

Name _____ **Answer Key** _____
Physics _____
Period _____



Date _____
Measure & Math WS #3H
Mrs. Nadworny

Dimensional Analysis

Directions: Read online textbook pages 10 – 14 & 22 – 25 and solve the following problems using correct scientific notation and dimensional analysis.

To get full credit on this assignment, you must show all of your work using the method learned in class. Simply putting an answer will earn NO credit.

1. Which is greater: **25 kilograms** or 2500 grams? [Show a conversion from kg to g or g to kg]

$$25 \text{ kg} \left(\frac{10^3 \text{ g}}{1 \text{ kg}} \right) = 25,000 \text{ g}$$

2. Which is greater: **45.0 miles** or 65 kilometers? [Show a conversion from miles to km or km to miles.]

$$45.0 \text{ miles} \left(\frac{1609 \text{ m}}{1 \text{ miles}} \right) \left(\frac{1 \text{ km}}{10^3 \text{ m}} \right) = 72.4 \text{ km}$$

3. Using dimensional analysis, convert 35 miles/hour into meters/second.

$$\frac{35 \text{ mi}}{\text{hr}} \left(\frac{1609 \text{ m}}{1 \text{ mi}} \right) \left(\frac{1 \text{ hr}}{3600 \text{ s}} \right) = 15.643 \text{ m/s} = 16 \text{ m/s}$$

4. Using dimensional analysis, convert 6.13 kilobytes into millibytes.

$$6.13 \text{ kb} \left(\frac{10^3 \text{ b}}{1 \text{ kb}} \right) \left(\frac{1 \text{ mb}}{10^3 \text{ b}} \right) = 6.13 \times 10^6 \text{ mb}$$

5. Using dimensional analysis, convert 866.1 centimeters into yards.

$$866.1 \text{ cm} \left(\frac{10^{-2} \text{ m}}{1 \text{ cm}} \right) \left(\frac{1.1 \text{ yd}}{1 \text{ m}} \right) = 9.527 \text{ yd}$$

$$866.1 \text{ cm} \left(\frac{1 \text{ in}}{2.54 \text{ cm}} \right) \left(\frac{1 \text{ ft}}{12 \text{ in}} \right) \left(\frac{1 \text{ yd}}{3 \text{ ft}} \right) = 9.472 \text{ yd}$$

Answers in size order: 9.472 or 9.527, 16, 6.13×10^6