Dimensional Analysis Practice Worksheet

1. 5400 inches to miles

2. 13 weeks to seconds

3. 54 yards to mm

4. 36 $\frac{\text{cm}}{\text{sec}}$ to mph

5. 1.09 $\frac{\text{g}}{\text{mL}}$ to $\frac{\text{lbs}}{\text{gal}}$

6. 19 inches to feet

7. 840 inches to cm

8. 4.22 $\frac{\text{g}}{\text{cm}}$ to $\frac{\text{lbs}}{\text{ft}}$

9. 32 $\frac{\text{ft}}{\text{sec}}$ to $\frac{\text{m}}{\text{min}}$

10. You find 13,406,190 pennies. How many dollars did you actually find? If each penny weighs 4 grams, how much did all that loot weigh in pounds?

1. 5400 inches to miles

$$5400 \text{ in.} \times \frac{1 \text{ ft}}{12 \text{ in.}} \times \frac{1 \text{ mi}}{5280 \text{ ft}} = \frac{5400}{63360} \text{ mi}$$

$$\approx 0.085 \text{ mi}$$

2. 13 weeks to seconds

$$13 \text{ weeks} \times \frac{7 \text{ days}}{1 \text{ week}} \times \frac{24 \text{ hrs}}{1 \text{ day}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{60 \text{ sec}}{1 \text{ min}} = 7{,}862{,}400 \text{ sec}$$

3. 54 yards to mm

$$54 \text{ yards} \times \frac{3 \text{ feet}}{1 \text{ yd}} \times \frac{1 \text{ m}}{3.28 \text{ ft}} \times \frac{1000 \text{ mm}}{1 \text{ m}} = \frac{162000}{3.28} \text{ mm}$$

$$\approx 49{,}390.24 \text{ mm}$$

4. $36 \frac{\text{cm}}{\text{sec}}$ to mph

$$\frac{36 \text{ cm}}{1 \text{ sec}} \times \frac{60 \text{ sec}}{1 \text{ hr}} \times \frac{1 \text{ m}}{1000 \text{ cm}} \times \frac{3.28 \text{ ft}}{1 \text{ m}} \times \frac{1 \text{ mi}}{5280 \text{ ft}} = \frac{7084.8}{5280000} \frac{\text{mi}}{\text{hr}}$$

$$\approx 0.00134 \frac{\text{mi}}{\text{hr}}$$

5. $1.09\ \frac{g}{mL}$ to $\frac{lbs}{gal}$

$$\frac{1.09\ g}{1\ mL} \times \frac{1\ oz}{28.3\ g} \times \frac{1\ lb}{16\ oz} \times \frac{1000\ mL}{1\ L} \times \frac{3.79\ L}{1\ gal} = \frac{4131.1}{452.8}\frac{lbs}{gal}$$

$$\approx 9.12\frac{lbs}{gal}$$

6. 19 inches to feet

$$19\ in. \times \frac{1\ ft}{12\ in.} \approx 1.583\ ft$$

7. 840 inches to cm

$$840\ in. \times \frac{2.54\ cm}{1\ in.} = 2{,}133.6\ cm$$

8. $4.22\ \frac{g}{cm}$ to $\frac{lbs}{ft}$

$$\frac{4.22\ g}{1\ cm} \times \frac{1\ oz}{28.3\ g} \times \frac{1\ lb}{16\ oz} \times \frac{1000\ cm}{1\ m} \times \frac{1\ m}{3.28\ ft} = \frac{4220}{1458.184}\frac{lbs}{ft}$$

$$\approx 2.89\frac{lbs}{ft}$$

9. $32\ \frac{\text{ft}}{\text{sec}}$ to $\frac{\text{m}}{\text{min}}$

$$\frac{32\ \text{ft}}{1\ \text{sec}} \times \frac{60\ \text{sec}}{1\ \text{min}} \times \frac{1\ \text{m}}{3.28\ \text{ft}} = \frac{1920}{3.28}\frac{\text{m}}{\text{min}}$$

$$\approx 585.37\frac{\text{m}}{\text{min}}$$

10. You find 13,406,190 pennies. How many dollars did you actually find? If each penny weighs 4 grams, how much did all that loot weigh in pounds?

$$13{,}406{,}190\ \text{pennies} \times \frac{1\ \text{dollar}}{100\ \text{pennies}} = 134061.90\ \text{dollars}$$

$$13{,}406{,}190\ \text{pennies} \times \frac{4\ \text{grams}}{1\ \text{penny}} \times \frac{1\ \text{kg}}{1000\ \text{grams}} \times \frac{2.2\ \text{lbs}}{1\ \text{kg}} = 117{,}974.472\ \text{lbs}$$