

Unit Conversions:

11
10E

① a. $466\text{m} \times \left(\frac{1\text{km}}{1000\text{m}}\right) = \underline{0.466\text{km}}$

b. $466\text{km} \times \left(\frac{1000\text{m}}{1\text{km}}\right) = \underline{466000\text{m}}$

c. $1.489\text{g} \times \left(\frac{100\text{cg}}{1\text{g}}\right) = \underline{148.9\text{cg}}$

d. $1.489\text{cg} \times \left(\frac{1\text{g}}{100\text{cg}}\right) = \underline{0.01489\text{g}}$

e. $28.33\text{s} \times \left(\frac{10^6\mu\text{s}}{1\text{s}}\right) = \underline{2.833 \times 10^7\mu\text{s}}$

f. $0.0056\text{Gm} \times \left(\frac{10^9\text{m}}{1\text{Gm}}\right) = \underline{5.6 \times 10^6\text{m}}$

g. $3.44 \times 10^6\text{ns} \times \left(\frac{1\text{s}}{10^9\text{ns}}\right) = \underline{3.44 \times 10^{-3}\text{s}}$

h. $440\text{hg} \times \left(\frac{100\text{g}}{1\text{hg}}\right) = \underline{44000\text{g}}$

i. $99.99\text{km} \times \left(\frac{1000\text{m}}{1\text{km}}\right) \times \left(\frac{1000\text{mm}}{1\text{m}}\right) = \underline{9.999 \times 10^7\text{mm}}$

j. $2.88 \times 10^{10}\mu\text{s} \times \left(\frac{1\text{s}}{10^6\mu\text{s}}\right) \times \left(\frac{1\text{Gs}}{10^9\text{s}}\right) = \underline{0.288\text{Gs}}$

k. $233\text{cm} \times \frac{1\text{m}}{100\text{cm}} \times \frac{1\text{km}}{1000\text{m}} = \underline{0.0233\text{km}}$

l. $78.0\text{kg} \times \left(\frac{1000\text{g}}{1\text{kg}}\right) \times \left(\frac{10^9\text{ng}}{1\text{g}}\right) = \underline{7.80 \times 10^{13}\text{ng}}$

m. $0.0034\text{ns} \times \left(\frac{1\text{s}}{10^9\text{ns}}\right) \times \left(\frac{1\text{ks}}{1000\text{s}}\right) = \underline{3.4 \times 10^{-15}\text{ks}}$

n. $2.22 \times 10^4\text{kJ} \times \left(\frac{1000\text{J}}{1\text{kJ}}\right) \times \left(\frac{100\text{cJ}}{1\text{J}}\right) = \underline{2.22 \times 10^9\text{cJ}}$

o. $9.400 \times 10^8\mu\text{N} \times \left(\frac{1\text{N}}{10^6\mu\text{N}}\right) \times \left(\frac{10\text{dN}}{1\text{N}}\right) = \underline{9.400 \times 10^3\text{dN}}$

p. $650\text{hT} \times \left(\frac{100\text{T}}{1\text{hT}}\right) \times \left(\frac{1\text{MT}}{10^6\text{T}}\right) = \underline{0.065\text{MT}}$

only 3 sig fig, we need 2

$$\textcircled{2} \text{ a. } 0.50 \text{ h} \times \left(\frac{60 \text{ min}}{\text{h}} \right) = 30 \text{ min} = \underline{3.0 \times 10^1 \text{ min}}$$

$$\text{b. } 45 \text{ min} \times \left(\frac{1 \text{ h}}{60 \text{ min}} \right) = \underline{0.75 \text{ h}}$$

$$\text{c. } 28.6 \text{ h} \times \left(\frac{60 \text{ min}}{\text{h}} \right) = 1716 \text{ min} \approx \underline{1720 \text{ min}}$$

$$\text{d. } 129 \text{ min} \times \left(\frac{1 \text{ h}}{60 \text{ min}} \right) = \underline{2.15 \text{ h}}$$

$$\text{e. } 2.00 \text{ h} \times \left(\frac{3600 \text{ s}}{\text{h}} \right) = 7200 \text{ s} = \underline{7.20 \times 10^3 \text{ s}}$$

$$\text{f. } 2.40 \text{ h} \times \left(\frac{3600 \text{ s}}{\text{h}} \right) = \underline{8640 \text{ s}}$$

$$\text{g. } 2 \text{ h } 22.1 \text{ min} = 2 \text{ h} + 22.1 \text{ min} = 2 \text{ h} \times \frac{3600 \text{ s}}{\text{h}} + 22.1 \text{ min} \left(\frac{60 \text{ s}}{\text{min}} \right) = 7200 \text{ s} + 1326 \text{ s} = \underline{8530 \text{ s}}$$

$$\text{h. } 1.603 \text{ min} \times \frac{60 \text{ s}}{\text{min}} = 96.18 \text{ s} \quad \text{i. } 3 \text{ h } 12 \text{ min } 32.2 \text{ s} = 3 \text{ h} \times \frac{3600 \text{ s}}{\text{h}} + 12 \text{ min} \left(\frac{60 \text{ s}}{\text{min}} \right) + 32.2 \text{ s} = \underline{11552.2 \text{ s}}$$

$$\text{j. } 3 \text{ h } 30 \text{ min} = 3 \text{ h} + 30 \text{ min} \left(\frac{1 \text{ h}}{60 \text{ min}} \right) = 3.5 \text{ h} \quad \text{k. } 48 \text{ min } 47.22 \text{ s} = 48 \text{ min} \left(\frac{1 \text{ h}}{60 \text{ min}} \right) + 47.22 \text{ s} \left(\frac{1 \text{ h}}{3600 \text{ s}} \right) = \underline{0.81312 \text{ h}}$$

$$\text{l. } 0.9852 \text{ h} \times \frac{3600 \text{ s}}{\text{h}} = \underline{3547 \text{ s}}$$

$$\textcircled{3} \text{ a. } 45.00 \frac{\text{km}}{\text{h}} \times \left(\frac{1000 \text{ m}}{\text{km}} \right) \times \left(\frac{1 \text{ h}}{3600 \text{ s}} \right) = \underline{12.50 \text{ m/s}}$$

$$\text{b. } 30.0 \frac{\text{km}}{\text{h}} \times \left(\frac{1000 \text{ m}}{\text{km}} \right) \times \left(\frac{1 \text{ h}}{3600 \text{ s}} \right) = \underline{8.33 \text{ m/s}}$$

$$\text{c. } 0.0265 \frac{\text{km}}{\text{h}} \times \left(\frac{1000 \text{ m}}{\text{km}} \right) \times \left(\frac{1 \text{ h}}{3600 \text{ s}} \right) = \underline{7.36 \times 10^{-3} \text{ m/s}}$$

$$\text{d. } 1.08 \times 10^9 \frac{\text{km}}{\text{h}} \times \left(\frac{1000 \text{ m}}{\text{km}} \right) \times \left(\frac{1 \text{ h}}{3600 \text{ s}} \right) = \underline{3.00 \times 10^8 \text{ m/s}}$$

$$\text{e. } 10.0 \text{ m/s} \times \left(\frac{1 \text{ km}}{1000 \text{ m}} \right) \times \left(\frac{3600 \text{ s}}{\text{h}} \right) = \underline{36.0 \frac{\text{km}}{\text{h}}}$$

$$\text{f. } 2.30 \text{ m/s} \times \left(\frac{1 \text{ km}}{1000 \text{ m}} \right) \times \left(\frac{3600 \text{ s}}{\text{h}} \right) = \underline{8.28 \frac{\text{km}}{\text{h}}}$$

$$\text{g. } 900 \text{ cm}^2 \times \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) \times \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) = \underline{0.09 \text{ m}^2}$$

$$\text{h. } 45 \text{ kg/min} \times \left(\frac{1000 \text{ g}}{\text{kg}} \right) \times \left(\frac{60 \text{ s}}{\text{min}} \right) = \underline{2.7 \times 10^6 \text{ g} \cdot \text{s}}$$

$$\text{i. } 0.055 \text{ kg/cm} \times \left(\frac{1000 \text{ g}}{\text{kg}} \right) \times \left(\frac{100 \text{ cm}}{\text{m}} \right) = \underline{5500 \text{ g/m}}$$

$$\text{j. } 555 \text{ kW} \cdot \text{h} \times \left(\frac{1000 \text{ W}}{\text{kW}} \right) \times \left(\frac{3600 \text{ s}}{\text{h}} \right) = \underline{2.00 \times 10^9 \text{ W} \cdot \text{s}}$$

$$\text{k. } 4.33 \times 10^{-9} \frac{\text{Mg} \cdot \text{s}^2}{\text{cg}} \times \left(\frac{10^3 \text{ g}}{10^3 \text{ Mg}} \right) \times \left(\frac{1 \text{ h}}{3600 \text{ s}} \right)^2 \times \left(\frac{10^5 \text{ cg}}{\text{kg}} \right) = \underline{\frac{3.34 \times 10^{-13} \text{ kg} \cdot \text{h}^2}{\text{kg}}}$$