CH 7 Review questions
1, 2, 3, 4, 5
13, my examples

SOLNS:

(1) $(36-10)\text{h} \times \frac{60\text{min}}{1\text{h}} \times \frac{1\text{song}}{3.5\text{min}} = \boxed{4457 \text{ songs}}$

(2) $(82\text{ L} - 77\text{ L}) \times \frac{0.264\text{ gal}}{1\text{ L}} = \boxed{1.32\text{ gal}}$

(3) $\left(26.4\text{mi} \times \frac{5280\text{ft}}{\text{mi}}\right) - \left(41940\text{yd} \times \frac{3\text{ft}}{1\text{yd}}\right)$

$139392\text{ft} - 125820\text{ft} = \boxed{13572\text{ft}}$

(4) $400\text{m} \times \frac{1\text{km}}{1000\text{m}} \times \frac{0.62\text{mi}}{1\text{km}} = 0.248\text{mi}$
$\boxed{(0.25\text{mi})}$

(5) $300\frac{\text{mi}}{\text{hr}} \times \frac{1\text{hr}}{3600\text{s}} \times \frac{1\text{km}}{0.62\text{mi}} \times \frac{1000\text{m}}{1\text{km}}$

$= \boxed{134.4\frac{\text{m}}{\text{s}}}$

(13) $528\frac{\text{gal}}{\text{day}} \times \frac{1\text{L}}{0.264\text{gal}} \times \frac{365\text{day}}{\text{yr}} =$

$\boxed{730\text{ kL}}$

**EX:** Determine if each is a valid equation

if $V$: m/s , $g$: $m/s^2$ $H$: m

$P$: Pa , $\rho$: $\frac{kg}{m^3}$

(a) $V = \frac{P}{\rho} + \sqrt{2gH}$

$\frac{m}{s} = \frac{Pa}{\frac{kg}{m^3}} + \sqrt{2\,\frac{m}{s^2}\,m}$

$\frac{N}{m^2} \rightarrow \frac{\frac{kg\,m}{s^2}}{m^2} \rightarrow \frac{kg}{m\,s^2}$

$\frac{m}{s}$

$\frac{m}{s} = \frac{\frac{kg}{m\,s^2}}{\frac{kg}{m^3}} + \frac{m}{s}$

$\frac{m}{s} = \frac{m^2}{s^2} + \frac{m}{s}$ ns!

(b) $V = \sqrt{\frac{2P}{\rho} + 2H}$

$\frac{m}{s} = \sqrt{2\,\frac{m^2}{s^2} + 2\,m}$ ns!

(c) $V = \sqrt{\frac{2P}{\rho} + 2gH}$

$= \sqrt{2\,\frac{m^2}{s^2} + 2\,\frac{m^2}{s^2}}$ yes!

EX: Find if each equation is valid if

P : W  A : $m^2$  V : $\frac{m}{s}$  $\eta$ : unitless

$\rho$ : $\frac{kg}{m^3}$

(a) $P = \eta \rho A V^2$

$W = \frac{kg}{m^3} m^2 \frac{m^2}{s^2}$

$\frac{J}{s} = \frac{Nm}{s} =$

$\frac{kg\,m^2}{s^3} \neq kg\frac{m}{s^2}$  no!

(b) $P = \eta \rho A V^3$

$\frac{kg\,m^2}{s^3}$  $\frac{kg}{m^3} m^2 \frac{m^3}{s^3} = \frac{kg\,m^2}{s^3}$  yes!!