{10.000ft}{1}\right) * \left(\frac{12in}{1ft}\right) * \left(\frac{2.54cm}{1in}\right)\left(\frac{10mm}{1cm}\right) = (10.000)(12)(2.54)(10) = 3048mm$

4. $100.0\frac{km}{H} = \left(\frac{100.0km}{1H}\right) * \left(\frac{1mi}{1.6km}\right) = 62.5\frac{mi}{H}$

5. $50.0\frac{in}{s} = \left(\frac{50.0in}{1s}\right) * \left(\frac{1ft}{12in}\right) * \left(\frac{1mi}{5280ft}\right) * \left(\frac{60s}{1\min}\right) * \left(\frac{60\min}{1H}\right) = 2.84\frac{mi}{H}$

6. $88\frac{ft}{s} = \left(\frac{88ft}{1s}\right) * \left(\frac{1mi}{5280ft}\right) * \left(\frac{60s}{1\min}\right) * \left(\frac{60\min}{1H}\right) = 60\frac{mi}{H}$

7. 5.32×10^4 grams
8. 5.99245×10^5 mi
9. 5.3×10^{-3} in
10. 1×10^{-5} m