Name: _____   Date: _____

Physical Science
Dimensional Analysis
(Unit Conversion) Worksheet

Conversions

1 hour = 60 minutes	1 mile = 5280 feet	1 yard = 3 feet
1 meter = 3.28 feet	1 km = 0.62 miles	1 light second = 300,000,000 meters
1 kg = 2.2 lbs	1 lb = 0.45 kg	1 quart = 0.946 liters
1 m/s = 2.2 miles/hour	1 foot = 12 inches	1 inch = 2.54 cm = 25.4 mm
1000 m = 1 kilometer	1000 mm = 1 meter	100 cm = 1 meter
10 mm = 1 centimeter	1 minute = 60 seconds	

Convert the following quantities using Dimensional Analysis and showing ALL of your work including the units. Use the steps in the textbox at the bottom of the page to help you!

A. 565,900 seconds into days

B. 17 years into minutes

C. 43 miles into feet

D. 165 pounds into kilograms

Steps for Dimensional Analysis:
1. Write the 'given' as a fraction with '1' as the denominator. (If the number you are converting from has two units (like m/s or km/hr) put the second unit on the bottom with the '1'.
2. Write a multiplication sign and a line indicating another fraction.
3. In the denominator of this second fraction, write the unit of the given (so that it will cancel). In the numerator, write the unit that you are converting to
4. By the unit that is larger, write a '1'. By the other number write the conversion factor.
5. Multiply and Divide to get the answer. Make sure your answer has a unit!

E. 100 yards into meters

F. 22,647 inches into miles

G. 2678 cm into feet

H. 60 miles per hour into meters per second

I. 130 meters per second into miles per hour

J. 1100 feet per second into miles per hour

K. 53 yards per hour into inches per week

L. 721 lbs per week into kg per second

Steps for Dimensional Analysis:
1. Write the 'given' as a fraction with '1' as the denominator. (If the number you are converting from has two units (like m/s or km/hr) put the second unit on the bottom with the '1'.
2. Write a multiplication sign and a line indicating another fraction.
3. In the denominator of this second fraction, write the unit of the given (so that it will cancel). In the numerator, write the unit that you are converting to
4. By the unit that is larger, write a '1'. By the other number write the conversion factor.
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M. 88 inches per second into miles per day

N. 12080 gallons per month into liters per hour

O. 27 miles per hour to feet per second

P. 186,282 kilometers per hour into meters per second

Q. The average student is in class 330 minutes per day. How many hours per day is the student in class?

R. The speed of light is 3 x 10^8 meters per second (m/s). What is the speed of light in miles per year (mi/yr)?

S. Convert 34 meters to centimeters

T. Convert 85.5 centimeters to millimeters

Steps for Dimensional Analysis:
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2. Write a multiplication sign and a line indicating another fraction.
3. In the denominator of this second fraction, write the unit of the given (so that it will cancel). In the numerator, write the unit that you are converting to
4. By the unit that is larger, write a '1'. By the other number write the conversion factor.
5. Multiply and Divide to get the answer. Make sure your answer has a unit!

Leave the following numbers in scientific notation and rely on your calculator to give you an answer in scientific notation. Continue to convert the following quantities using Dimensional Analysis and showing ALL of your work including the units. Use the steps in the textbox at the bottom of the page to help you!

U. Convert 6.54×10^8 meters to kilometers. Make sure that your answer is in scientific notation.

V. Convert 3.69×10^{-9} kilometers per hour (km/hr) to meters per second (m/s). Make sure that your answer is in scientific notation.

W. Convert 8.65×10^9 meters per second (m/s) to kilometers per hour (km/hr). Make sure that your answer is in scientific notation.

X. Convert 2.22×10^5 seconds to years. Make sure that your answer is in scientific notation.

Y. Convert 2.22×10^{-5} years to minutes. Make sure that your answer is in scientific notation.

Steps for Dimensional Analysis:
1. Write the 'given' as a fraction with '1' as the denominator. (If the number you are converting from has two units (like m/s or km/hr) put the second unit on the bottom with the '1'.
2. Write a multiplication sign and a line indicating another fraction.
3. In the denominator of this second fraction, write the unit of the given (so that it will cancel). In the numerator, write the unit that you are converting to
4. By the unit that is larger, write a '1'. By the other number write the conversion factor.
5. Multiply and Divide to get the answer. Make sure your answer has a unit!