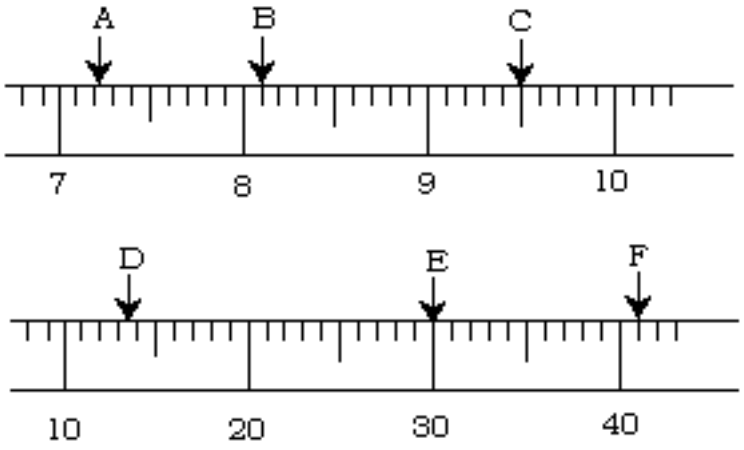
Pretest Evaluation/Review - Measurement Name_____

Topics for Review
- Precision vs. Accuracy
- Taking measurements with correct precision
- Significant Digits
- Scientific Notation
- Calculations with correct significant digits
- Using labels in calculations
- Density (mass vs. weight vs. volume)

Which is more precise and why? Describe in detail and give other examples.
2 cm or 2.000 cm
What is the difference between precision and accuracy?
How can something be precise but not accurate?
What is the range of possible correct answers for a measurement reported as 4 g?



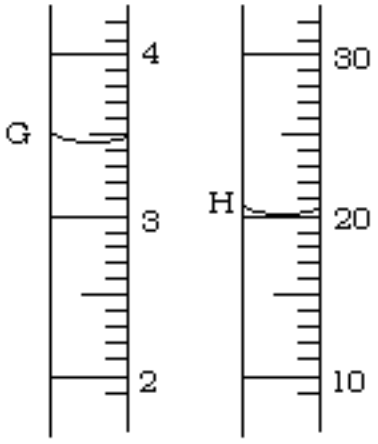
Using the correct precision, indicate each of the following measurements. Assume the rulers are in cm and the cylinders to be in ml.

A. _____ E. _____

B. _____ F. _____

C._____ G. _____

D._____ H. _____



How many significant digits in the following (give a range if the exact number of SD is not clear):

9.201	____	5.000	____	0.560	____
0.666	____	5.001	____	12.0001	____
5	____	0.005	____	3.14000	____
1000	____	0.0050	____	90210	____
50500	____	87.9	____	8675309	____

Which of the above numbers should be written in scientific notation to clarify their number of significant digits?

Calculate the following and round the answer to the correct number of significant digits. Don't forget the correct label as well.

1) 3.8 cm + 4.672 cm
2) 3.000 g + 5.9 g
3) 25.5 m + 0.333 m
4) 25.50 cm^3 + 0.333 cm^3
5) 0.4 g + 10.40 g
6) 4.38 cm^2 - 1.62 cm^2

11) 503.46 cm · 0.340 cm
12) 0.333 m · 51.0 m
13) 120.00 cm^3 · 8.60 cm
14) 56.2 cm^3 / 1.3 cm
15) 56.2 g cm^3 / 1.300 g^3 cm
16) 38 m · 38 m

17) $15.0\frac{g}{cm^3} = \frac{Y}{3.0cm^3}$

18) $12.0\frac{g}{cm^3} = \frac{6.4cm^3}{Y}$

19) $\frac{5.34cal}{10.0g \cdot 0.045^\circ C} = Y$

20) $530.0cal = 0.215\frac{cal}{g \cdot ^\circ C} \cdot 12.0g \cdot Y$

21) $340.2cal = Y \cdot 1.345g \cdot 54.23^\circ C$

22) $Y = 5.443cm^3 \cdot 4.3\frac{g}{cm^3} \cdot 0.0052\frac{cal}{cm}$

23) $4.5\frac{g}{cm^3} = \frac{0.445g}{2.30cm \cdot 1.44cm \cdot Y}$

Using the following equalities to solve the problems below:
1 m&m = 2.33g 1 kg = 1000g 1 lb = 2.2 kg 1 mile = 1609 m 1 Rial = 1.27 shekels

1 rupee = 0.103 shekels 1 rupee = 0.242 pesos 1 dollars U.S. = 10.91 pesos

24) I weigh 168.5 lbs. How many m&m's are equal to my weight?

25) While traveling in the country of Qatar you see a camera for sale marked $3480 Rial. You are carrying $600 in U.S. currency. Can you buy the camera?

26) If I am driving 35 miles/hr, how fast is that in nanometers per millisecond (use the table of prefixes in your notes to figure this out).

Answers:

9.201	__4__	5.000	__4__	0.560	__3__
0.666	__3__	5.001	__4__	12.0001	__6__
5	__1__	0.005	__1__	3.14000	__6__
1000	_1 - 3_	0.0050	__2__	90210	_4 - 5_
50500	_3 - 5_	87.9	__3__	8675309	__7__

A) 7.22 cm B) 8.10 cm C) 9.50 cm D) 13.5 cm E) 30.0 cm F)41.0 cm G) 3.44 ml H)20.1 ml
(notice that each scale will always have the same precision or number of decimal places for all measurements taken on that scale)

1) 8.5 cm
2) 8.9 g
3) 25.8 m
4) 25.83 cm^3
5) 10.8 g
6) 2.76 cm^2

11) 171 cm^2
12) 17.0 m^2
13) 1.03 x 10^3 cm^4
14) 43 cm^2
15) 43.2 cm^2/g^2
16) 1.4 x 10^3 m^2

17) Y = 45 g
18) Y = 0.53 cm^3
19) $Y = 12\frac{cal}{g \cdot ^\circ C}$
20) Y = 205 °C

21) $Y = 4.664\frac{cal}{g \cdot ^\circ C}$
22) $Y = 0.12\frac{g \cdot cal}{cm}$
23) Y = 0.030 cm

24) 160,000 or 1.6 x 10^5 m&m's 25) no 26) 1.6 e+7 nm/msec