

15. Liters
14. Kilometers
13. Milligrams
12. Millimeter
11. Hectares
10. Cubic Meters
9. Grams
8. Meters
7. Centimeters
6. Milliliter
5. D
4. C
3. B
2. C
1. A

BASIC MATH

The Complete Course
Lesson Twenty Seven

Measurements

KA8427

Teaching Guide & Worksheet

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HOW TO USE THIS PROGRAM

1. The "STOP TO THINK" signal means pause to think
2. The "STOP TO WORK" signal means work the problem(s)
3. Use the index to find specific items
4. Rewind the tape and watch the lesson again if the concept is not clear
5. Complete exercises on the worksheet to confirm understanding

LEARNING STRATEGIES

WHY DO WE NEED STANDARD MEASUREMENTS?

- A. The "king's foot" as a measure of distance would change every time a new king was crowned
- B. The great Baltimore fire demonstrated the need for standards in fire equipment
- C. The Bureau of Standards maintains the standard for measures
- D. The consumer desires standard measures for:
 - 1. A pound on the butcher's scale
 - 2. A gallon at the gasoline pump
 - 3. A "medium"-sized shirt or blouse

THE METRIC SYSTEM

- A. The metric system is really the official measurement system of the United States
- B. The metric system uses prefixes
 - 1. Kilo = 1000
 - 2. Centi = 1/100
 - 3. Milli = 1/1000
- C. Measures of length
 - 1. The basic unit of length is the meter, a little more than one yard
 - 2. The meter is used in sports (e.g., the 100-meter dash) and to measure such distances as the dimensions of a room
 - 3. The kilometer is 1000 meters and is used to measure longer distances such as those between cities
 - 4. Most people are familiar with 5K and 10K road races; the K stands for kilometer
 - 5. The centimeter is 1/100 of a meter and is approximately the width of a paper clip
 - 6. The centimeter is used to measure small distances such as a person's height or the dimensions of a piece of paper
 - 7. The millimeter is 1/1000 of a meter and is used for very small measurements such as the thickness of a hair or of a piece of paper
- D. Measures of mass
 - 1. Mass and weight are really different measurements but on Earth we can use a measure of mass to find the weight of an object
 - 2. The gram is the basic unit of mass and is approximately the weight of a paper clip or a dollar bill
 - 3. The gram is used to measure fat content in various foods
 - 4. The milligram is 1/1000 of a gram and is used to measure minute quantities such as vitamin, sodium, or cholesterol content
 - 5. The kilogram is 1000 grams and is used to measure food (a kilo of apples or five kilos of chicken) and human weight
 - 6. A kilogram is approximately 2.2 pounds
- E. Measures of capacity
 - 1. The basic unit of capacity is the liter, which is approximately one quart
 - 2. Most people are familiar with the two-liter bottle
 - 3. A milliliter is 1/1000 of a liter and is used to measure very small capacities such as dosages of medicine
- F. Measures of area
 - 1. A square centimeter is a square whose side is one centimeter and is used to measure the area of a table
 - 2. A square meter would be used to measure the area of a yard
 - 3. A square kilometer would be used to measure the area of a town
- G. Measures of volume
 - 1. A cubic centimeter or cc. is the volume of a cube whose sides each measure one centimeter

- 2. The cubic centimeter is the most common metric unit of volume and is used in measuring medications and engine size
- 3. A cubic centimeter is a milliliter
- 4. A cubic centimeter of water has a mass of one gram
- H. Measures of temperature
 - 1. The freezing point of water is 0 degrees Celsius or 32 degrees Fahrenheit
 - 2. The boiling point of water is 100 degrees Celsius or 212 degrees Fahrenheit

OTHER SPECIAL UNITS OF MEASURE

- A. The light year is the distance light travels in one year
- B. To compute the distance multiply 186,000 _ 60 _ 60 _ 24 _ 365; the product is almost six trillion miles
- C. The acre is used to measure land and is equal to 43,500 square feet
- D. A hectare is the metric unit for land area and is equal to 10,000 square meters
- E. One hectare is 2.471 acres

MEASURING RATES

- A. The word per means divided by
- B. Examples of common rate measurements are:
 - 1. Miles per hour
 - 2. Miles per gallon
 - 3. Points per game
 - 4. Beats per minute
 - 5. Cycles (or Hertz) per second

WORKSHEET STRATEGIES

For each measurement, select the most appropriate unit of measure.

For each measurement, provide the most appropriate metric unit of measure

- | | |
|---|---|
| 1. The length of a tennis court
A. meter B. kilometer
C. liter D. milliliter | 6. Amount of milk in a baby bottle |
| 2. The amount of sugar to sprinkle on your cereal
A. hectare B. square cm
C. gram D. kilogram | 7. Height of a high jump bar |
| 3. The amount of milk in a plastic container
A. square meter B. liter
C. milligram D. kilogram | 8. Height of a pole vault bar |
| 4. Area of a small garden
A. acre B. square centimeter
C. square meter D. cubic meter | 9. Weight of a feather |
| 5. The volume of blood drawn for a blood test
A. square meter B. kilogram
C. cubic meter D. cubic centimeter | 10. Volume of gas in a large tank |
| | 11. Area of land on a ranch |
| | 12. Thickness of paint on a surface |
| | 13. Amount of vitamin C in a certain portion of a vegetable |
| | 14. The distance from home to school |
| | 15. The amount of blood in your body |