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O. I METRIC CONVEKSIONS (B)

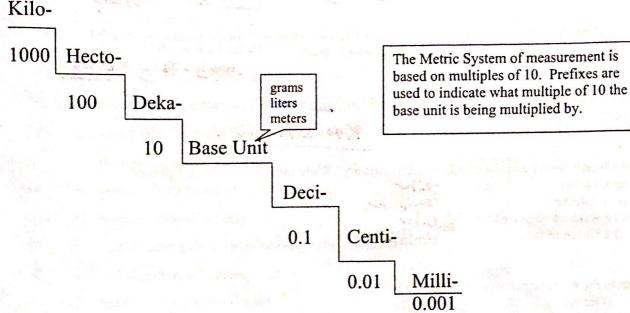
Unit I
The Nature of Science
Need extra help?

Salah Salah

Date:

Check out http://www.nwr1biology.com

Metric Conversion: Stair-Step Method



The prefix Kilo (k) - means 1000 times.
The prefix Hecto (h) - means 100 times
The prefix Deka (dk) - means 10 times.
The prefix Deci (d) - means 0.1 times.
The prefix Centi (c) - means 0.01 times.
The prefix Milli (m) - means 0.001 times.

Base Units will include the gram (g), liter (L), and meter (m) and will have no prefix.

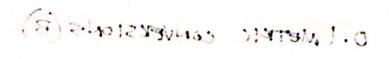
To use the Stair-Step method, find the prefix the original measurement starts with. (ex. milligram) If there is no prefix, then you are starting with a base unit. Find the step which you wish to make the conversion to. (ex. decigram) Count the number of steps you moved, and determine in which direction you moved (left or right). The decimal in your original measurement moves the same number of places as steps you moved and in the same direction. (ex. milligram to decigram is 2 steps to the left, so 40 milligrams = .40 decigrams) If the number of steps you move is larger than the number you have, you will have to add zeros to hold the places. (ex. kilometers to meters is three steps to the right, so 10 kilometers would be equal to 10,000 meters)

That's all there is to it! You need to be able to count to 6, and know your left from your right!

- 1) Write the equivalent measurement: (.5 pt each)
 - a) 5 dm = 5 m
- b) 4 mL = ... L
- c) 8 g = **8000** mg f) 6 kg = **6000** g

- d) 9 mg = .009 g g) 4 cm = ____04 m
- e) 2 mL = .002 L h) 12 mg = .012 g
- f) $6 \text{ kg} = \underline{\text{Low}} \text{ g}$ i) $6.5 \text{ cm}^3 = \underline{\text{Low}} \text{ L}$

- j) $7.02 \text{ mL} = 7.02 \text{ cm}^3$ m) $.32 \text{ m} = 32 \cdot \text{cm}$
- k) .03 hg = 30 dgn) 38.2 g = .0332 kg
- 1) 6035 mm = 603.5 cm



| | | | loce than 1 |
|---|--|--|---|
| 2. One cereal bar has a mass of 37 g. V | What is the mass of 6 | cereal bars? Is that me | ore than or less than I |
| kg? Explain your answer. (2 pts) | MC-2275 | less from | 2229 6 1000 |
| 3. Wanda needs to move 110 kg of roc | ks She can carry 10 | he each trip. How man | y trips must she make? |
| Explain your answer. (2 pts) | | | 41-1-3 |
| | 10hg = 1kg | 1100 tubs | 165/mp |
| 4. Dr. O is playing in her garden again | She needs 1 kg of p | otting soil for her plant | s. She has 750 g. How |
| much more does she need? Expla | in your answer. (2pt | 7) | |
| | | 1000 5 | 1509 = 2509 |
| 5. Weather satellites orbit Earth at an a | ltitude of 1,400,000 | meters. What is this al | titude in kilometers? (2 |
| pts) | 1.400 | kilomehra | |
| | | | |
| 6. Which unit would you use to measu | | te milliliter or liter. (.5 | pt each) |
| | ihr | | |
| - | millith | | |
| c) a water storage tank | ni li lata | | |
| d) a carton of juice | WITH MINT | | |
| 7 Circle the many markets are | 76 mt agab) | | |
| 7. Circle the more reasonable measure a) length of an ant | mm) or5cm | | |
| b) length of an automobile | | | |
| | 50 km or 4,500 km | | |
| | 5 mm or 75 cm | New York | |
| 8. Will a tablecloth that is 155 cm long | cover a table that is | s 1.6 m long? Explain y | our answer (2 pts) |
| No. | The state of the s | 1.55 m < 1. | |
| 9. A dollar bill is 15.6 cm long. If 200 | dollar bills were laid | d end to end, how many | meters long would |
| the line be? (2 pts) 3120c | m 31.2 n | | |
| 31200 | 31.21 | | |
| 10. The ceiling in Jan's living room is husband is exactly 2 m tall. Will h | 2.5 m high. She had he hit his head on the | s a hanging lamp that he hanging lamp? Why c | angs down 41 cm. Her or why not? (2 pts) |
| | | | |
| | 2.07~> 2 m | Mor | |
| | | | |
| | | Carlotte St. St. Carlotte | |

Using SI Units

Match the terms in Column II with the descriptions in Column I. Write the letters of the correct term in the blank on the left.

| | | Column I | | Column II |
|-----------------|-------|---|----------------|----------------------|
| 1 | 1. | distance between two points | a. | time |
| e | 2. | SI unit of length | b. | volume |
| m | 3. | tool used to measure length | c. | mass |
| 9 | 4. | units obtained by combining other units | d. | density |
| | 5. | amount of space occupied by an object | e. | meter |
| L | 6. | unit used to express volume | f. | kilogram |
| 10 | 7. | SI unit of mass | g. | derived |
| C | 8. | amount of matter in an object | h. | liter |
| 400 | 9. | mass per unit of volume | i. | second |
| | 10. | temperature scale of most laboratory thermometers | j . | Kelvin |
| 0 | 11. | instrument used to measure mass | k. | length |
| a | 12. | interval between two events | 1. | balance |
| | 13. | | m. | meterstick |
| (100 | 14. | 1.10 | n. | thermometer |
| M Circle | | instrument used to measure temperature wo terms in each group that are related. Explain how the | o. se terms | Celsius are related. |
| 6. Cel | sius | degree, mass, Kelvin | | |
| 17. bal | ance | , second, mass | | |
| 18. kilo | ogran | m, liter, cubic centimeter | Ö | 14.99 |
| 19 fim | e se | cond, distance | | |
| | | | | 1 |
| 20. dec | ime | ter, kilometer, Kelvin | | |
| | | | -1-1 | |

Standards of Measurement

Some prefixes used in SI are listed in the table below. Use the information in the table to answer

questions 1-5.

| SI Prefix | Meaning |
|-----------|--------------------|
| kilo- | thousand (1000) |
| hecto- | hundred (100) |
| deka- | ten (10) |
| deci- | tenth (0.10) |
| centi- | hundredth (0.01) |
| milli- | thousandth (0.001) |

| ۱. | How many meters are | in one kilometer? 1000 | |
|--------------|---|--|---|
| 2. | What part of a liter is | one milliliter? | |
| 3. | How many grams are | in two dekagrams? | |
| 4. | | nas a volume of one milliliter, what wo | ould the mass of one liter of water |
| n kil | ograms? | | |
| | What part of a meter is | s a decimeter? | |
| 5. In the | What part of a meter is blank at the left, write t | s a decimeter?the term that correctly completes each | statement. Choose from the terms |
| 5. In the | What part of a meter is blank at the left, write the below. | the term that correctly completes each | statement. Choose from the terms |
| 5. In the | What part of a meter is blank at the left, write t | | statement. Choose from the terms prefixes |

7. The system of measurement used worldwide in science is ______

11. The prefix deci- means _____

8. SI is based on units of ____

Standards of Measurement

| SI prefixes | and their meanings | | |
|-------------|--------------------|--|--|
| Prefix | Meaning | | |
| milli | 0.001 | | |
| Certi | 0.01 | | |
| deci- | 0.1 | | |
| deke | 10 | | |
| hecto- | 100 | | |
| 6.13 | 1000 | | |

| Circle | the large | r unit in | each pair | of units. |
|--------|-----------|-----------|-----------|-----------|
| | | | | |

- 1. millimeter, kilometer
- 2. decimeter, dekameter
- 3. hectogram, decigram

- 4. centimeter, millimeter
- 5. hectogram, kilogram
- 6. In SI, the base unit of length is the meter. Use this information to arrange the following units of measurement in the correct order from smallest to largest. Write the number 1 (smallest) through 7 .(largest) in the spaces provided.
 - a. kilometer
 - b. centimeter
 - c. meter
 - d. dekameter

e. hectometer

f. millimeter

g. decimeter

Use your knowledge of the prefixes used in SI to answer the following questions in the spaces provided.

- 7. One part of the Olympic games involves an activity called the decathlon. How many events do you think make up the decathlon?
- 8. How many years make up a decade?
- 9. How many years make up a century?
- 10. What part of a second do you think a millisecond is? 1000