

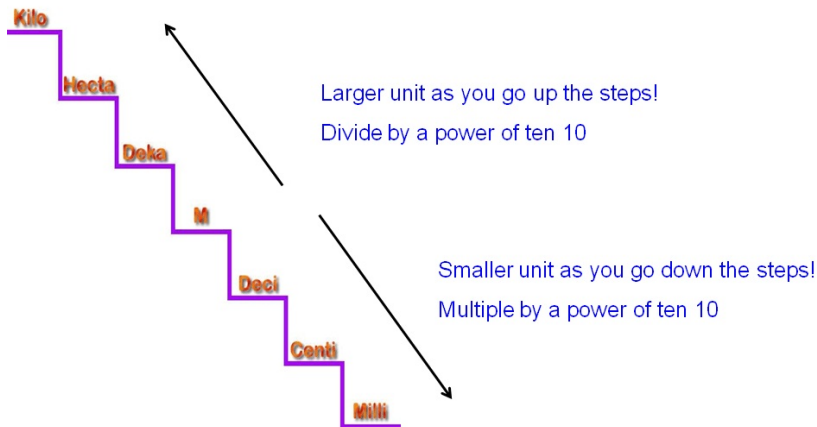


PHYSICS 2204
UNIT 1: KINEMATICS
WORKSHEET #2: CONVERTING DERIVED AND BASE UNITS

STUDENT NAME: _____

Converting measurements is a skill that will be tested in high school math and science classes, as well as in some college classes

Method #1: The Step Stair



METHOD #2: CONVERSION FACTOR

To convert units, we need to multiply the quantity we want to convert by its conversion factor. The conversion factor basically tells us how to convert one unit into another

Example 1:

How many seconds are in seven years?

$$7a \times \frac{365 \text{ day}}{1a} \times \frac{24 \text{ hours}}{1 \text{ day}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{60}{1 \text{ min}} = \underline{\underline{220\,752\,000 \text{ s}}}$$

Example 2:

Convert 30 km/hr to m/s:

$$30 \frac{\text{km}}{\text{hr}} \times \frac{1 \text{ hr}}{60 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ sec}} \times \frac{1000 \text{ m}}{1 \text{ km}} = 8.3 \text{ m/s}$$

General Rule:

To change from km/hr = m/s ÷ 3.6

To change from m/s to km/hr x 3.6



PART A: MULTIPLE CHOICE

Instructions: Shade the letter of the correct answer on the computer scorable answer sheet provided

1. How many seconds are there in 1.5 hours?
(A) 90 s
(B) 1500 s
(C) 5400 s
(D) 8600 s

2. Convert 1.56 kilograms into grams
(A) 1560 g
(B) 156 g
(C) 1.56 g
(D) 0.00156 g

3. What is the measurement 455 km, converted to meters?
(A) 0.000455 m
(B) 0.455 m
(C) 45 500 m
(D) 455 000 m

4. What is 198 km/h equal to?
(A) 0.0198 m/s
(B) 55.0 m/s
(C) 198 m/s
(D) 7128 m/s

5. What is 120. km/h equal to?
(A) 0.120 m/s
(B) 33.3 m/s
(C) 432 m/s
(D) 1.20×10^3 m/s

6. What is 36 m/s in km/hr?
(A) 10.0 km/hr
(B) 36 km/hr
(C) 100 km/hr
(D) 130. km/hr

PART B: WRITTEN RESPONSE

1. Write the correct abbreviation for each metric unit.
A) Kilogram _____ B) Milliliter _____ C) Kilometer _____
D) Meter _____ E) Millimeter _____ F) Centimeter _____
G) Gram _____ H) Liter _____ L) Milligram _____

2. Convert the following.

- | | |
|----------------------|----------------------|
| A) 2000 mg = _____ g | B) 5 L = _____ ml |
| C) 16 cm = _____ mm | D) 104 km = _____ m |
| E) 198 g = _____ kg | F) 2500 m = _____ km |
| G) 480 cm = _____ m | H) 75 ml = _____ L |
| I) 65 g = _____ mg | J) 5.6 kg = _____ g |
| K) 50 cm = _____ m | L) 6.3 cm = _____ mm |
| M) 8.8 mm = _____ cm | N) 5.6 m = _____ cm |
| O) 120 mg = _____ g | P) 2000 ml = _____ L |

3. Convert the following

- | | |
|--------------------------|-------------------------|
| A) 30.0s = _____ min | B) 602 min = _____ h |
| C) 4.7 h = _____ min | D) 23.6 h = _____ s |
| E) 5024 s = _____ min | F) 6.2 h = _____ min |
| G) 25.40 min = _____ h | H) 45 km/h = _____ m/s |
| I) 2.67 m/s = _____ km/h | J) 100 km/h = _____ m/s |
| K) 15 m/s = _____ km/h | L) 363 m/s = _____ km/h |
| M) 25 km/h = _____ m/s | N) 2.0 m/s = _____ km/h |