

①

DATE \_\_\_\_\_ PERIOD \_\_\_\_\_ NAME \_\_\_\_\_

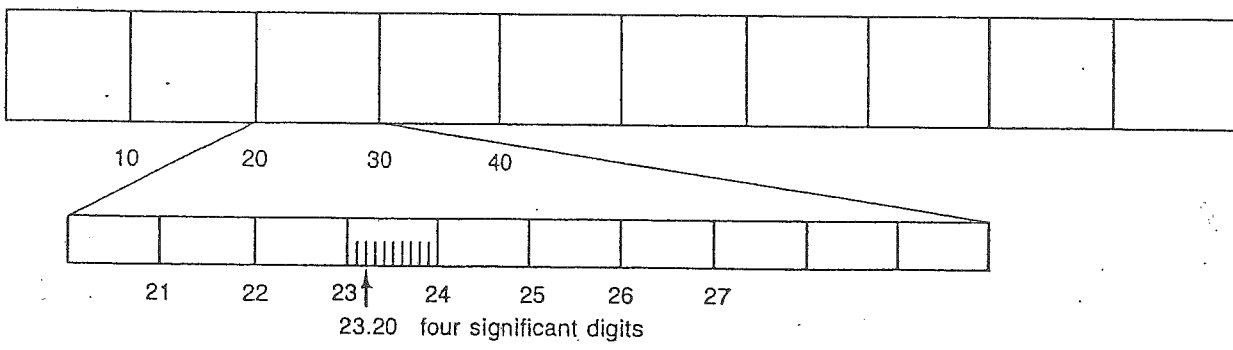
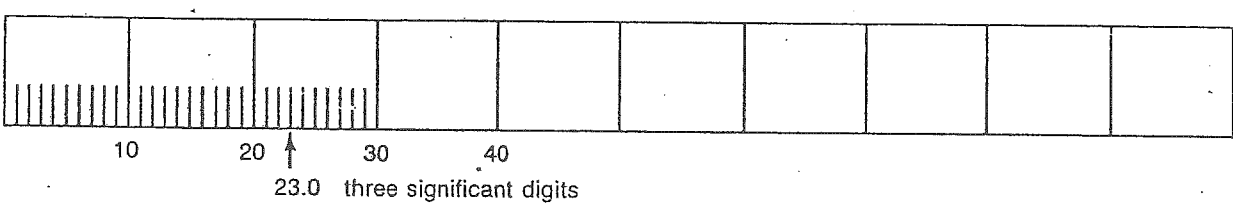
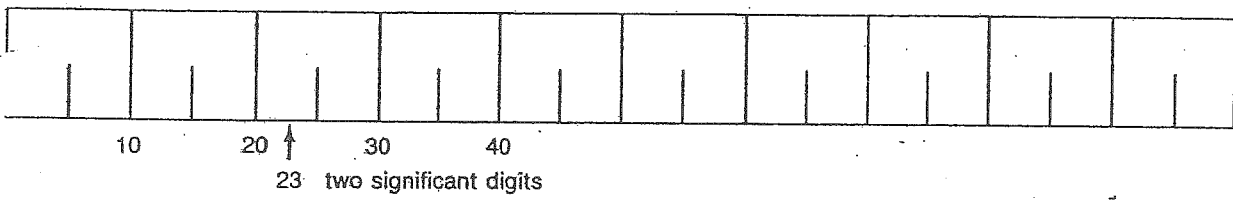
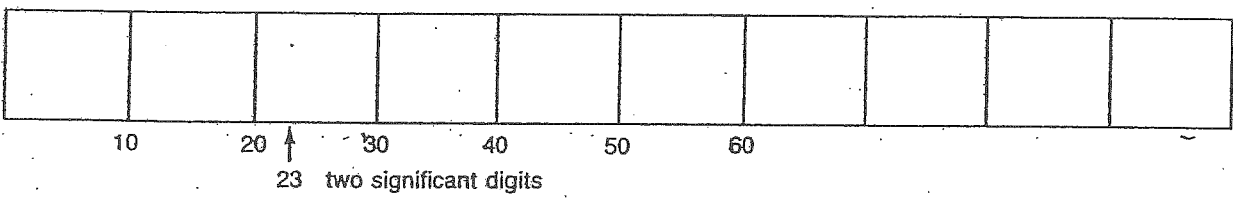


# Physics Skill

Measurement and Significant Digits  
~~Use with Chapter 2~~

## RECORDING MEASUREMENTS

Look at the four meter sticks shown. As you proceed down the page, each meter stick has more divisions marked. When you read any scale, you always record the measurement by reading the smallest division on the scale and then "guessing at," or estimating, the tenth of the smallest division. As you proceed down the page you can see how your measurement becomes more precise, and you have more significant digits in your reading. A significant digit is a digit that has physical meaning.



# 2 Physics Skill

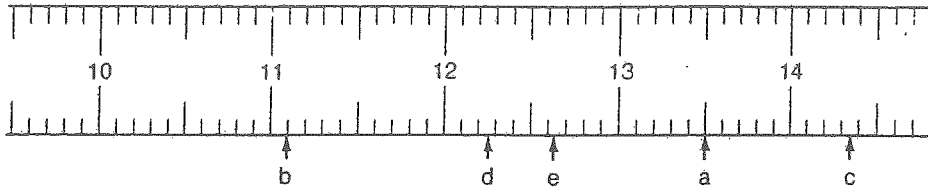
NAME \_\_\_\_\_

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For the instruments shown below, record the correct reading.

1.

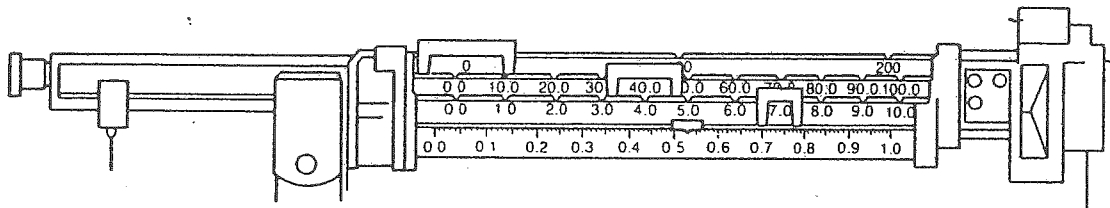
Metric Ruler



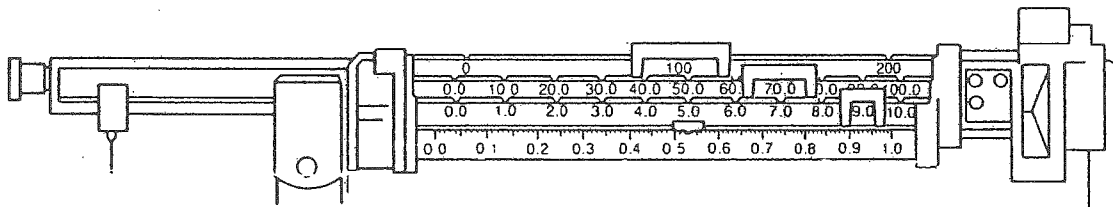
a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_ d. \_\_\_\_\_ e. \_\_\_\_\_

2.

Balance

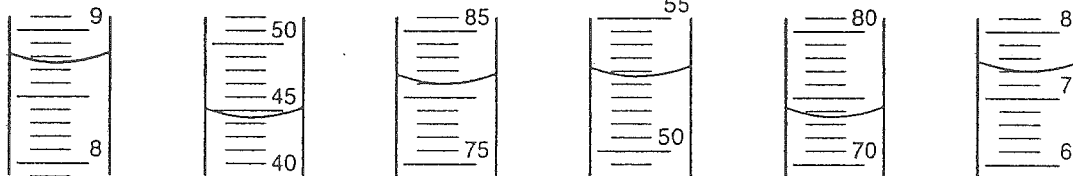


a. \_\_\_\_\_



3.

Graduated Cylinder



a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_ d. \_\_\_\_\_ e. \_\_\_\_\_ f. \_\_\_\_\_

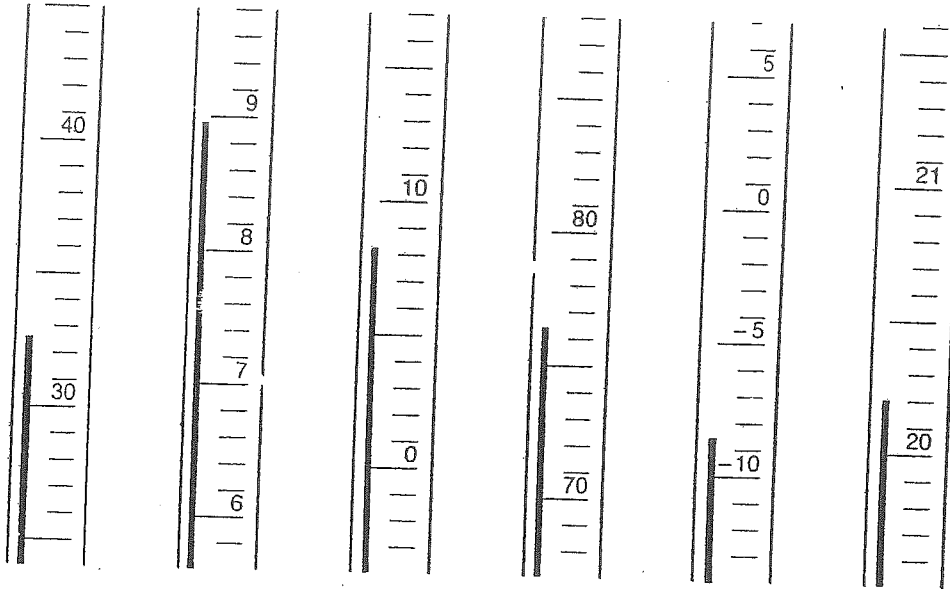
# 2 Physics Skill

NAME \_\_\_\_\_

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4.

Thermometer



a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_ d. \_\_\_\_\_ e. \_\_\_\_\_ f. \_\_\_\_\_

Activity

Measuring devices and measurement

Device	Dimension Measured	Unit	Maximum measurement	Minimum measurement	Smallest division	measure to a reasonable number of significant digits	Challenges and advantages of the device
Meter stick	length	cm	100 cm = 1m	1 mm = 0.1cm	1 mm = 0.1cm	Length of thumb = _____ Width of desk = _____	
Thermometer						Room temperature = _____ Temp in your fist = _____	
Centigram balance							
Bathroom scale							
Micrometer						Thickness of paper = _____ Thickness of a hair = _____	
Barometer							
Hydrometer							
Stop watch							
Photogate							
Wall clock							

Name: \_\_\_\_\_

Block: \_\_\_\_\_

Express ALL answers to the appropriate number of significant digits.

1. How many significant digits are in each of the following numbers?

- (a) 8.0 m \_\_\_\_\_
- (b) 0.000246 cm \_\_\_\_\_
- (c) 2.050 kg \_\_\_\_\_
- (d)  $1.615 \times 10^8$  m \_\_\_\_\_
- (e)  $2.40 \times 10^4$  s \_\_\_\_\_
- (f) 50600 m \_\_\_\_\_

2. Put the following into scientific notation:

- (a) 50.6 \_\_\_\_\_
- (b) 7809 \_\_\_\_\_
- (c) 0.08 \_\_\_\_\_
- (d) 284 000 \_\_\_\_\_
- (e) 0.00000211 \_\_\_\_\_

3. Write the following in expanded form:

- (a)  $1.35 \times 10^5$  \_\_\_\_\_
- (b)  $2.4506 \times 10^{-2}$  \_\_\_\_\_
- (c)  $7.5 \times 10^3$  \_\_\_\_\_
- (d)  $1.300 \times 10^{-7}$  \_\_\_\_\_

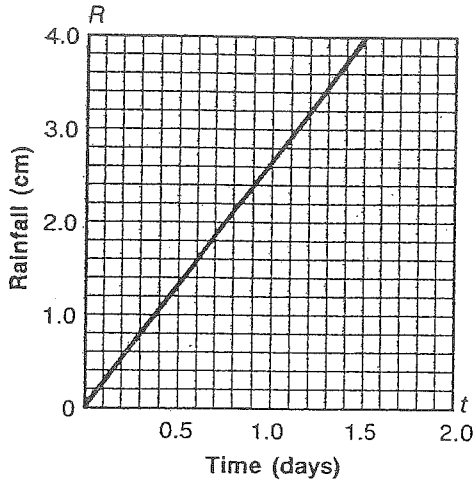
4. Calculate the following and express the answer in **scientific notation** with the correct number of **significant digits** and correct **units**.

- (a) A wall measures 2.23m by 2.4m. Find the area. \_\_\_\_\_
- (b) divide  $234.8\text{cm}^2$  by 3.13cm \_\_\_\_\_
- (c)  $\frac{89.05\text{g/mL} \times 5.762\text{mL}}{1.2\text{mL}}$  \_\_\_\_\_
- (d)  $3.982454\text{cm} \times 8.3\text{cm}$  \_\_\_\_\_
- (e)  $15.378\text{mm} + 0.25\text{mm}$  \_\_\_\_\_
- (f)  $45.787\text{m}^3 + 2.1\text{m}^3$  \_\_\_\_\_
- (g)  $1.0001\text{mm} - 0.01\text{mm}$  \_\_\_\_\_
- (h)  $12.768\text{kg} - 1.02\text{kg}$  \_\_\_\_\_
- (i)  $2.5 \times 10^{-8}\text{g} + 1.4 \times 10^{-7}\text{g}$  \_\_\_\_\_

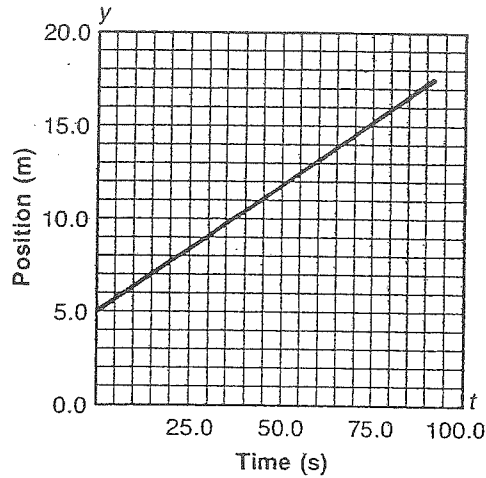
# DETERMINING RELATIONSHIPS FROM GRAPHS

When data are plotted and the curve of the graph is a straight line, the relationship between the independent and dependent variables is described as a linear relationship. All such relationships can be described by the general equation  $y = mx + b$ . In this equation,  $m$  is the slope of the line and  $b$  is the y-intercept. For each graph shown, calculate the slope and identify the y-intercept. Then write the equation that describes the relationship shown in the graph. Be sure to include the appropriate units in your equations.

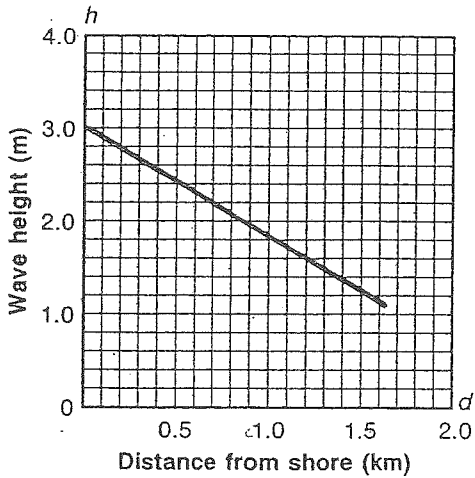
Rainfall versus Time



Position versus Time



Wave Height versus Distance



Wages versus Workdays

