

UNIT ANALYSIS WORKSHEET

Set up a unit analysis for each conversion (just units) you may need to include some units not shown.

Example: Change minutes to days

$$\frac{\text{min}}{1} * \frac{\text{hr}}{\text{min}} * \frac{\text{day}}{\text{hr}}$$

1. Change ft to in.

2. Change miles/hr to ft/min.

3. Change lbs/ft to oz/in.

4. Change in^2 to ft^2

Arrange the facts into a unit analysis and solve.

5. 55 feet per second is how many miles per hour?

1 mile = 5280 feet

1 minute = 60 seconds

1 hour = 60 minutes

6. 40 miles per hour is how many feet per second?

1 mile = 5280 feet

1 minute = 60 seconds

1 hour = 60 minutes

7. One gallon for five miles is how many dollars per day?

1 hour to travel 55 miles

1 gallon is \$3.10

1 driving day is 10 hours

8. 240 milliliters in 12 hours is how many microdrops per minute?

60 microdrops = 1 milliliter

1 hour = 60 minutes

9. Prescription dosage for young children may be based on their age relative to 150 months, as 150 months is considered "adult" for many prescriptions. If the adult dosage is 500 milligrams, how many milligrams should a 1-year-old infant receive?

10. You are on a part of a 1500-mile trip where gas stations are far apart. Your car is averaging 40 miles per gallon and you are traveling at 60 miles per hour. The fuel tank holds twelve gallons of gas, and you just filled the tank. How long is it before you have to fill the tank again?

Do the following conversions done correctly? If not explain what was done wrong and then do it correctly.

11. Walter Payton has been clocked at 4 seconds in the 40 (40yd). How many miles per hour is this.

$$\frac{40\text{yds}}{4\text{sec}} * \frac{3\text{ft}}{1\text{yd}} * \frac{1\text{mile}}{5280\text{ft}} * \frac{60\text{sec}}{1\text{min}} * \frac{60\text{min}}{1\text{hr}} = \frac{40 * 3 * 1 * 60 * 60}{1 * 5280 * 1 * 1} = \frac{432000}{5280} = 81\text{mph}$$

12. You are driving your M/C in Germany; the speed limit is 90 k/h. You're speedometer only has miles per hour. How fast can you go?

$$\frac{90\text{k}}{1\text{hr}} * \frac{1\text{k}}{0.6214\text{mi}} = \frac{90}{0.6214} = 144.8\text{m/h}$$

Journal prompt: Many people have difficulty with conversions deciding whether to multiply or divide.

) Convert 250 inches to feet using unit analysis and explain how the units help you know whether to multiply or divide by 12.