Phabulous Physics
Review Homework Problems

1-1

$$1mile \quad \times \frac{5280\,ft}{mile} \quad \times \frac{12in}{foot} \quad \times \frac{2.54cm}{inch} \quad \times \frac{1m}{100cm} \quad \times \frac{1km}{1000m} \quad \boxed{= 1.6093km}$$

1-2

$$1\frac{g}{cm^3} \quad \times \frac{1kg}{1\times10^3\,g} \quad \times \frac{1\times10^6\,cm^3}{1m^3} \quad \boxed{= 1\times10^3\,\frac{kg}{m^3}}$$

1-3a)

$$\frac{60mi}{hr} \quad \times \frac{5280\,ft}{1mi} \quad \times \frac{1hr}{60\min} \quad \times \frac{1\min}{60s} \quad \boxed{= 88\frac{ft}{s}}$$

1-3b)

$$\frac{100km}{hr} \quad \times \frac{1000m}{1km} \quad \times \frac{1hr}{60\min} \quad \times \frac{1\min}{60s} \quad \boxed{= 27.8\frac{m}{s}}$$

1-4

$$170lbs \times \frac{1kg}{2.205lbs} \boxed{= 77.1kg}$$

1-5

$$1 day \times \frac{24hr}{1day} \times \frac{3600s}{1hr} = \boxed{86,400\tfrac{s}{day}} \qquad\qquad 86400\tfrac{s}{day} \times \frac{365days}{1year} = \boxed{3,153,600\tfrac{s}{year}}$$

1-6

$$1.30\tfrac{deutschmark}{liter} \times \frac{\$0.40}{1deutschmark} \times \frac{3.788liter}{1gallon} = \boxed{\$1.97\big/gallon}$$

1-7

$$\frac{17km}{liter} \times \frac{1mile}{1.609km} \times \frac{3.788liters}{1gallon} = \boxed{40\,mi\big/gallon}$$

1-8

$$\frac{150000\,furlongs}{fortnight} \times \frac{0.125miles}{1\,furlong} \times \frac{1\,fortnight}{14days} \times \frac{1day}{24hr} = \boxed{55.8\,miles\big/hr}$$

1-9

$$2liters \times \frac{1000cm^3}{liter} \times \frac{1in^3}{16.39cm^3} = \boxed{122in^3}$$

1-10 a)

$$\frac{\pi - \tfrac{22}{7}}{\pi} \times 100 = \boxed{0.04\%\,error}$$

b)

$$\frac{\pi - \tfrac{355}{113}}{\pi} \times 10 = \boxed{8.5 \times 10^{-6}\%\,error}$$