

Dimensional Analysis Key

1. $5 \text{ Km} \left(\frac{1000 \text{ m}}{1 \text{ Km}} \right) = \boxed{5000 \text{ m}}$

2. $.013 \text{ Km} \left(\frac{1000 \text{ m}}{1 \text{ Km}} \right) \left(\frac{100 \text{ cm}}{1 \text{ m}} \right) = \boxed{1300 \text{ cm}}$

3. $12 \times 10^6 \text{ cm} \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) \left(\frac{1 \text{ Km}}{1000 \text{ m}} \right) = \boxed{120 \text{ Km}}$

4. $12 \text{ in} \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) = \boxed{30.48 \text{ cm}}$

5. $70 \text{ in} \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) = 1.778 \text{ m} = \boxed{1.78 \text{ m}}$

6. $1600 \text{ m} \left(\frac{100 \text{ cm}}{1 \text{ m}} \right) \left(\frac{1 \text{ in}}{2.54 \text{ cm}} \right) \left(\frac{1 \text{ ft}}{12 \text{ in}} \right) \left(\frac{1 \text{ mi}}{5280 \text{ ft}} \right) = \boxed{.99 \text{ mi}}$

7. $4.2 \text{ hr} \left(\frac{60 \text{ min}}{1 \text{ hr}} \right) \left(\frac{60 \text{ sec}}{1 \text{ min}} \right) = \boxed{15120 \text{ sec}}$

8. $\frac{55 \text{ mi}}{\text{hr}} \left(\frac{5280 \text{ ft}}{1 \text{ mi}} \right) \left(\frac{12 \text{ in}}{1 \text{ ft}} \right) \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) \left(\frac{1 \text{ Km}}{1000 \text{ m}} \right) = \boxed{88.51 \frac{\text{Km}}{\text{hr}}}$

9. $\frac{15 \text{ mi}}{\text{hr}} \left(\frac{5280 \text{ ft}}{1 \text{ mi}} \right) \left(\frac{12 \text{ in}}{1 \text{ ft}} \right) \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) \left(\frac{1 \text{ hr}}{3600 \text{ s}} \right) = \boxed{6.71 \frac{\text{m}}{\text{s}}}$

10. $\frac{2 \text{ gal}}{\text{min}} \left(\frac{128 \text{ oz}}{1 \text{ gal}} \right) \left(\frac{29.57 \text{ ml}}{1 \text{ oz}} \right) \left(\frac{1 \text{ l}}{1000 \text{ ml}} \right) \left(\frac{1 \text{ hr}}{60 \text{ min}} \right) \left(\frac{60 \text{ min}}{1 \text{ hr}} \right) \left(\frac{24 \text{ hr}}{1 \text{ day}} \right) =$

$\boxed{10900.68 \frac{\text{l}}{\text{Day}}}$

11. $\frac{1500 \text{ cm}^3 \text{ water}}{\text{min}} \left(\frac{1 \text{ in}^3}{2.54^3 \text{ cm}^3} \right) \left(\frac{1 \text{ ft}^3}{12^3 \text{ in}^3} \right) \left(\frac{60 \text{ min}}{1 \text{ hr}} \right) = \frac{90000 \text{ ft}^3}{28316.84659 \text{ hr}}$

$1 \text{ ft}^3 = 28.32$

$= \boxed{3.18 \frac{\text{ft}^3}{\text{hr}}}$

12. $3.8 \times 10^4 \left(\frac{\text{Furlongs}}{\text{Fortnight}} \right) \left(\frac{220 \text{ yd}}{1 \text{ Furlong}} \right) \left(\frac{3 \text{ ft}}{1 \text{ yd}} \right) \left(\frac{12 \text{ in}}{1 \text{ ft}} \right) \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) \left(\frac{1 \text{ m}}{100 \text{ cm}} \right) \left(\frac{1 \text{ Km}}{1000 \text{ m}} \right)$

$\rightarrow \left(\frac{1 \text{ Fortnight}}{14 \text{ days}} \right) \left(\frac{1 \text{ day}}{24 \text{ hr}} \right) = \boxed{8.96 \frac{\text{Km}}{\text{hr}}}$