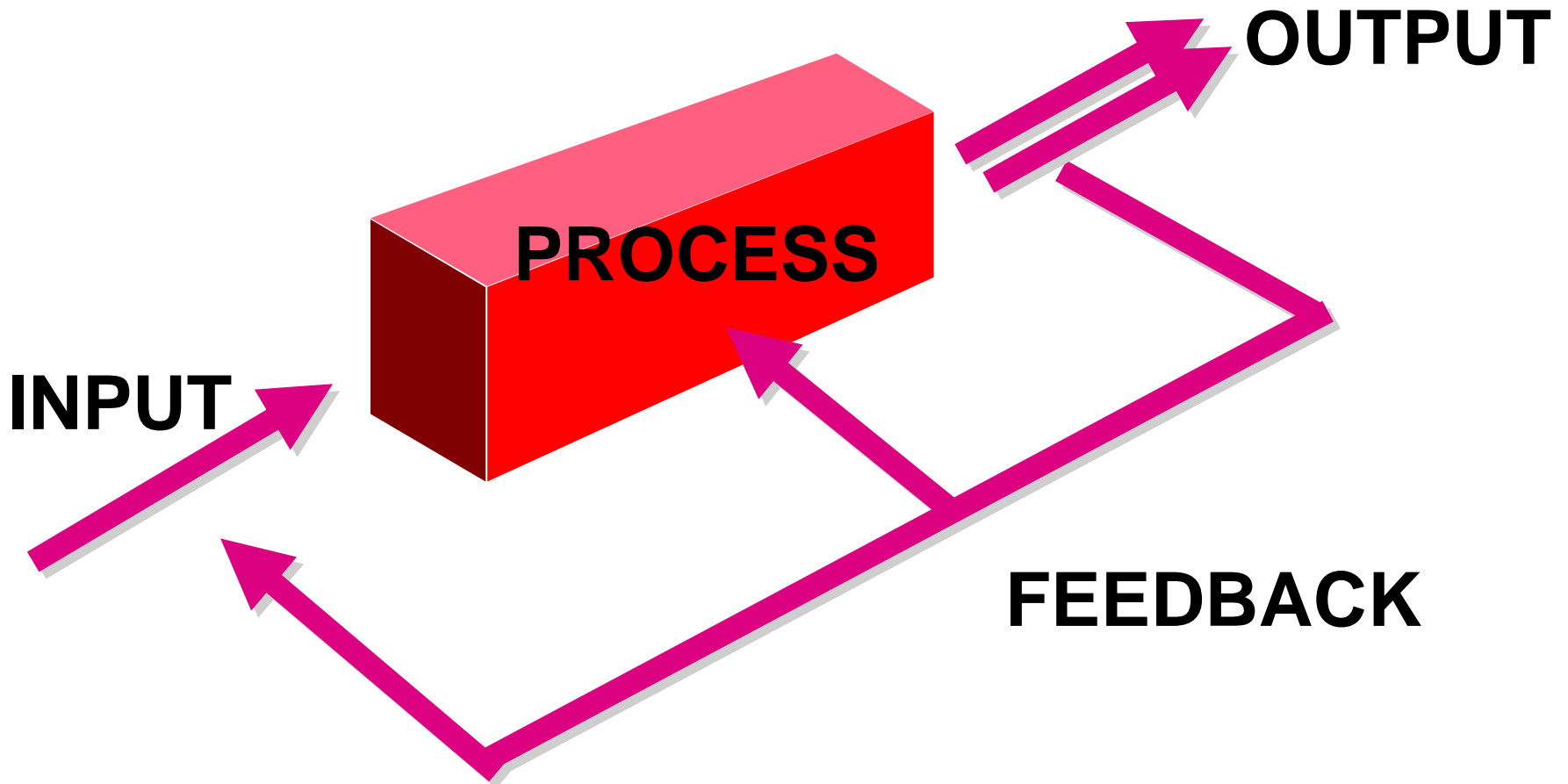


# **THE DESIGN/RESEARCH PROCESS**

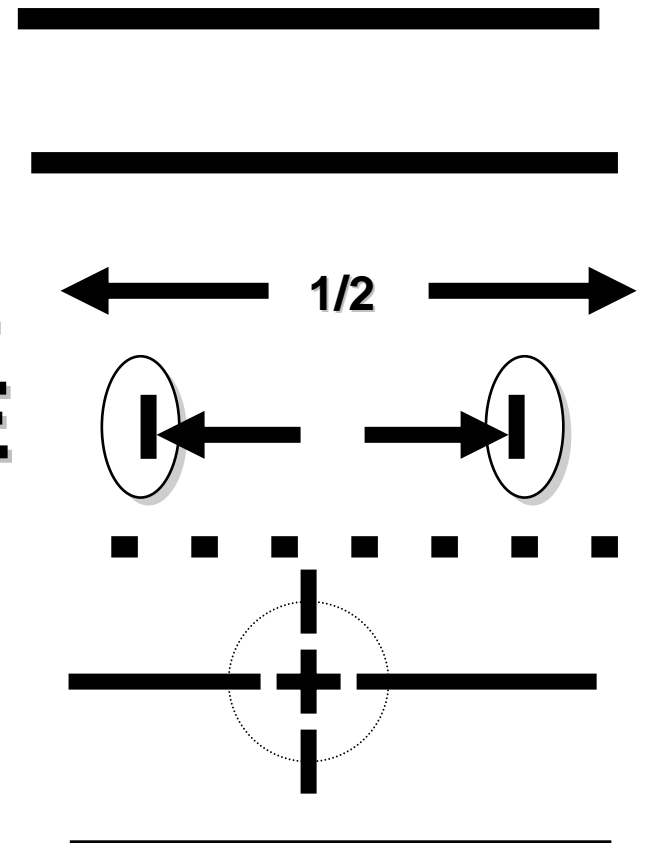
- **Identify & Define the Problem**
- **Analyze and Research**
- **Brainstorm Ideas**
- **Pick the Best Option**
- **Design it! Plan it! Make it! Try it!**
- **Test and Evaluate**  
(Collect and Analyze Data)
- **Make Conclusions**  
(Did You Solve the Problem? Describe the Outcome.)
- **Make Reflections**  
(If We Did This Again We Would....)

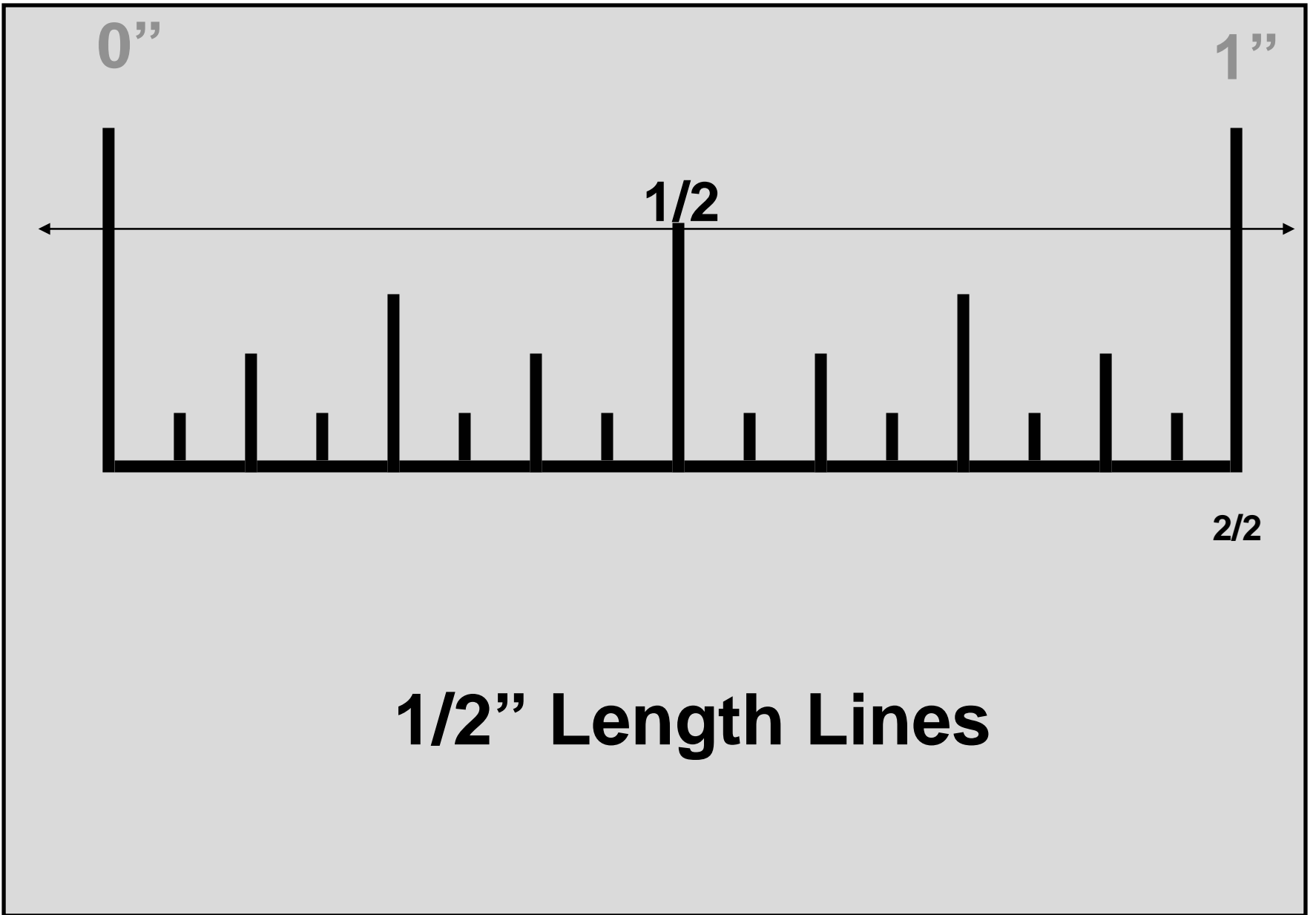
# THE SYSTEMS MODEL

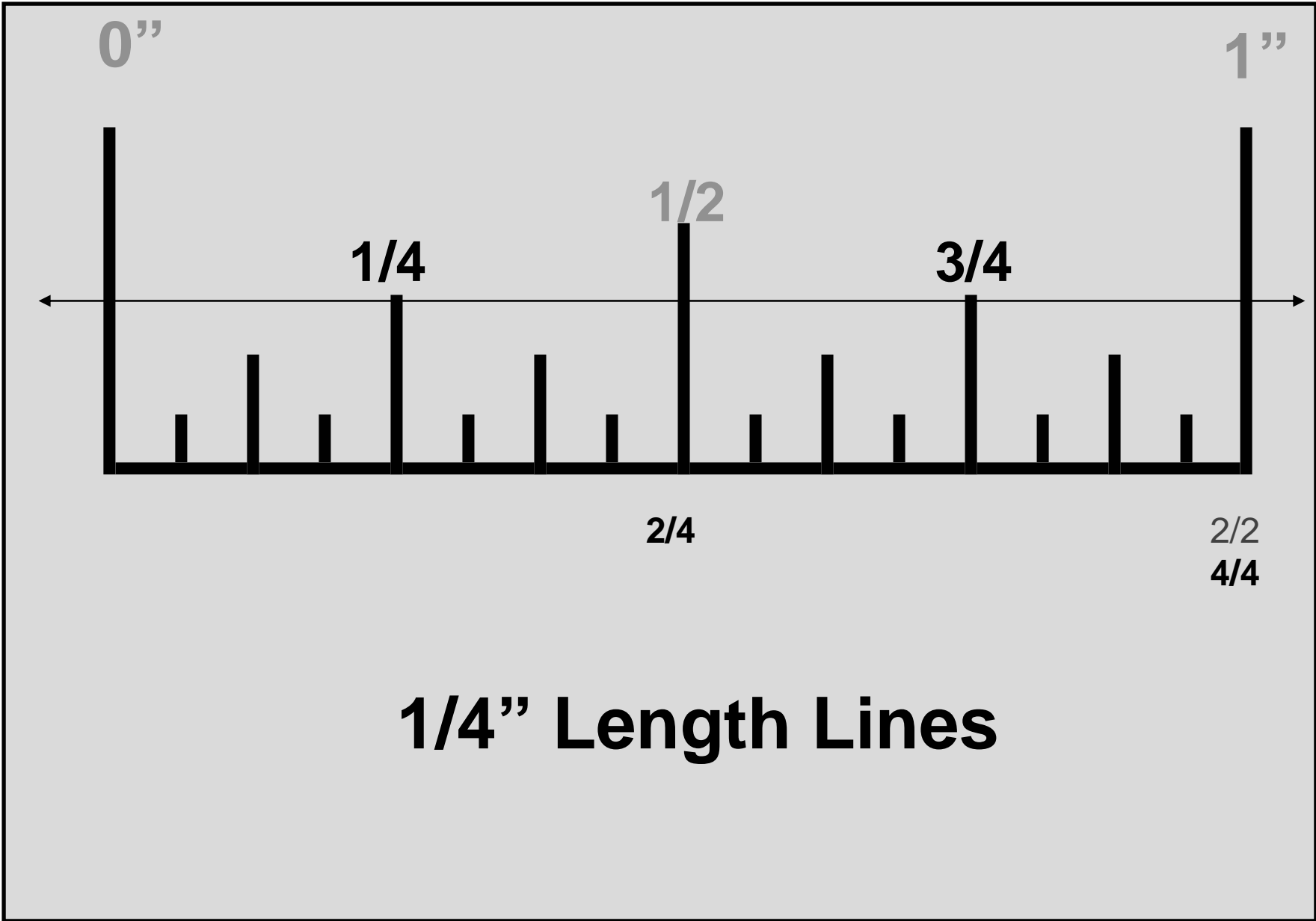


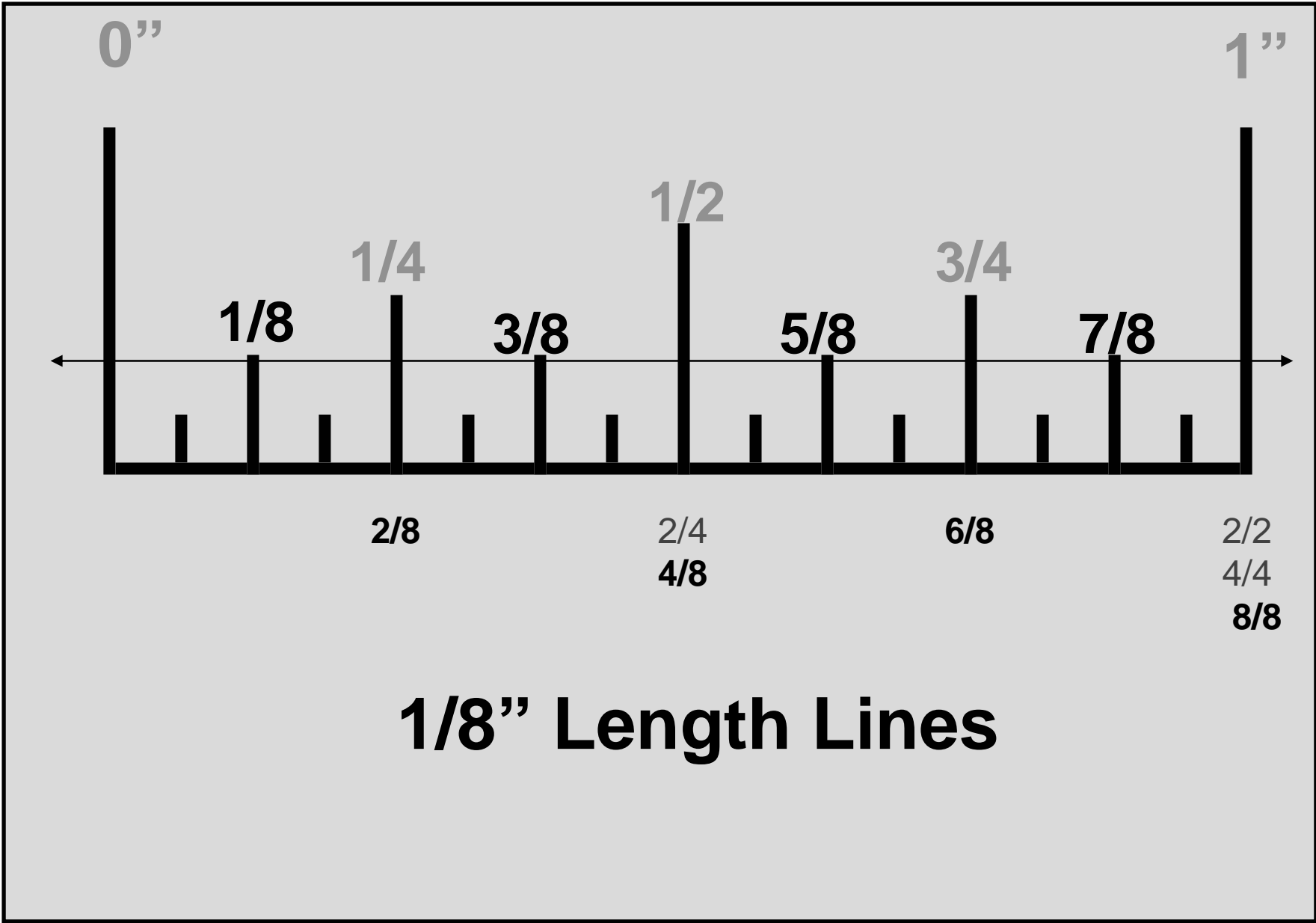
# TYPES OF LINES

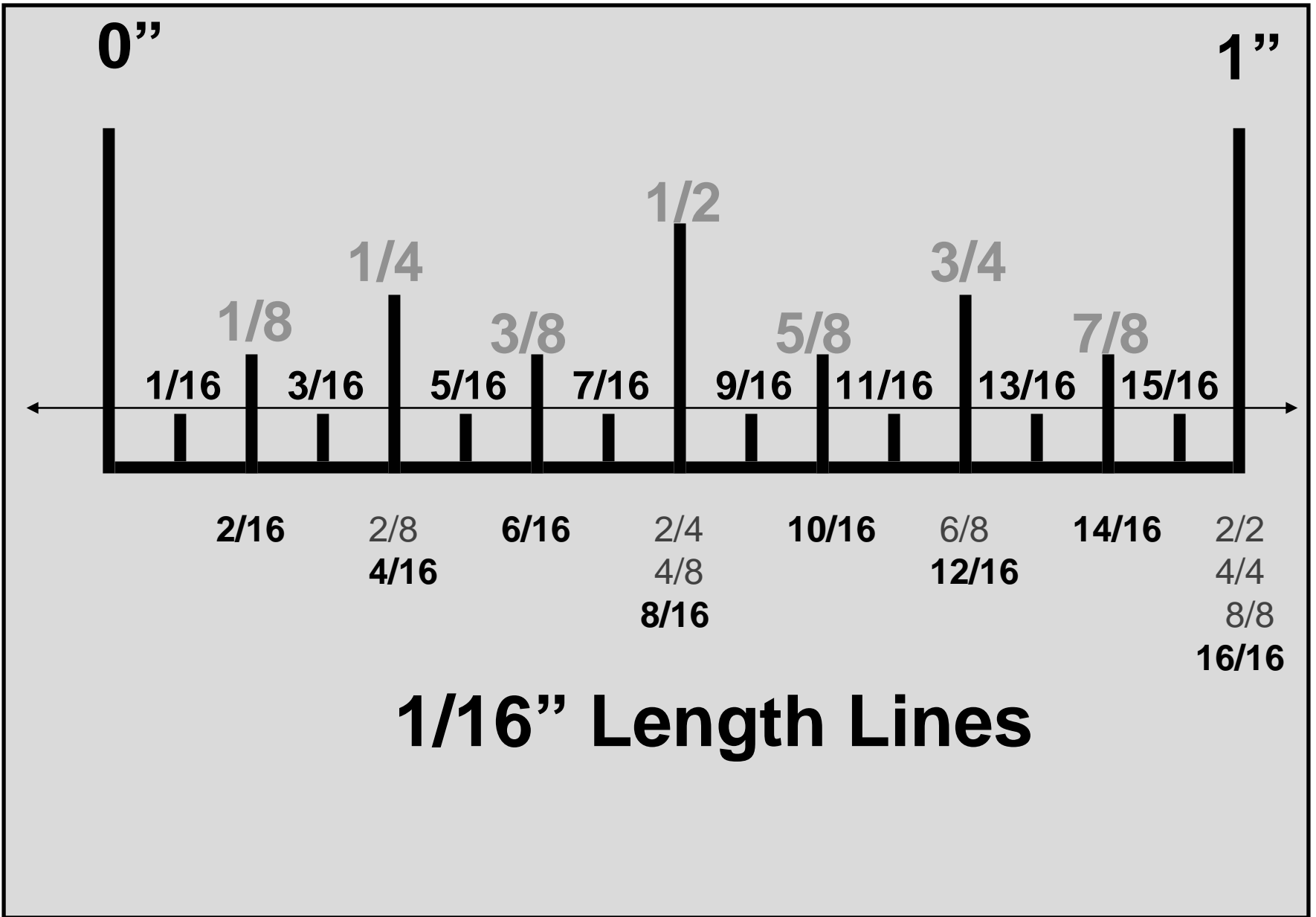
- **BORDER LINE**
- **OBJECT LINE**
- **DIMENSION LINE**
- **EXTENSION LINE**
- **HIDDEN LINE**
- **CENTER LINE**
- **GUIDE LINE**





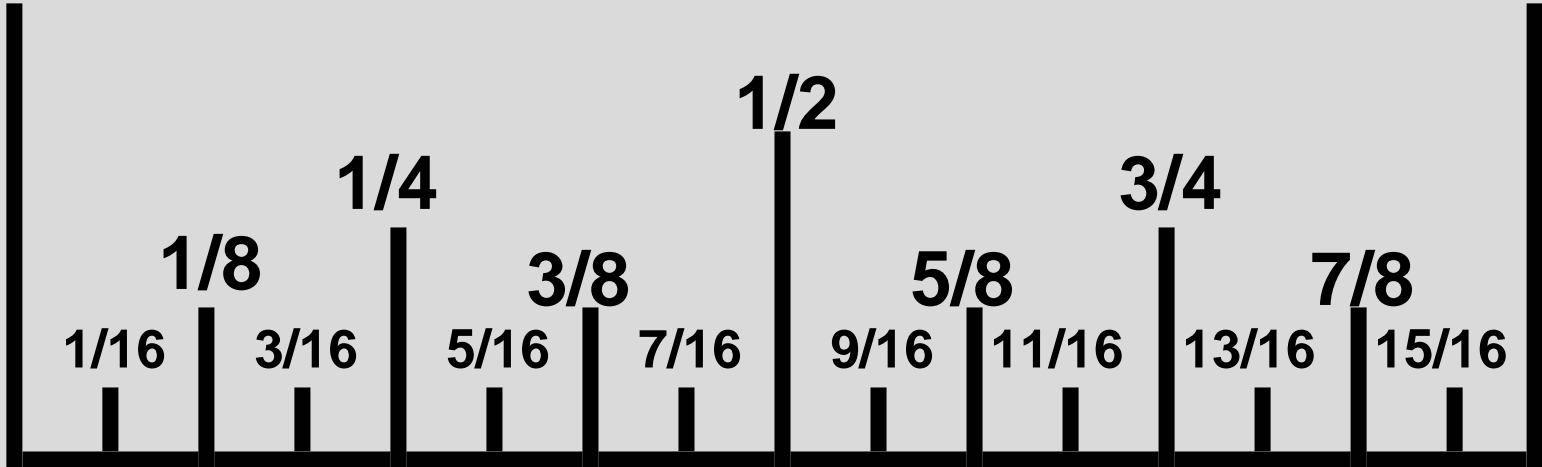






0''

1''



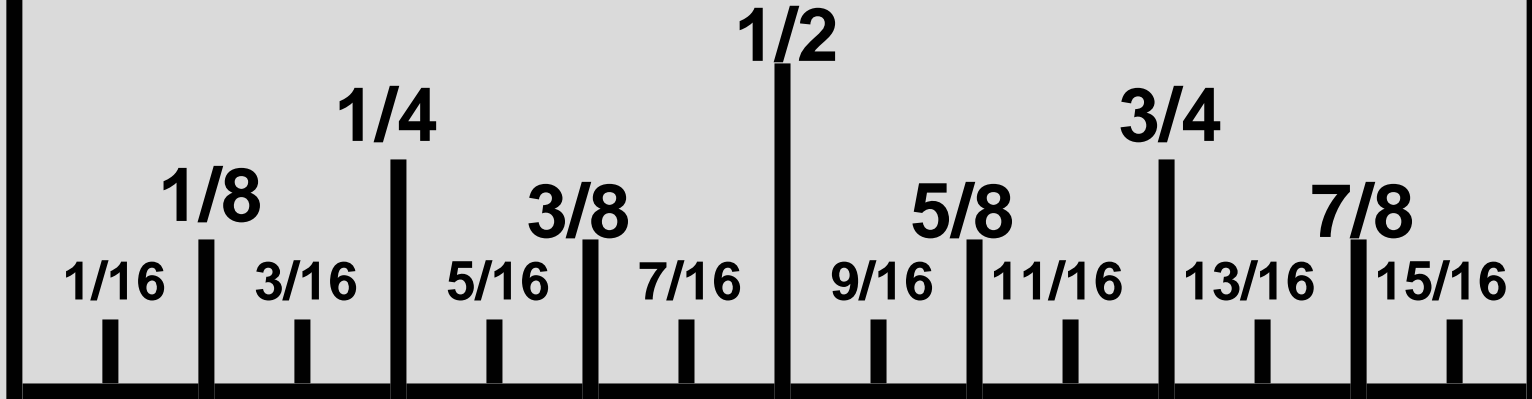
2/16      2/8      6/16      2/4      10/16      6/8      14/16      2/2  
4/16      4/8      8/16      12/16      4/4  
8/8  
16/16

# HOW TO READ THE MARKS

0''

1''

**NUMBERS ABOVE THE LINE ARE  
Reduced to the Lowest Denominator**



2/16

2/8

6/16

2/4

10/16

6/8

14/16

2/2

4/16

4/8

12/16

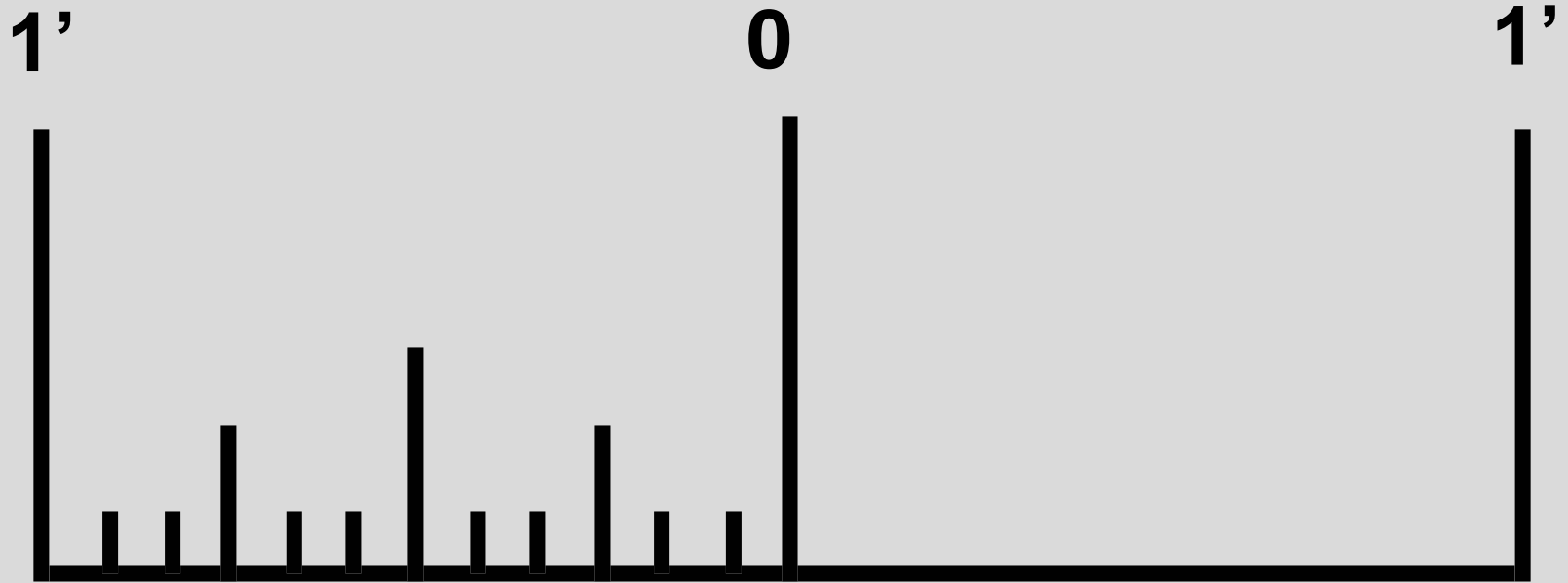
4/4

8/16

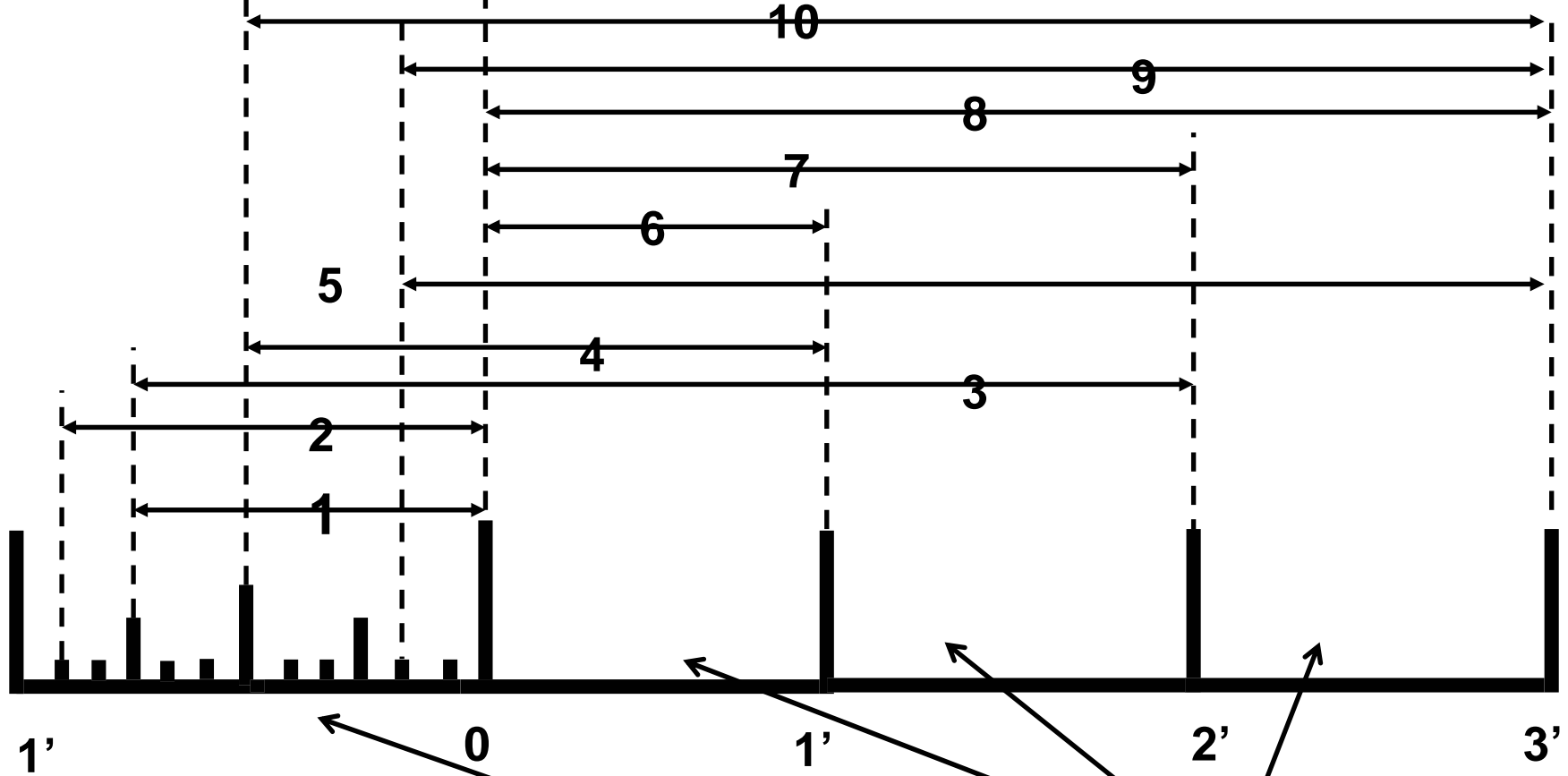
8/8

16/16

**NUMBERS UNDER THE LINE ARE  
IMPROPER to say for Measuring**



# READING AN ARCHITECT SCALE



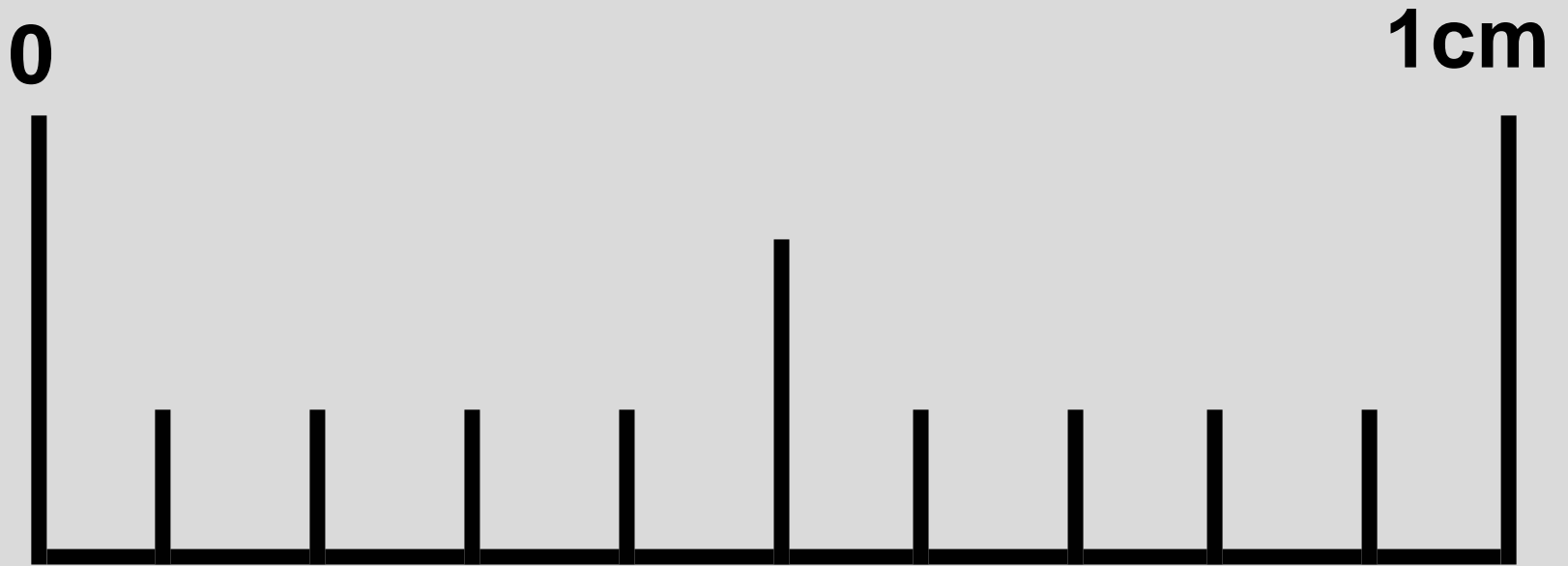
What are the measurements?

1. 9"
2. 11"
3. 2'9"
4. 1'6"
5. 3'2"

6. 1'
7. 2'
8. 3'
9. 3'2"
10. 3'6"

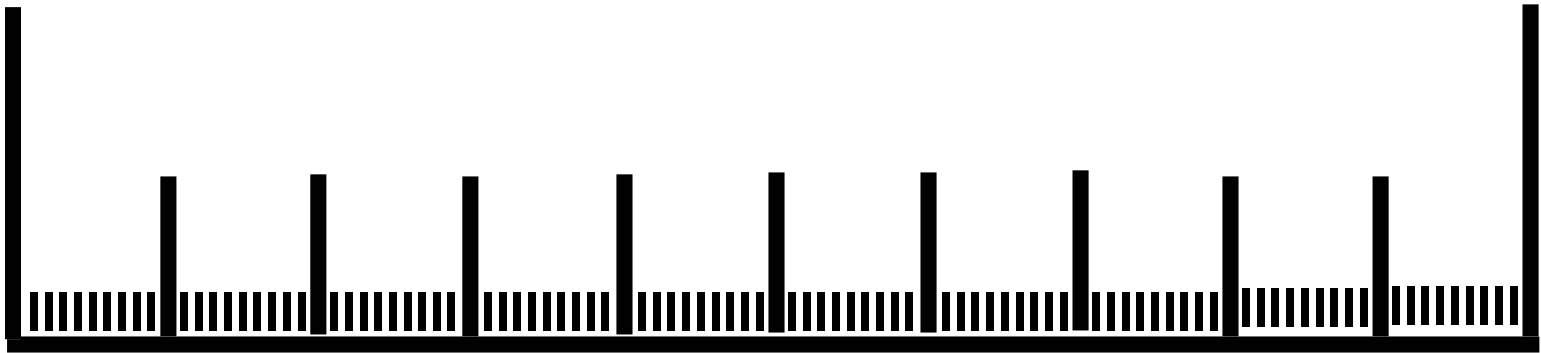
Feet Lengths

Inch Lengths

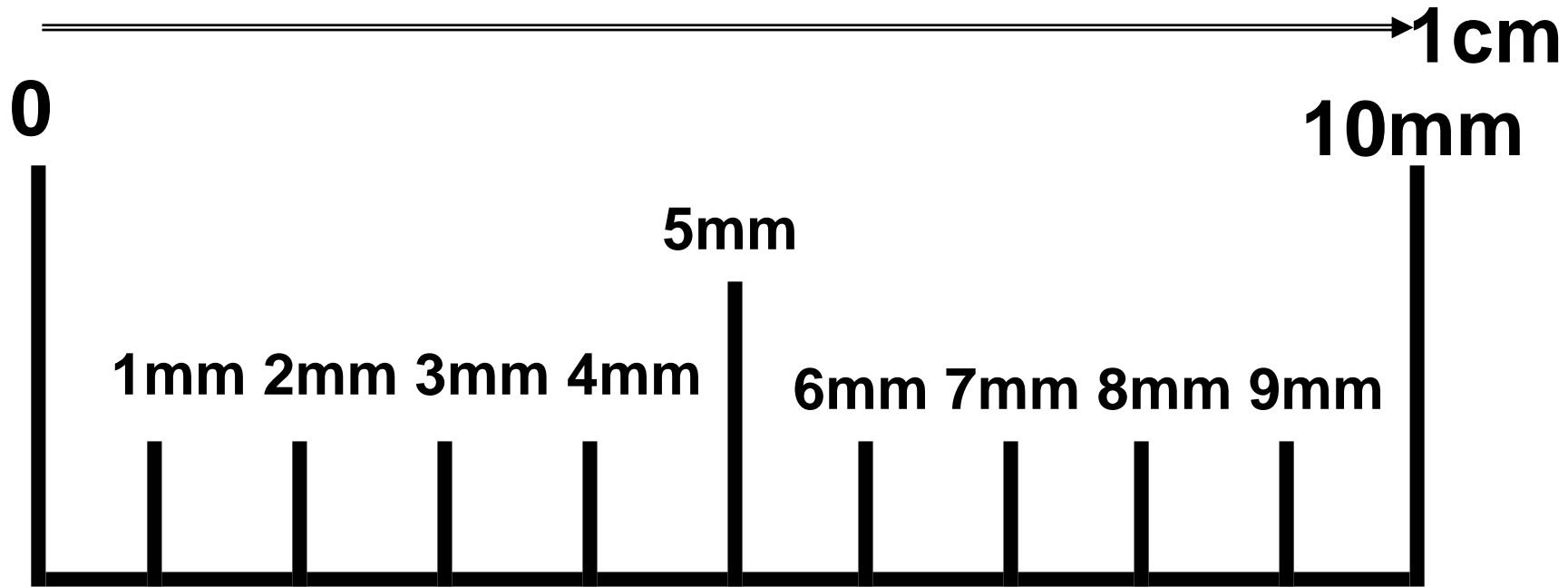


# READING A METRIC RULE

**1 Meter**  
**100 centimeters**

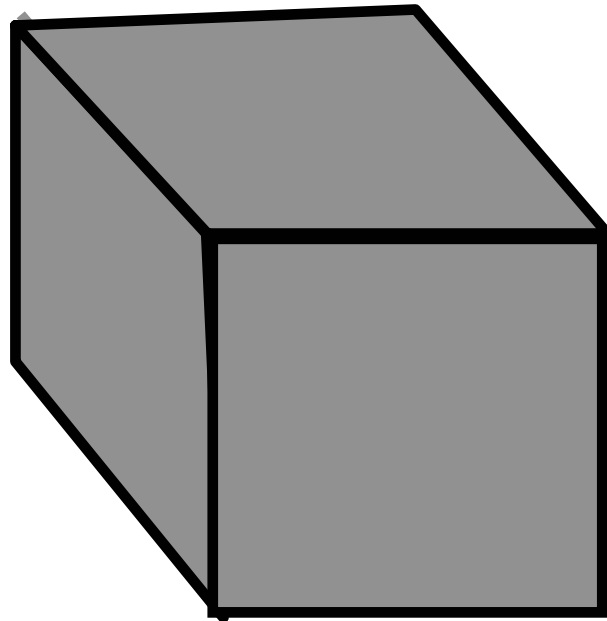


**To Measure Length**  
**the Basic Unit is the**  
***Meter***

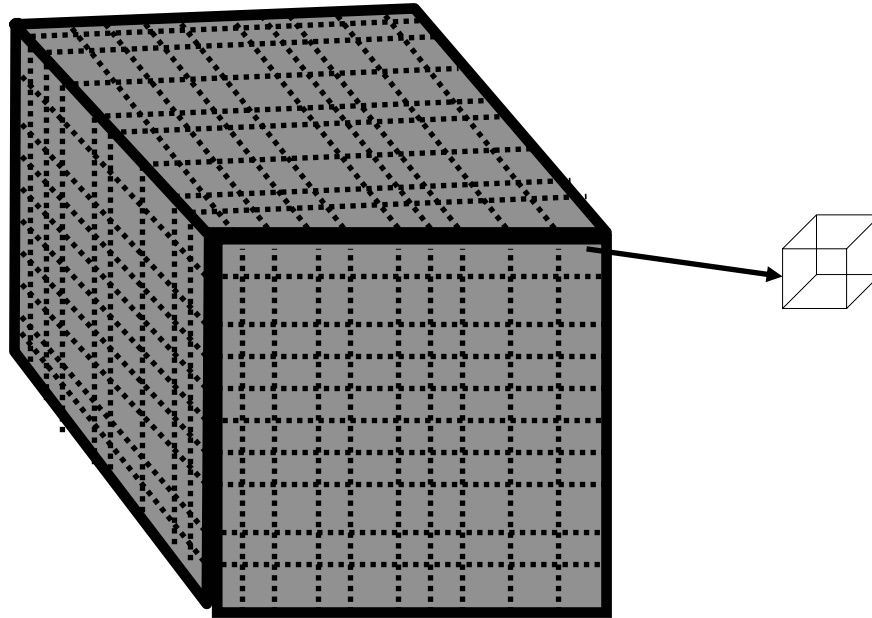


**10 Millimeters Equal  
1 Centimeter**

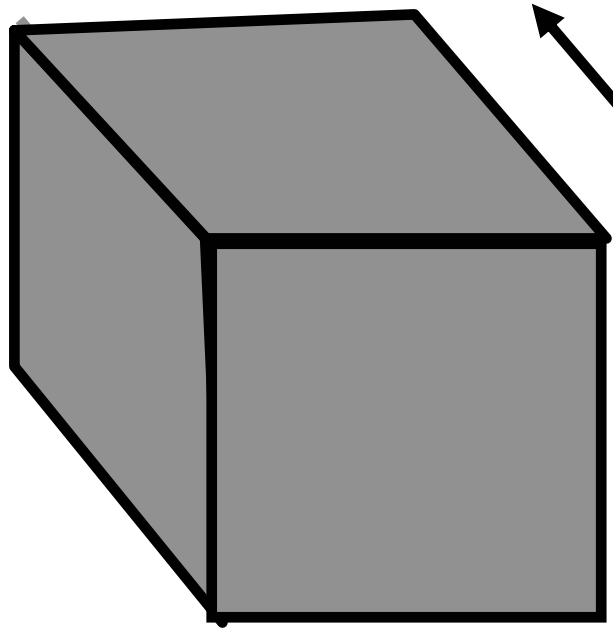
# Measuring Volume or Capacity



**1 Liter**  
**1000 milliliters**



**To Measure Volume or Capacity**  
**the Basic Unit is the**  
***Liter***



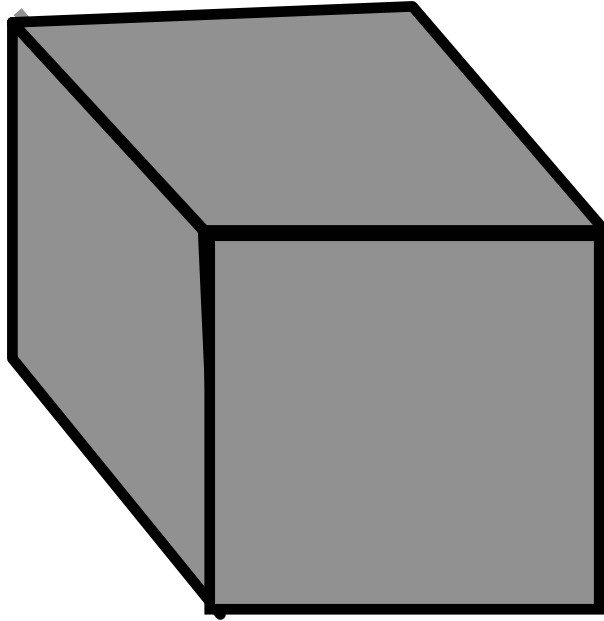
**1cm**

**1cm**

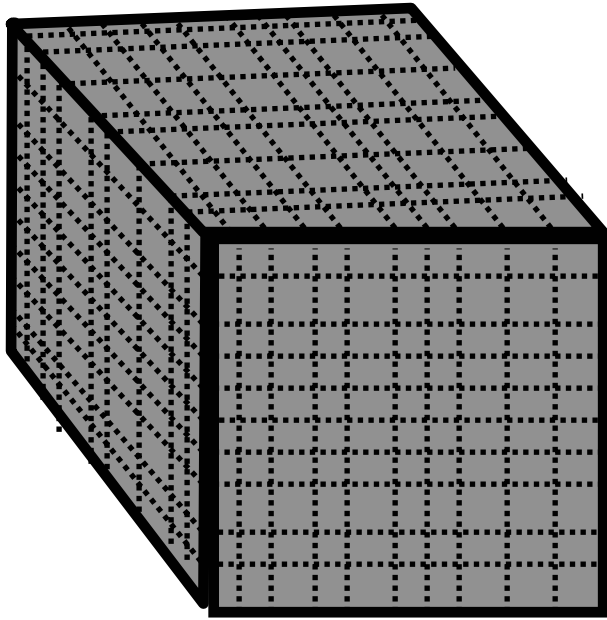
**1cm**

**One Cubic  
Centimeter**

**One Cubic Centimeter  
of Liquid  
Equals**



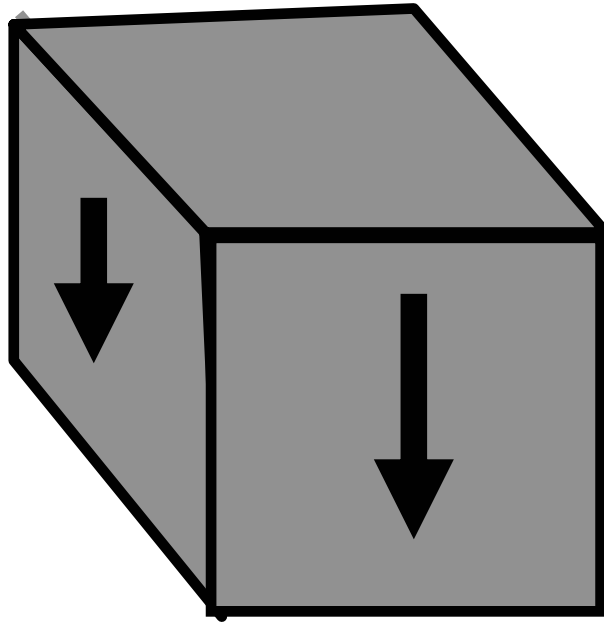
**ONE MILLILITER**



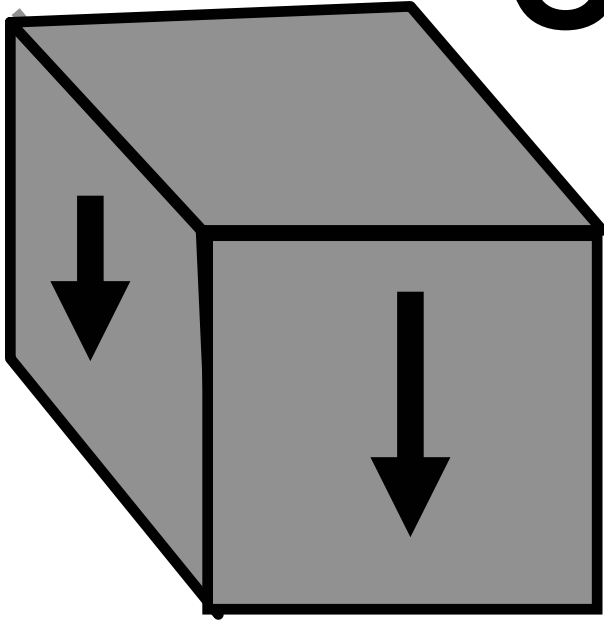
**1000  
MILLILITERS  
EQUALS**

**ONE LITER**

# Measuring Mass



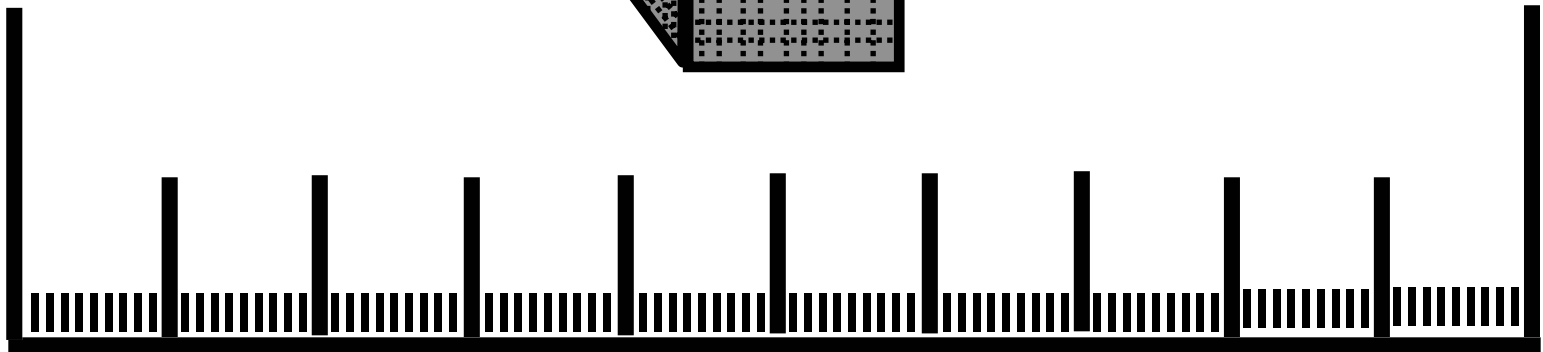
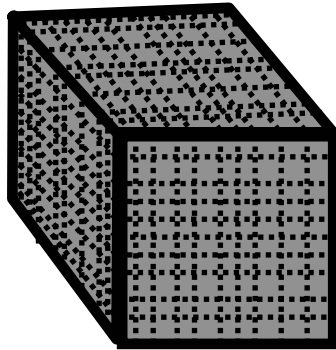
# ONE GRAM



1 cubic centimeter ( $\text{cm}^3$ )  
or 1 milliliter  
of  $\text{H}_2\text{O}$  (Water)  
Weighs *One Gram*

To Measure Mass  
the Basic Unit is the  
*Gram*

# Dividing Basic Units of Metric Measure



- (K) 1 Kilo... = 1000 Basic Units**
- (H) 1 Hecto... = 100 Basic Units**
- (D) 1 Deka... = 10 Basic Units**

## **Basic Unit of Measure**

- (d) 10 deci... = 1 Basic Unit**
- (c) 100 centi... = 1 Basic Unit**
- (m) 1000 milli... = 1 Basic Unit**

# Length

**(K)** 1 Kilometer = 1000 Meters

**(H)** 1 Hectometer = 100 Meters

**(D)** 1 Dekameter = 10 Meters

**(BASIC) METER**

**(d)** 10 decimeters = 1 Meter

**(c)** 100 centimeters = 1 Meter

**(m)** 1000 millimeters = 1 Meter

# Volume or Capacity

(K) 1 Kiloliter = 1000 Liters

(H) 1 Hectoliter = 100 Liters

(D) 1 Dekaliter = 10 Liters

(BASIC) LITER

(d) 10 deciliters = 1 Liter

(c) 100 centiliters = 1 Liter

(m) 1000 milliliters = 1 Liter

# Mass

(K) 1 Kilogram = 1000 Grams

(H) 1 Hectogram = 100 Grams

(D) 1 Dekagram = 10 Grams

(BASIC) Gram

(d) 10 decigram = 1 Gram

(c) 100 centigrams = 1 Gram

(m) 1000 milligrams = 1 Gram

right

left

(K) 1 Kilometer = 1000 Meter

(H) 1 Hectometer = 100 Meter

(D) 1 Dekameter = 10 Meters

(BASIC) Meter, Liter, Gram, ect.

(d) 10 decimeters = 1 Meter

(c) 100 centimeters = 1 Meter

(m) 1000 millimeters = 1 Meter



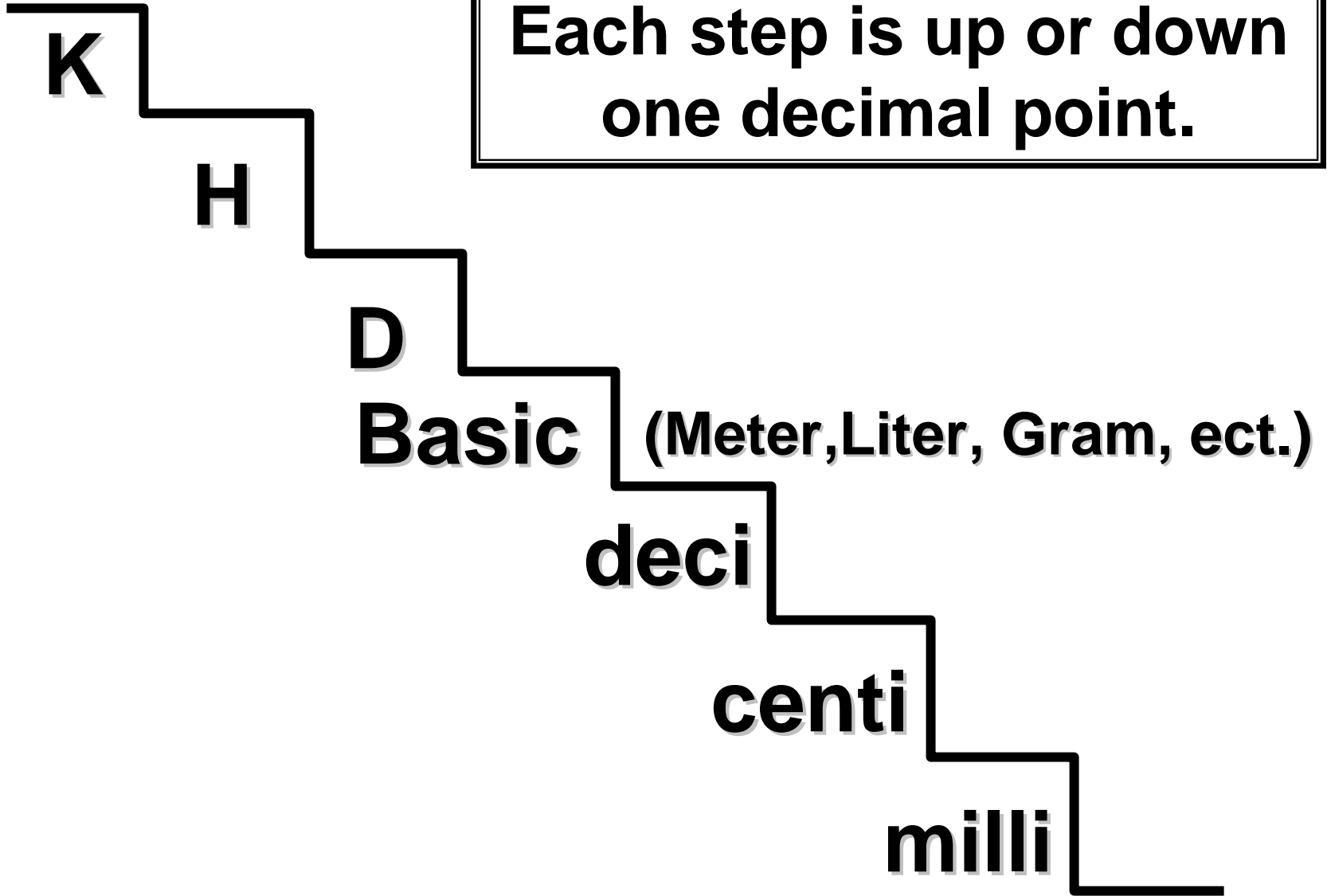
down

up

1 decimal place for each step  
e.g. 123.45cm = \_\_\_\_\_ Meters?  
2 steps up = 2 places left.

123.45 cm = 1.2345 Meters.

Each step is up or down  
one decimal point.



# Drafting Basics Test

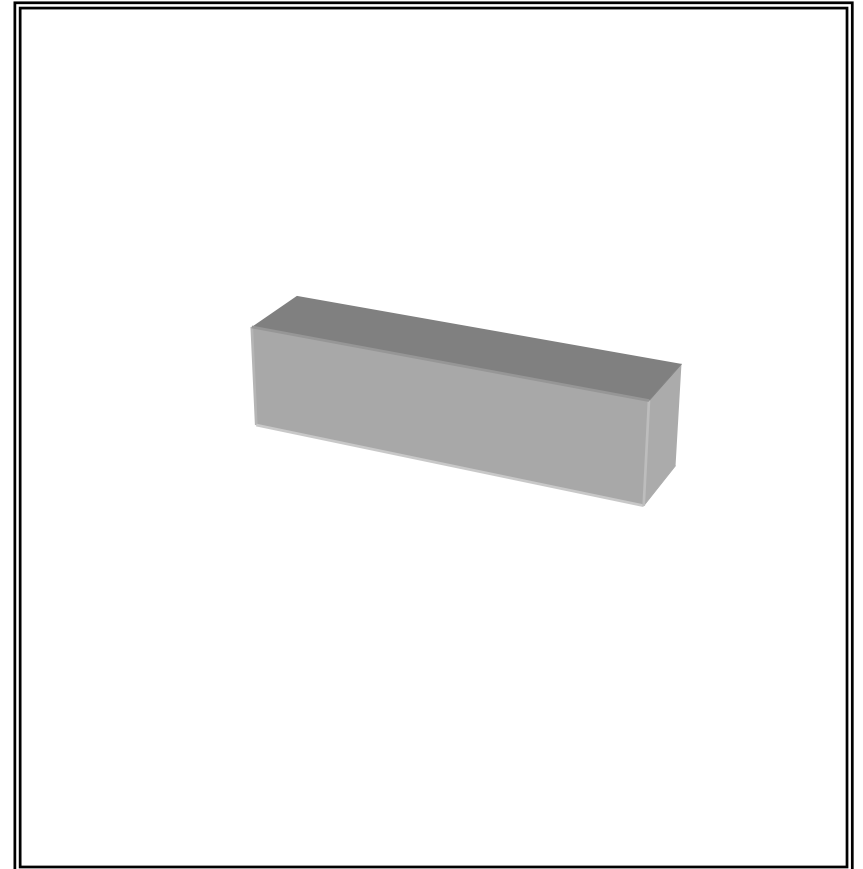


# Complete These Charts










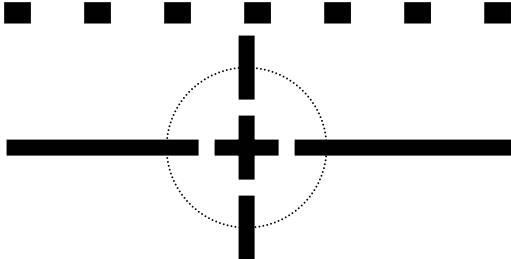

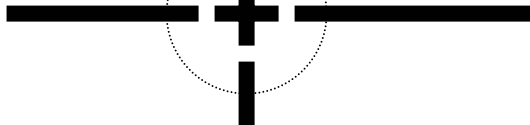


## The Problem Solving Model

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_
- \_\_\_\_\_
  - \_\_\_\_\_

## The Systems Model



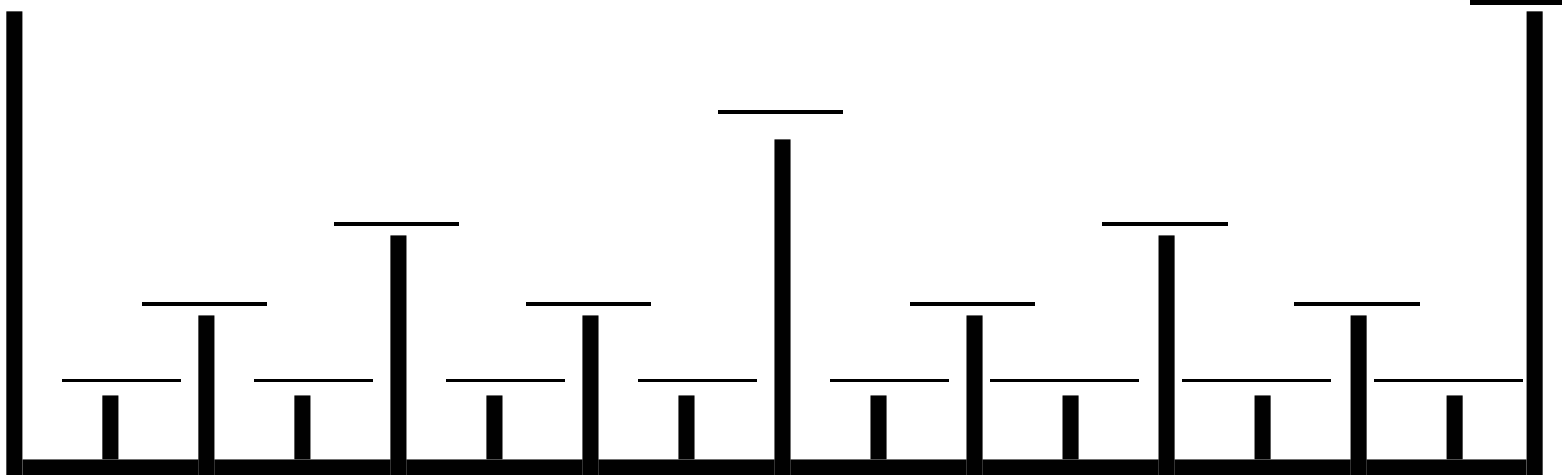
# TYPES OF LINES

-  LINE 
-  LINE 
-  LINE 
-  LINE 
-  LINE 
-  LINE 
-  LINE 

1. Put the Proper Fraction in each blank as described in class.  
(30 pts.)

0''

''



\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

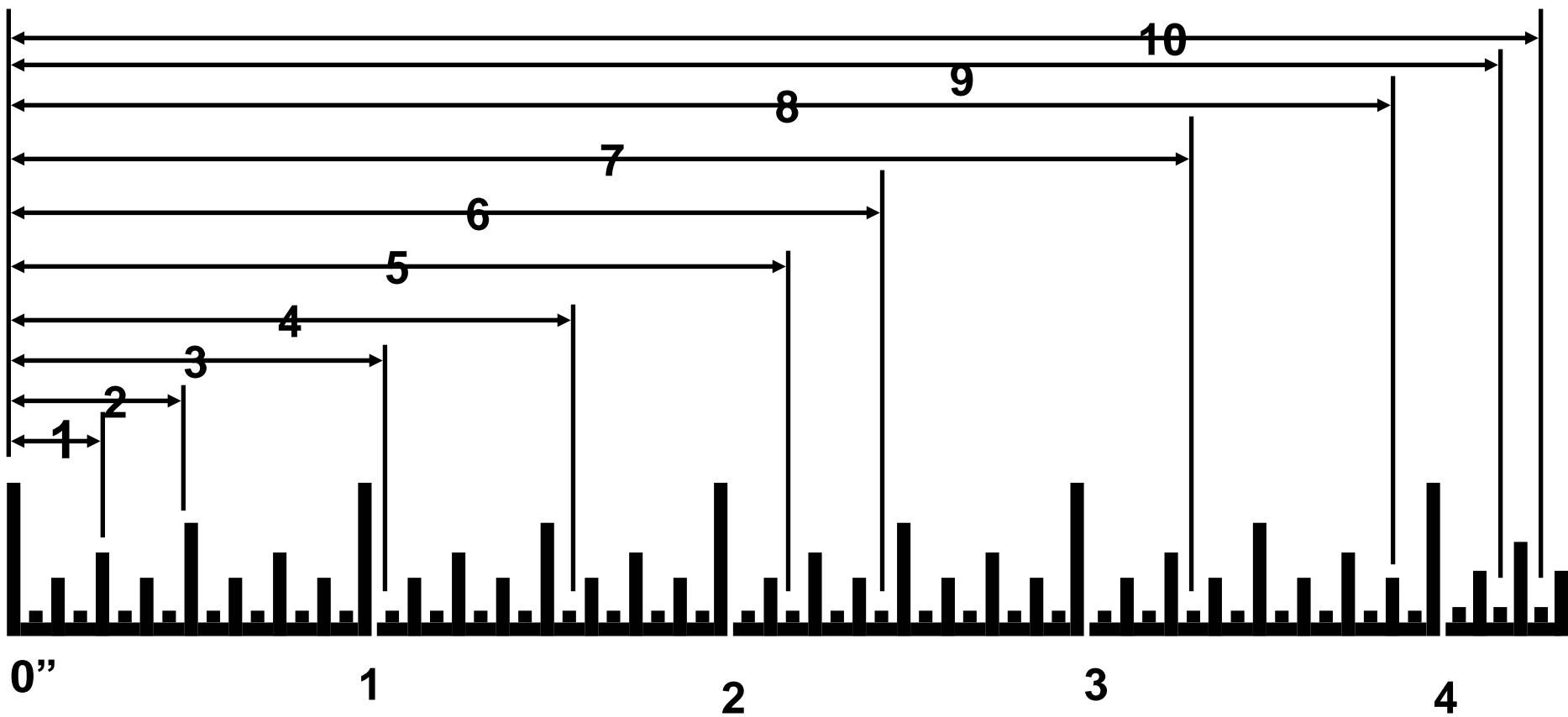
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. The numbers above the rule line are \_\_\_\_\_ fractions.
3. The numbers below the rule line are \_\_\_\_\_ fractions.
4. The top number of a fraction is called the \_\_\_\_\_.
5. The bottom number of a fraction is called the \_\_\_\_\_.
6. The length of the rule line indicates the \_\_\_\_\_ (4 or 5).



**What are the measurements?**

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

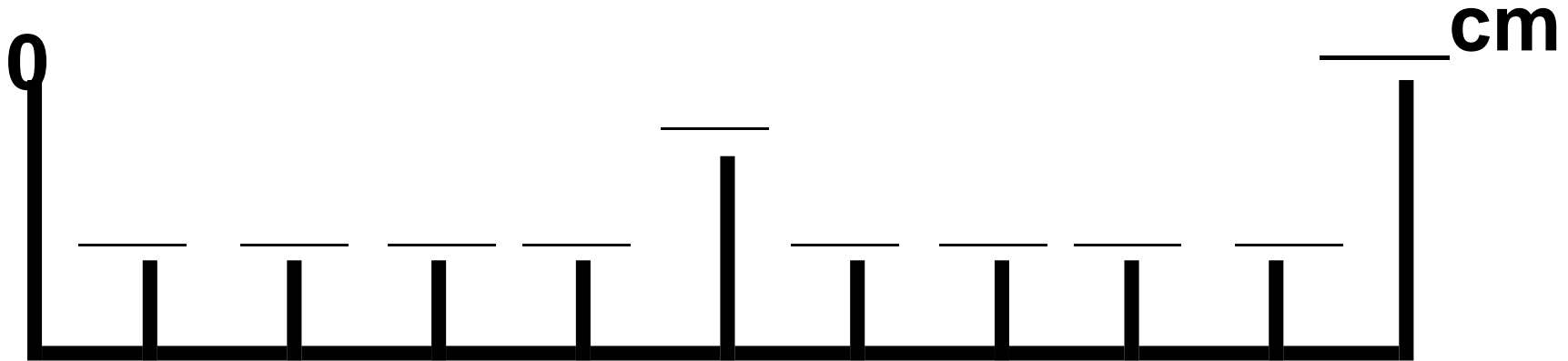
6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_



Place the proper metric number in each blank.

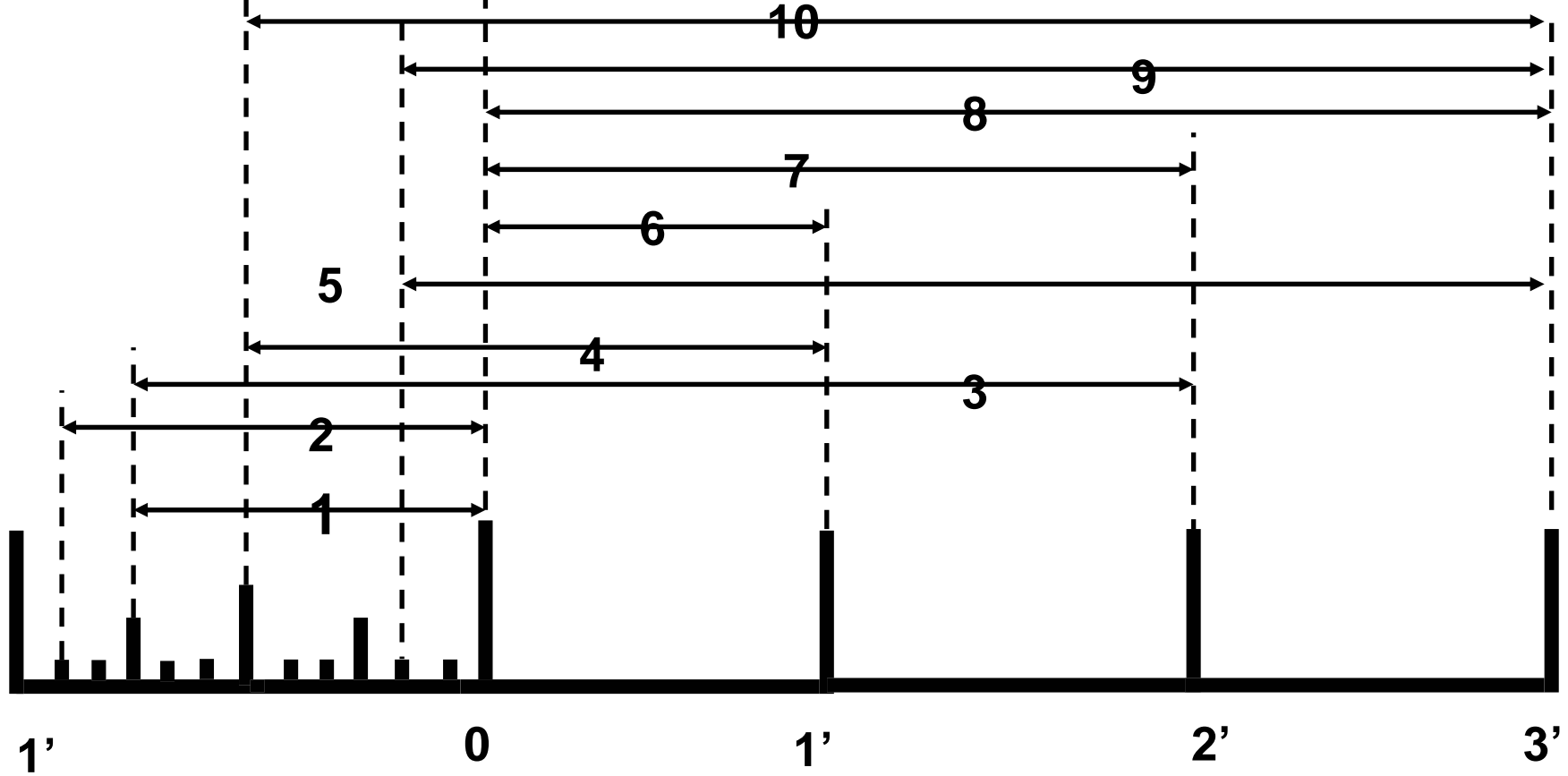
(10 pts.)

1. 1 Kilometer = \_\_\_\_\_ Meters

2. 100 Centimeters = \_\_\_\_\_ Meter

3. 10 Millimeters = \_\_\_\_\_ Centimeter

4. 1000 Millimeters = \_\_\_\_\_ Meter



What are the measurements?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_