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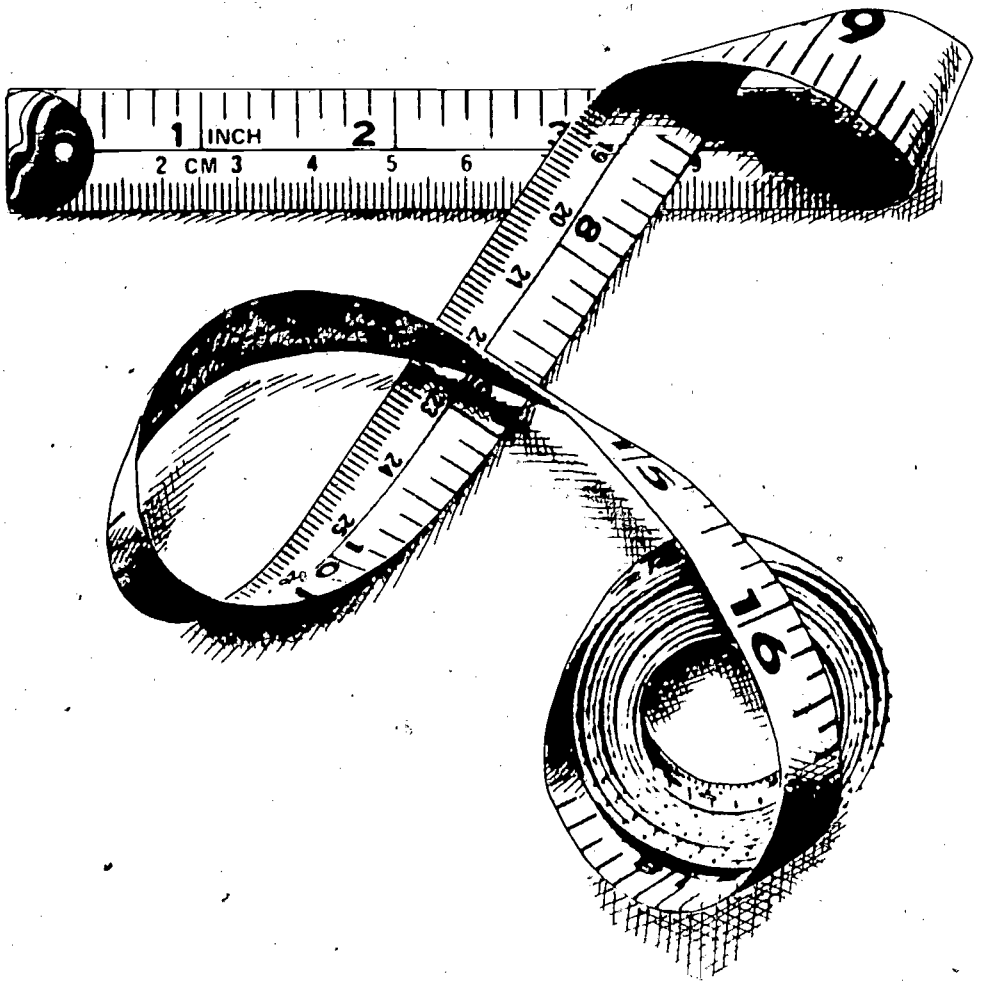
ABSTRACT

This learning activity package on using the metric system is one of a series of 12 titles developed for use in health occupations education programs. Materials in the package include objectives, a list of materials needed, information sheets, reviews (self evaluations) of portions of the content, and answers to reviews. These topics are covered: metric system history, metric system rules, metric system tools, and measuring volume, mass, length, and temperature. (YLB)

**LAP** Learning Activity Package



# Using The Metric System In Health Careers




CALIFORNIA STATE DEPARTMENT OF EDUCATION
Wilson Riles, Superintendent of Public Instruction
Sacramento, 1982

# Using The Metric System In Health Careers

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1982

# CONTENTS

# METRIC SYSTEM

## OBJECTIVES

AFTER COMPLETING THIS LAP, YOU WILL BE ABLE TO DO THE FOLLOWING:

1. BRIEFLY DESCRIBE THE HISTORY OF THE METRIC SYSTEM.
2. EXPLAIN SIX ADVANTAGES OF THE METRIC SYSTEM.
3. LIST EIGHT RULES OF THE METRIC SYSTEM.
4. DEFINE THE UNITS AND PREFIXES USED IN THE METRIC SYSTEM.
5. LIST THE COMMON TOOLS OF THE METRIC SYSTEM USED FOR LINEAR, VOLUME, AND WEIGHT MEASUREMENTS.
6. CALCULATE COMMON METRIC MEASUREMENTS, INCLUDING VOLUME, MASS, AND LENGTH.
7. CONVERT FAHRENHEIT TEMPERATURE TO CELSIUS.

## MATERIALS NEEDED

*WORK SHEET

PEN OR PENCIL

* PICK UP A WORK SHEET BEFORE BEGINNING THIS LAP.

# METRIC SYSTEM
## HISTORY

THE METRIC SYSTEM WAS ADOPTED IN FRANCE IN 1790 AS A UNIVERSAL SYSTEM OF WEIGHTS AND MEASURES. IT WAS MADE LEGAL IN THE UNITED STATES IN 1866.

SOME OPPONENTS OF THE METRIC SYSTEM IN THE UNITED STATES BASED THEIR OPPOSITION ON THE BELIEF THAT THE INCH WAS DERIVED FROM THE CUBIT REFERED TO IN THE BIBLE. OTHER OPPONENTS WERE CONVINCED THAT THE INTRODUCTION OF THE METRIC SYSTEM WAS THE RESULT OF A FOREIGN CONSPIRACY.

INDUSTRY HAS OPPOSED THE USE OF THE METRIC SYSTEM BECAUSE OF COSTS AND COMPLICATIONS IN THE CHANGEOVER IN TOOLS AND MACHINERY.

THE METRIC CONVERSION ACT OF 1975 PROVIDED FOR A METRIC BOARD TO OVERSEE THE CHANGEOVER IN THE UNITED STATES FROM THE ENGLISH SYSTEM TO THE METRIC SYSTEM.

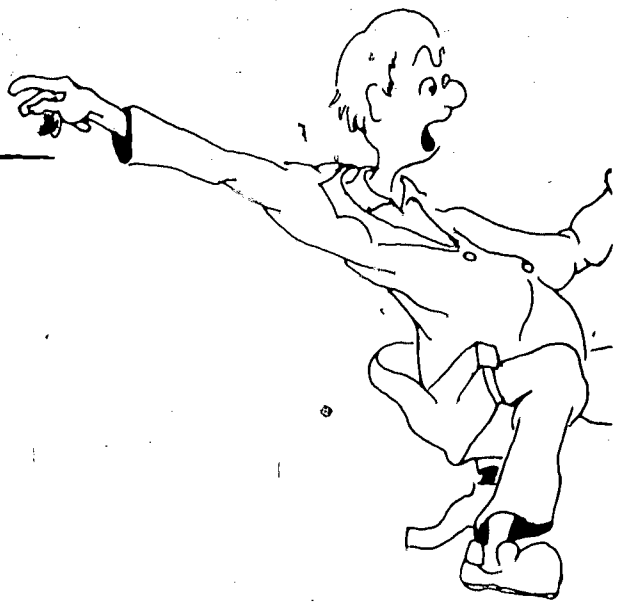
NINETY PERCENT OF THE WORLD NOW USES THE METRIC SYSTEM. IT IS CALLED THE INTERNATIONAL SYSTEM OF UNITS (SI) AND IS BASED ON AN INTERNATIONAL AGREEMENT IN 1960.

# METRIC SYSTEM
## HISTORY

AS CIVILIZATION GREW, THERE WAS A NEED TO MEASURE GOODS, COMMODITIES, BUILDING MATERIALS, AND DISTANCES. THIS LED TO THE CREATION OF DIFFERENT MEASURING SYSTEMS. HODGEPODGE MEASURING METHODS AND DEVICES WERE ESTABLISHED. AVAILABLE "MEASURES" WERE USED; THESE INCLUDE:

A MAN'S STRIDE ——

AN ARM'S LENGTH ——




—— HANDFULS

—— FOOT

# METRIC SYSTEM
## HISTORY

REVIEW I.

DO YOU REMEMBER?

1. WHY DOES INDUSTRY RESIST CHANGING TO THE METRIC SYSTEM?
2. HOW WERE MEASURING SYSTEMS ORIGINALLY STARTED?
3. HOW MUCH OF THE WORLD IS NOW USING THE METRIC SYSTEM?
4. WHEN WAS THE METRIC SYSTEM MADE LEGAL IN THE UNITED STATES?

ANSWERS ARE ON THE NEXT PAGE.
IF YOU GOT ALL OF THE QUESTIONS RIGHT, CONTINUE ON.
IF NOT, GO BACK AND REVIEW.

REVIEW I. ANSWER KEY

1. COSTS AND COMPLICATIONS OF TOOLS AND MACHINERY

2. HODGEPODGE, USING AVAILABLE MEASURES LIKE A MAN'S STRIDE OR ARM'S LENGTH OR HANDFULS OR "FOOT."

3. 90 PERCENT

4. 1866

# METRIC SYSTEM
## ADVANTAGES

**10** ALL UNITS OF MEASURE ARE MULTIPLES OR SUBMULTIPLES OF 10.

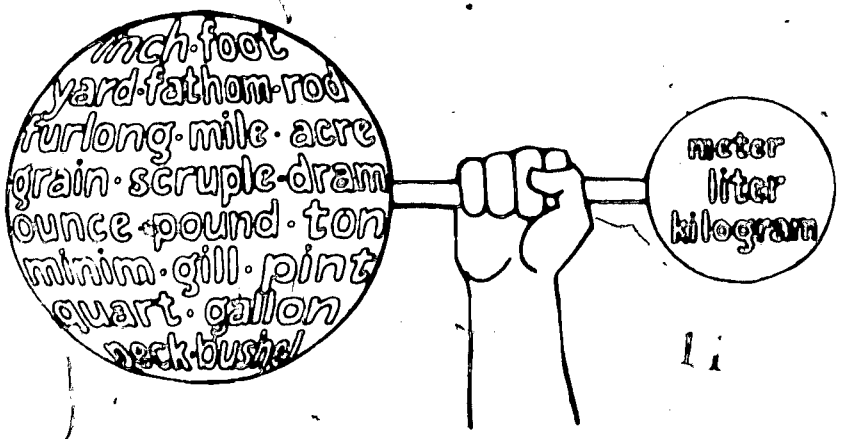
ONE SET OF PREFIXES IS USED FOR ALL TYPES OF MEASURES.

| | |
|---|---|
| KILO | DECI |
| HECTO | CENTI |
| DEKA | MILLI |

CONVERSION TO THE METRIC SYSTEM WOULD BE BETTER FOR IMPORT/EXPORT.

HEALTH SERVICES ALREADY USE THE METRIC SYSTEM.

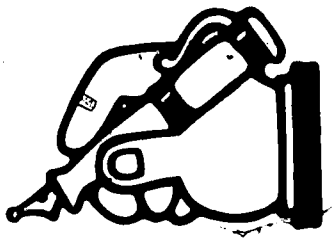

FEWER MORE SENSIBLE SIZES.



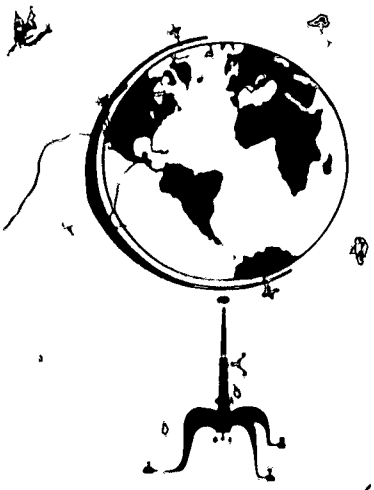
# METRIC SYSTEM
## ADVANTAGES

GREATER EASE IN COMPARING PRICES

EASIER TO CALCULATE



MANY COUNTRIES USE ALREADY



# METRIC SYSTEM
# ADVANTAGES

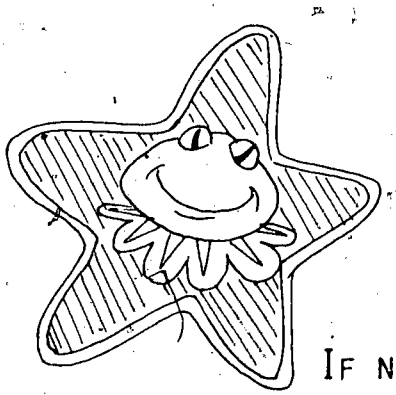
## REVIEW II.

DO YOU REMEMBER?

1. WHAT SERVICE IN THE U.S. ALREADY USES THE METRIC SYSTEM?

2. HOW MANY SETS OF PREFIXES ARE USED FOR ALL TYPES OF MEASURES?

3. WHAT NUMBER IS VERY IMPORTANT IN DOING MULTIPLES IN THE METRIC SYSTEM?



ANSWERS ARE ON THE NEXT PAGE.

IF YOU GOT ALL OF THE QUESTIONS RIGHT, CONTINUE ON.

IF NOT, PLEASE GO BACK AND REVIEW.

REVIEW II. ANSWER KEY

1. HEALTH SERVICES

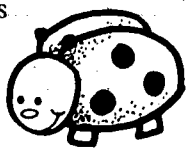
2. 1

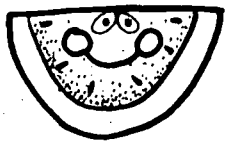
3. 10

# METRIC SYSTEM

UNITS YOU NEED TO KNOW:

| UNIT | SYMBOL | MEASURES | REPLACES |
|---|---|---|---|
| METER | m | length, distance, thickness | inch, foot, yard, mile |
| GRAM | g | weight | ounce, pound |
| LITER | L | volume | cup, pint, quart, gallon fluid ounce |
| CELSIUS | $^{o}C$ | temperature | Fahrenheit, Centigrade |
| AMPERE | A | electrical current | no change |
| WATT | W | power | no change |





NOTE: Other English-speaking countries use the spelling: metre and litre.

# METRIC SYSTEM

PREFIXES COMMONLY USED:

| MORE THAN ONE OF A UNIT | PREFIX | SYMBOL | RELATION TO UNIT | EXAMPLE |
|---|---|---|---|---|
| | Kilo- | k | 1000 of them | 1 kilogram<br>1000 grams |
| | Hecto- | h | 100 of them | 1 hectometer<br>100 meters |
| LESS THAN ONE OF A UNIT | Deci- | d | 1/10 of unit | 1 deciliter<br>0.1 liter |
| | Centi- | c | 1/100 of unit | 1 centimeter<br>0.01 meter |
| | Milli- | m | 1/1000 of unit | 1 milliliter<br>0.001 liter |

# METRIC SYSTEM

## REVIEW III.

DO YOU REMEMBER?

1. THE METER MEASURES _____ AND THE SYMBOL FOR IT IS _____.

2. THE METRIC UNIT FOR WEIGHT IS CALLED _____.

3. THE LITER MEASURES _____, AND REPLACES _____.

4. THE METRIC TEMPERATURE UNIT IS CALLED _____.

5. AMPERE DENOTES _____ AND WATT MEANS _____.

6. TWO PREFIXES THAT DENOTE MORE THAN ONE OF A UNIT ARE _____ AND _____.

7. MATCH THE FOLLOWING:

| | |
|---|---|
| _____MILLI- | A. 1/100 OF UNIT |
| _____KILO- | B. 1/1000 OF UNIT |
| _____CENTI- | C. 100 OF THEM |
| _____DECI- | D. 1000 OF THEM |
| _____HECTO- | E. 1/10 OF UNIT |

ANSWERS ARE ON NEXT PAGE.

IF YOU GOT THEM ALL RIGHT, CONTINUE ON.

IF NOT, GO BACK AND REVIEW.

REVIEW III. ANSWER KEY

1. LENGTH OR DISTANCE OR THICKNESS
   m

2. A GRAM OR KILOGRAMS

3. VOLUME
   CUP OR PINT OR QUART OR GALLON OR FLUID OUNCE

4. CELSIUS

5. ELECTRICAL CURRENT
   POWER

6. KILO-
   HECTO-

7. B.
   D.
   A.
   E.
   C.

# METRIC SYSTEM

RULES TO FOLLOW:

1. USE A SPACE, NOT A COMMA, FOR WRITING NUMBERS.

2. A ZERO PRECEDES THE DECIMAL POINT IF THE NUMBER IS LESS THAN 1.

3. SYMBOLS ARE NOT PLURAL, NO MATTER HOW MANY.

4. LEAVE A SPACE BETWEEN THE NUMBER AND THE SYMBOL, EXCEPT FOR TEMPERATURE (E.G., $13^{o}C$).

5. SYMBOLS ARE NOT FOLLOWED BY PERIODS.

6. CAPITAL LETTERS AND SMALL LETTERS ARE NOT INTERCHANGEABLE. FOR EXAMPLE, c IS THE SYMBOL FOR CENTI AND $^{o}C$ IS THE SYMBOL FOR DEGREE CELSIUS.

7. WHEN BOTH THE METRIC SYSTEM AND CUSTOMARY UNITS ARE USED, SHOW NONMETRIC UNITS IN PARENTHESES.

8. AVOID COMMON FRACTIONS. USE DECIMAL FRACTIONS FOR QUANTITIES NOT EXPRESSED IN WHOLE NUMBERS.

NOTE: IN THE METRIC SYSTEM AN UPPER CASE LETTER MAY MEAN SOMETHING DIFFERENT FROM THE LOWER CASE LETTER. FOR EXAMPLE, mm FOR MILLIMETER (WIDTH OF A DIME), AND Mm FOR MEGAMETER (A THOUSAND KILOMETERS).

THE METER IS THE BASE UNIT OF LENGTH IN THE METRIC SYSTEM. EACH UNIT HAS A STANDARD WHICH CAN BE REPRODUCED IN A LABORATORY WITH GREAT ACCURACY—TO 8 DECIMAL PLACES AND MORE.

# METER

EXAMPLES OF RULES TO FOLLOW....

USE A SPACE, NOT A COMMA, FOR WRITING NUMBERS.

| CORRECT | INCORRECT |
|---|---|
| 53 471 | ~~53,471~~ |
| 2 600.5 | ~~2,600.5~~ |
| 1.051 07 | ~~1,051,07~~ |

NO → 9,99

A ZERO PRECEDES THE DECIMAL POINT IF THE NUMBER IS LESS THAN 1.

| CORRECT | INCORRECT |
|---|---|
| 0.560 | ~~.560~~ |
| 0.017 | ~~.017~~ |

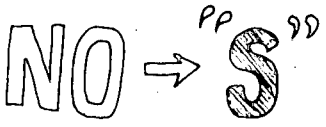
0.

# METRIC SYSTEM

RULES TO FOLLOW....

SYMBOLS ARE NOT PLURAL, NO MATTER HOW MANY.

| CORRECT | INCORRECT |
|---|---|
| m (METERS) | ms (MILLISECOND) |
| g | GS |
| kL | KLS |




LEAVE A SPACE BETWEEN NUMBER AND SYMBOL.

| CORRECT | INCORRECT |
|---|---|
| 25 mg | 25mg |
| 1.050 mm | 1.050mm |
| 0.5 L | 0.5L |

**SPACE.**

# METRIC SYSTEM

RULES TO FOLLOW....

SYMBOLS ARE NOT FOLLOWED BY PERIODS
(TO AVOID CONFUSION WITH DECIMAL POINTS).

| CORRECT | INCORRECT |
|---|---|
| 25 m | 25 m. |
| 370 kg | 370 k.g |
| 250 cm | 250 c.m. |

NO ".

ALL SYMBOLS ARE SMALL LETTERS, EXCEPT FOR LITER IS "L".
(LOWER CASE l LOOKS LIKE A NUMBER 1.)

| CORRECT | INCORRECT |
|---|---|
| m (MILLI) | M (MILLI) |
| c (CENTI) | C (CENTI) |
| L (LITER) | l (LITER) |

NO "M" "C"

# METRIC SYSTEM.

RULES TO FOLLOW....

WHEN BOTH METRIC AND ENGLISH UNITS ARE USED, SHOW THE NONMETRIC UNITS IN PARENTHESES.

CORRECT

76.2 mm (3 in.)

450 kg (990 lb.)

5 mL (0.17 oz.)

INCORRECT

~~76.2 mm-3 in.~~

~~990 lbs. (450 kg)~~

~~5 ml-0.17 oz.~~

USE ( )

AVOID COMMON FRACTIONS. USE DECIMAL FRACTIONS FOR QUANTITIES FEWER THAN ONE.

CORRECT

0.25 mg

3.50 km

INCORRECT

~~¼ mg~~

~~3½ km~~

NO 1/4

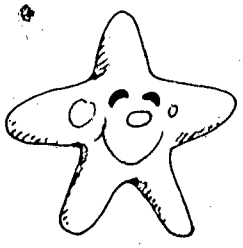
# METRIC SYSTEM

## REVIEW IV.

DO YOU REMEMBER THE RULES?

MARK THE FOLLOWING EXAMPLES EITHER RIGHT OR WRONG AND BRIEFLY EXPLAIN WHICH RULE HAS BEEN VIOLATED.

1. 2,000,011
2. 0.017
3. ms
4. 25mg
5. 25 m.
6. m
7. 5 mL (0.17 oz.)
8. ¼ mg
9. 53 471
10. 0.5L



ANSWERS ARE ON THE NEXT PAGE.

IF YOU GOT THEM ALL RIGHT, CONTINUE ON.

IF NOT, GO BACK AND REVIEW.

REVIEW IV. ANSWER KEY

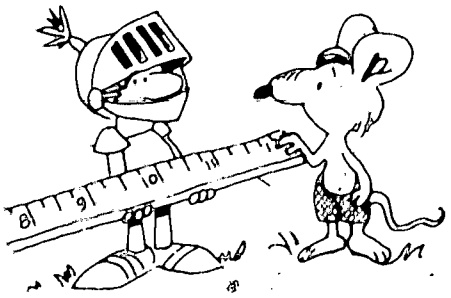
1. WRONG.....NO COMMAS
2. RIGHT.....ZERO PRECEDES DECIMAL IF LESS THAN 1.
3. WRONG.....NO PLURALS SHOULD BE USED.
4. WRONG.....LEAVE SPACE BETWEEN NUMBER AND SYMBOL.
5. WRONG.....SYMBOLS ARE NOT FOLLOWED BY A PERIOD.
6. RIGHT.....SYMBOLS ARE SMALL LETTERS.
7. RIGHT.....BOTH SYSTEMS USED, NONMETRIC IN PARENTHESES
8. WRONG.....NO FRACTIONS
9. RIGHT.....NO COMMAS
10. WRONG.....NO SPACE BETWEEN NUMBER AND SYMBOL

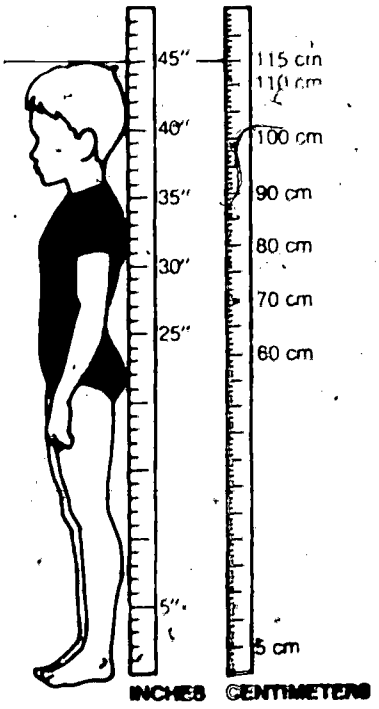
# METRIC SYSTEM

## TOOLS OF THE TRADE.....

## LINEAR MEASUREMENTS

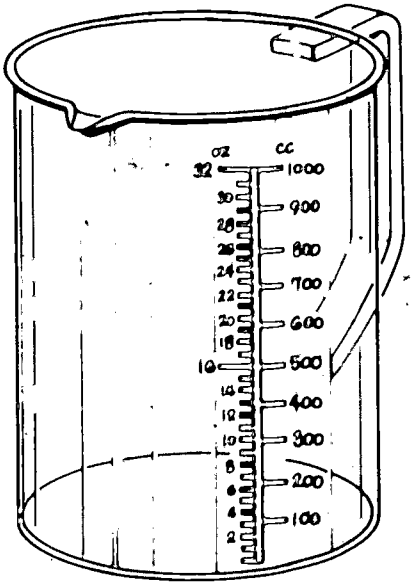
METERSTICK....OR....TAPE....OR....RULER....



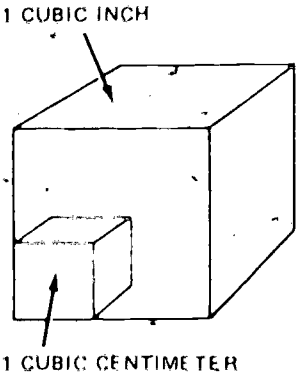



## VOLUME

MEASURING CUP OR GRADUATE

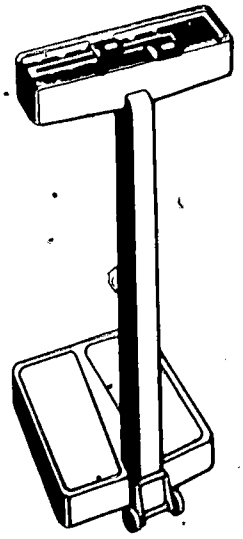



ACTUAL SIZE OF
CUBIC INCH
AND
CUBIC CENTIMETER




## WEIGHT OR MASS

SCALES

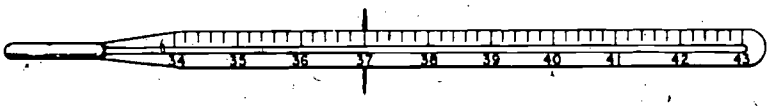


## TEMPERATURE

THERMOMETER IN CELSIUS (CENTIGRADE)

AVERAGE NORMAL BODY TEMPERATURE

NORMAL BODY TEMPERATURE IS 37°C.




## MEDICAL MEASURING

IN DOCTORS' OFFICES, SCALES ARE GENERALLY IN POUNDS AND NEED TO BE CONVERTED TO KILOGRAMS.

MEDICATIONS ARE ALREADY CONVERTED TO THE METRIC SYSTEM.

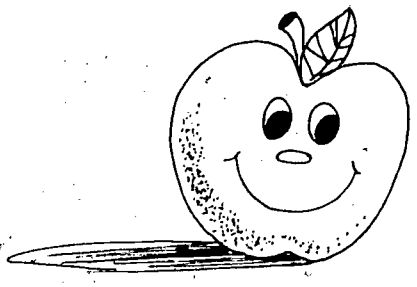
BLOOD PRESSURE IS ALREADY IN MILLIMETERS OF MERCURY.

WEIGHT CONTROL DIETS ARE DESIGNED FOR GRAMS PER DAY.

REVIEW V.

DO YOU REMEMBER?

1. WHAT UNITS SHOULD APPEAR ON SCALES FOR MEASURING WEIGHT OR MASS?
2. WHAT IS THE MEDICAL TERM FOR A MEASURING CUP?
3. WHAT DOES THE METERSTICK REPLACE?
4. THE NORMAL BODY TEMPERATURE IN THE METRIC SYSTEM IS _____.



ANSWERS ARE ON THE NEXT PAGE.

IF YOU GOT THEM ALL RIGHT,
CONTINUE ON.

IF NOT, GO BACK AND REVIEW.

REVIEW V. ANSWER KEY

1. GRAMS OR KILOGRAMS

2. GRADUATE

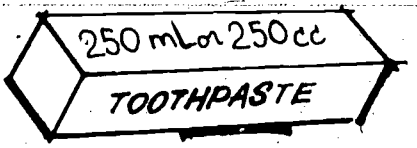
3. RULER OR YARDSTICK

4. 37°C

## MEASURING VOLUME

### CUBIC CENTIMETER (cc) OR MILLILITER (mL)

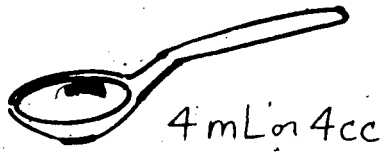
* LIQUID MEASURE
* SMALL AMOUNTS





| APPROXIMATE | ACTUAL | | |
|---|---|---|---|
| 1 mL | 1 mL | EQUALS | ¼ TEASPOON |
| 15 mL | 14 mL | EQUAL | 1 TABLESPOON |
| 30 mL | 29 mL | EQUAL | 1 OUNCE |
| 500 mL | 480 mL | EQUAL | 1 PINT |
| 1000 mL | 960 mL | EQUAL | 1 QUART |
| 4000 mL | 3840 mL | EQUAL | 1 GALLON |

EXAMPLES....




AN 8 OUNCE GLASS OF MILK EQUALS 240 mL.

HALF OF A PINT IS 250 mL.

A HALF GALLON OF MILK IS 2000 mL.

ONE TEASPOON OF LIQUID IS 4 mL.

A 4 OUNCE GLASS OF JUICE IS 120 mL.

A 6 OUNCE CUP OF COFFEE IS EQUAL TO 180 mL.

### LITER (L)

* LIQUID MEASURE
* LARGER AMOUNTS

1 L EQUALS 1.06 QUART.

EXAMPLES.....

THE AVERAGE LARGE BOTTLE OF COLA IS 2 LITERS.

NOTE: ALTHOUGH "cc" IS COMMONLY USED IN THE UNITED STATES FOR CUBIC CENTIMETERS, THE INTERNATIONAL SYMBOL IS "$cm^3$" AND MAY BE USED INTERCHANGEABLY WITH "mL."

## REVIEW VI.

DO YOU REMEMBER?

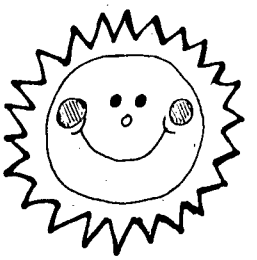
1. SMALLER LIQUID MEASURES ARE MEASURED IN _____ WHILE LARGER AMOUNTS ARE MEASURED IN _____.

2. WHAT IS THE METRIC LIQUID MEASUREMENT OF A LARGE BOTTLE OF COLA? _____.

3. CALCULATE THE FOLLOWING TO CUBIC CENTIMETERS:
   - A. 2 OUNCES OF EGGNOG IS _____
   - B. 7 OUNCES OF PINEAPPLE JUICE IS _____
   - C. 5½ OUNCES OF WATER IS _____
   - D. 1 PINT OF ALCOHOL IS _____
   - E. 2 TEASPOONS OF MEDICINE IS _____
   - F. 3 GALLONS OF CHOCOLATE MILK IS _____
   - G. 6½ OUNCES OF SOUP IS _____
   - H. 1½ PINTS IS _____

4. ANOTHER NAME FOR CUBIC CENTIMETER IS _____.

ANSWERS ARE ON THE NEXT PAGE.
IF YOU GOT THEM ALL RIGHT,
CONTINUE ON.
IF NOT, GO BACK AND REVIEW.



## REVIEW VI. ANSWER KEY

1. CUBIC CENTIMETERS (cc)
   LITER (L)

2. 2 LITERS

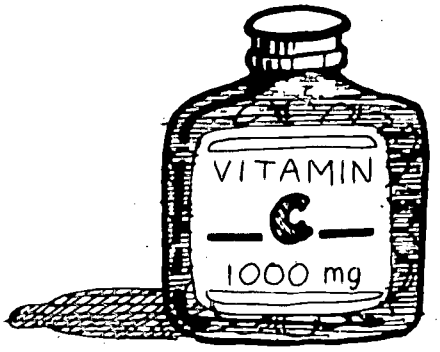
3. A. 60
   B. 210
   C. 165
   D. 500
   E. 8
   F. 12 000
   G. 195
   H. 750

4. MILLILITER (mL)

## MEASURING MASS

### MILLIGRAM (mg)

- A VERY SMALL QUANTITY OF MASS
- ABOUT 1 GRAIN OF SALT
- USED IN CHEMISTRY AND MEDICINE

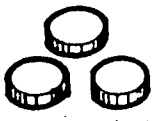



### GRAM (g)

- SMALL WEIGHTS
- 1 g EQUALS 0.035 OUNCE
- 1 OUNCE EQUALS 30 g


5 g

1 g



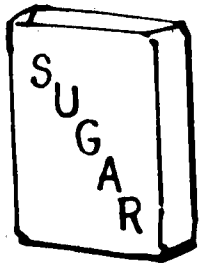
3 aspirin tablets

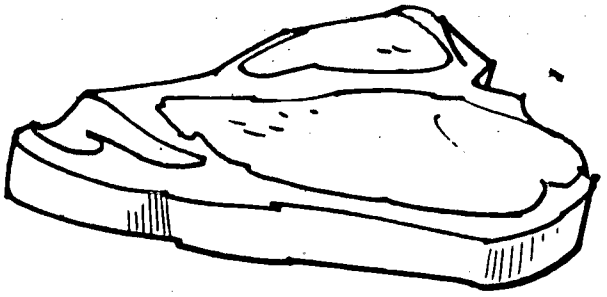
golf ball
50 g

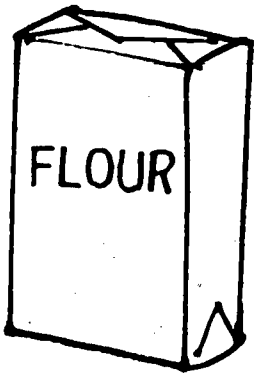
## MEASURING MASS

### ☆ KILOGRAM (kg)

- MEDIUM WEIGHTS
- 1 kg EQUALS 2.2 POUNDS






### ☆ METRIC TON (t)

- HEAVY WEIGHTS
- 1 t EQUALS 1.1 U.S. TONS

## REVIEW VII.

## DO YOU REMEMBER?

1. SMALL WEIGHTS IN THE METRIC SYSTEM ARE MEASURED IN _____.

2. KILOGRAMS ARE USED TO MEASURE _____WEIGHTS.

3. AUTOMOBILES ARE WEIGHED IN METRIC _____.

4. CALCULATE THE FOLLOWING:

   A. 3 kg EQUAL _____ POUNDS.

   B. 6 g EQUAL _____ OUNCES.

   C. 0.070 OUNCES EQUAL _____ g.

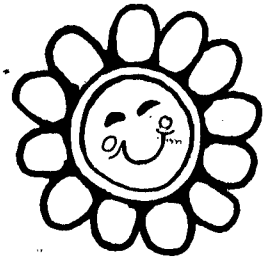
   D. 4.4 POUNDS EQUAL _____kg.

5. A VERY SMALL QUANTITY OF WEIGHT, LIKE A GRAIN OF SALT, IS CALLED A _____.

ANSWERS ARE ON THE NEXT PAGE.

IF YOU GOT THEM ALL RIGHT,
CONTINUE ON.

IF NOT, GO BACK AND REVIEW.



## REVIEW VII. ANSWER KEY

1. GRAMS ( g )

2. MEDIUM

3. TONS

4. A. 6.6
   B. 0.210
   C. 2
   D. 2

5. MILLIGRAM (mg)

## MEASURING LENGTH

### MILLIMETER (mm)

* SMALL DIMENSION
* 1 INCH OR LESS
* 1 mm EQUALS 0.04 INCH

one mm

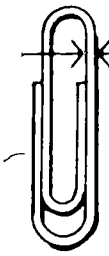
The thickness of a pumpkin seed

one mm


The thickness of a dime

### CENTIMETER (cm)

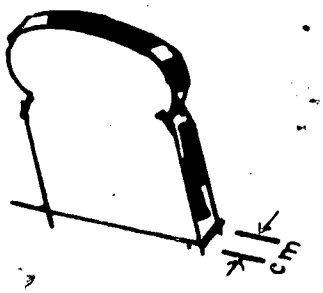
* DAILY PRACTICAL USE
* 30 cm EQUAL 1 FOOT



one mm

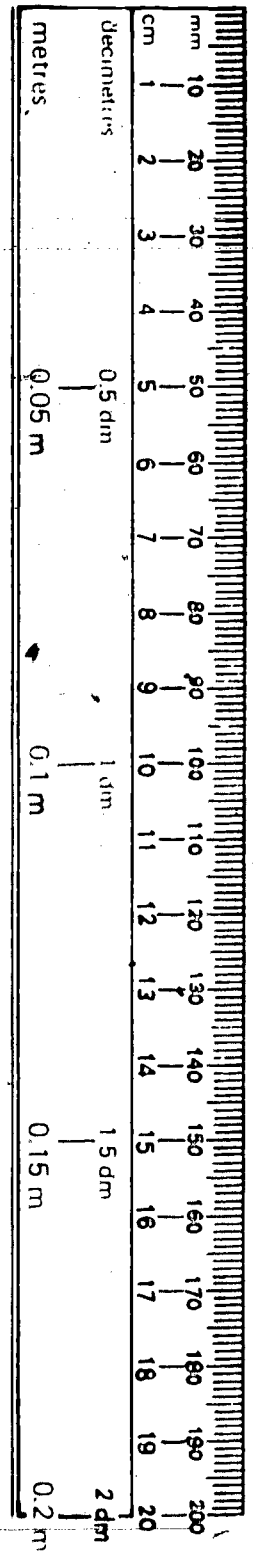
The diameter of wire of a paper clip

cm



# METRIC SYSTEM

USE THIS PIECE OF PAPER WITH THE MEASURING EDGE TO MEASURE THE ITEMS ON THE FOLLOWING PAGE.



## PRACTICE USING THE CENTIMETER (cm)

### ACTUAL MEASURE (WRITE ON WORKSHEET)

1. HOLD THE METRIC RULER AGAINST THE WIDTH OF YOUR THUMBNAIL. HOW WIDE IS IT? _____cm
2. MEASURE YOUR THUMB FROM THE FIRST JOINT TO THE END. _____ cm
3. USE THE METRIC RULER TO FIND THE WIDTH OF YOUR PALM. _____ cm
4. MEASURE YOUR INDEX OR POINTING FINGER. HOW LONG IS IT? _____cm

### ESTIMATE MEASUREMENTS

| | ESTIMATE | ACTUAL |
|---|---|---|
| 1. LENGTH OF YOUR PENCIL | _____ cm | _____cm |
| 2. WIDTH OF A SHEET OF PAPER | _____ cm | _____ cm |
| 3. WIDTH OF YOUR SHOE SOLE | _____ cm | _____ cm |

## PRACTICING THE MILLIMETER (mm)

### ACTUAL MEASURE

1. THE WIDTH OF YOUR FINGERNAIL _____mm
2. YOUR THUMB FROM THE FIRST JOINT TO THE END _____ mm
3. THE WIDTH OF YOUR PALM _____mm
4. YOUR INDEX OR POINTING FINGER _____mm

## ESTIMATE MEASUREMENTS

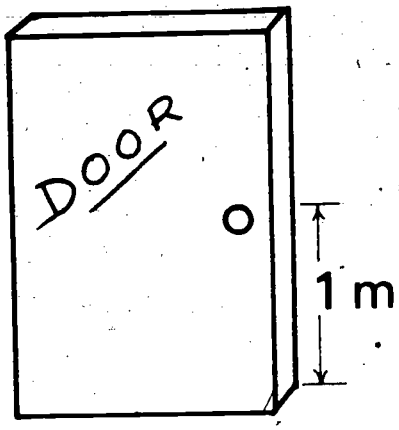
| | ESTIMATE | ACTUAL |
|---|---|---|
| 1. LENGTH OF YOUR PENCIL | _____mm | _____mm |
| 2. WIDTH OF A SHEET OF PAPER | _____mm | _____mm |
| 3. WIDTH OF YOUR SHOE SOLE | _____mm | _____mm |

TAKE YOUR ANSWERS TO YOUR INSTRUCTOR TO SEE IF YOU HAVE CALCULATED CORRECTLY.

## MEASURING LENGTH

### METER (m)

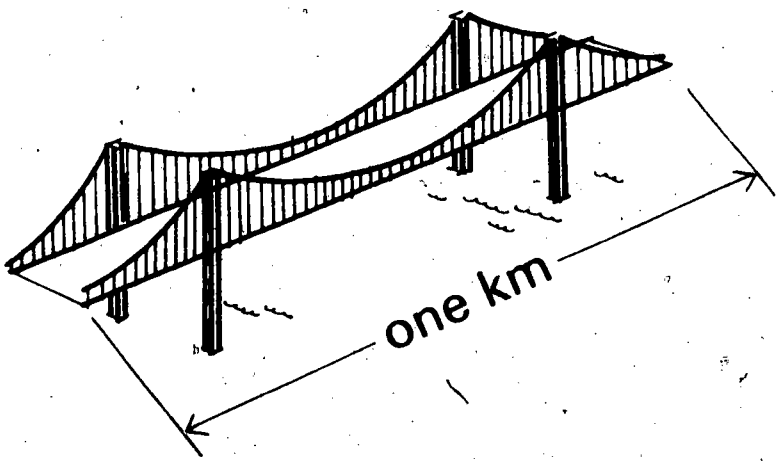
* LARGER MEASUREMENTS
* 1 mm EQUALS 39.37 INCHES.




### KILOMETER (km)

* GREATER DISTANCES
* 1 km EQUALS 0.6 MILES.

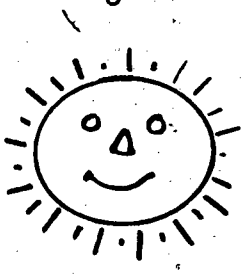
George Washington Bridge



# METRIC SYSTEM

## MEASURING TEMPERATURE

| CELSIUS | VS | FAHRENHEIT |
|---|---|---|
| 100 | WATER BOILS | 212 |
| 37 | NORMAL BODY TEMP. | 98.6 |
| 0 | WATER FREEZES | 32 |

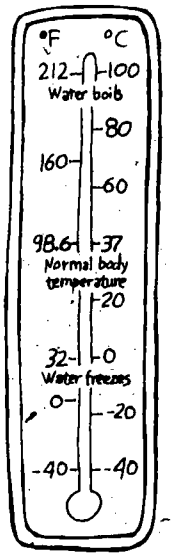


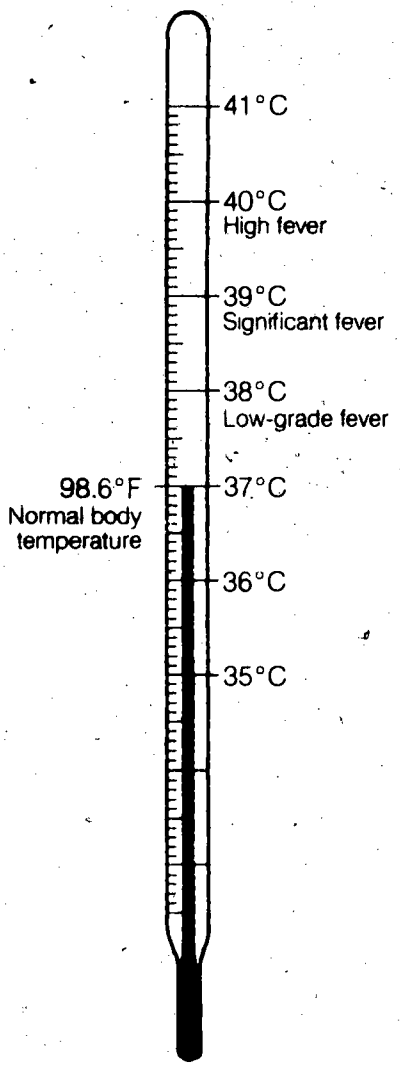
Heat wave 40°C

Room Temperature 20°C

Safe Skating -20°C

Very Cold -40°C




## TEMPERATURE CONVERSIONS

TO CHANGE FAHRENHEIT TO CELSIUS, SUBTRACT 32, THEN MULTIPY BY 5/9.

EXAMPLES:

THE F TEMPERATURE IS $\begin{array}{r} 98.6 \\ -32.0 \\ \hline 66.6 \end{array}$

THEN....

$$\frac{66.6}{1} \times \frac{5}{9} = \frac{333.0}{9} = 37^{\circ}C$$

---

THE F TEMPERATURE IS $\begin{array}{r} 100.4 \\ -\ 32.0 \\ \hline 68.4 \end{array}$

THEN....

$$\frac{68.4}{1} \times \frac{5}{9} = \frac{342.0}{9} = 38^{\circ}C$$

---

THE F TEMPERATURE IS $\begin{array}{r} 102.0 \\ -\ 32.0 \\ \hline 70.0 \end{array}$

THEN....

$$\frac{70}{1} \times \frac{5}{9} = \frac{350}{9} = 38.8^{\circ}C$$

REVIEW VIII.

DO YOU REMEMBER?

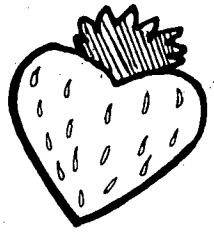
1. WHAT IS THE NORMAL BODY CELSIUS TEMPERATURE?

2. WATER FREEZES AT _____ DEGREE CELSIUS.

3. 100 DEGREE CELSIUS IS WHEN _____.

4. CALCULATE THE FOLLOWING:
   - A. $99.2^{\circ}$F. TO _____C
   - B. $103.4^{\circ}$F. TO _____C
   - C. $98.2^{\circ}$F. TO _____C
   - D. $102.6^{\circ}$F. TO _____C
   - E. $101.8^{\circ}$F. TO _____C

ANSWERS ARE ON THE NEXT PAGE.
IF YOU GOT THEM ALL RIGHT,
CONTINUE ON.
IF NOT, GO BACK AND REVIEW.



## REVIEW VIII. ANSWER KEY

1. 37 degrees

2. 0

3. water boils

4. a. $\begin{array}{r} 99.2 \\ -32. \\ \hline 67.2 \end{array}$ then $\frac{67.2}{1} \times \frac{5}{9} = \frac{336.0}{9} = 37.3^{o}C$

   b. $\begin{array}{r} 103.4 \\ -\ 32. \\ \hline 71.4 \end{array}$ then $\frac{71.4}{1} \times \frac{5}{9} = \frac{357.0}{9} = 39.7^{o}C$

   c. $\begin{array}{r} 98.2 \\ -32. \\ \hline 66.2 \end{array}$ then $\frac{66.2}{1} \times \frac{5}{9} = \frac{331.0}{9} = 36.8^{o}C$

   d. $\begin{array}{r} 102.6 \\ -\ 32. \\ \hline 70.6 \end{array}$ then $\frac{70.6}{1} \times \frac{5}{9} = \frac{353.0}{9} = 39.2^{o}C$

   e. $\begin{array}{r} 101.8 \\ -\ 32 \\ \hline 69.8 \end{array}$ then $\frac{69.8}{1} \times \frac{5}{9} = \frac{349.0}{9} = 38.8^{o}C$

GIVE THIS BOOKLET TO YOUR TEACHER WITH YOUR COMPLETED WORK SHEETS, AND PICK UP THE COMPLETION TEST FOR THE METRIC SYSTEM.

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