

Physics 1130

Sample Problems on Unit Conversion

Given: 1 in = 2.54 cm

100 cm = 1m

10 mm = 1cm

12 in = 1 ft

5280 ft = 1 mile

60 s = 1 min

1000 m = 1 km

1 mile = 1.6 km

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!

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

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

3.

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

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

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

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

7. 5.32×10^4 grams

8. 5.99245×10^5 mi

9. 5.3×10^{-3} in

10. 1×10^{-5} m