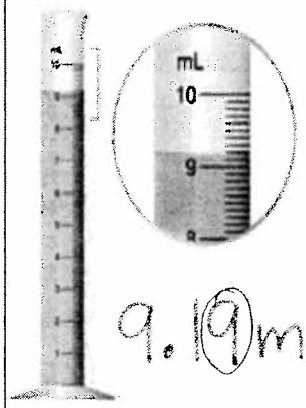
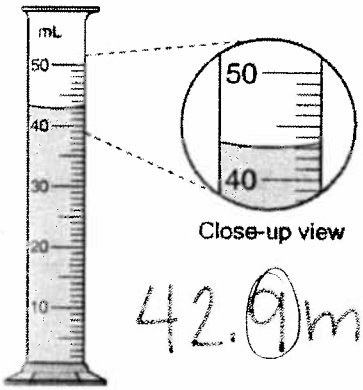
Name: #4 Block: _____ **Sig Fig Practice**

Uncertainty in Measurement:
When reading an instrument.... Write all the #s you see **+ 1** more that you ***estimate***

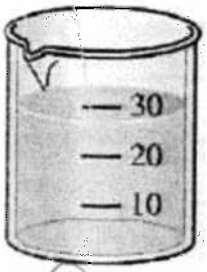
1.Determine the volume in each image below: circle estimated digit



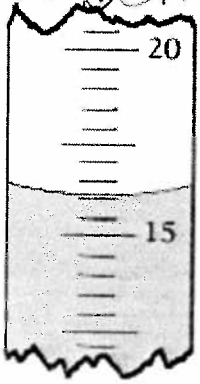
9.19mL



42.9mL

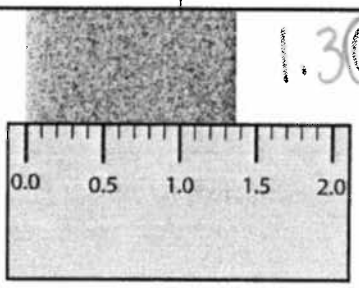


28mL

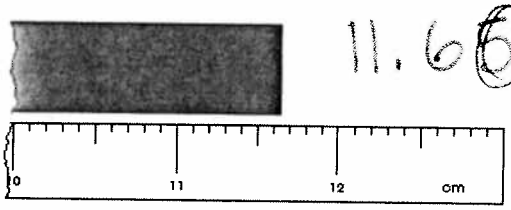


16.0cm

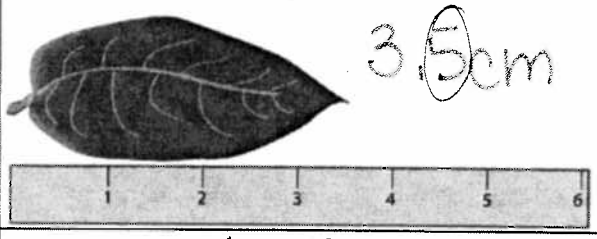
2. Determine the length in each centimeter rulers right:



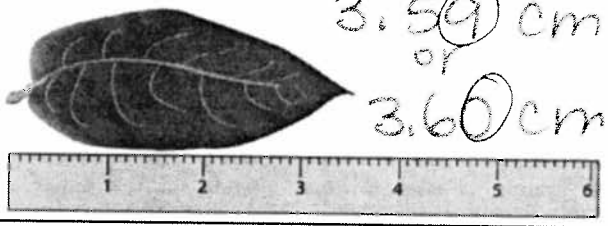
1.30cm



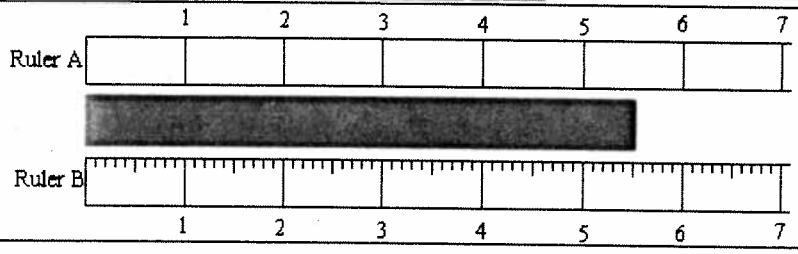
11.66cm



3.5cm



3.59 cm or 3.60 cm



5.5cm

5.55cm

Sig Fig Rules

1. Count all non-zero # s: 1234 = 4 sig figs 100 = 1 sig figs
2. Count zeros that are in b/w non-zero #s: 708 = 3 sig figs 1008 = 4 sig figs
3. If # is **less** than **1**, count **all** # after the first real # : 0.000987= 3 sig figs 0.009870 = 4 sig figs
   do not count the zeros to the left of the first real #
4. If # is **greater** than **zero &** a **decimal point** is present, count all #s: 101.2 = 4 sig figs 1000.000= 7 sig figs

3. Determine the number of sig figs in each value

213 mg 3	3001 dm 4	81~~000~~ pg 2	6.00 L 3
~~0.00~~21km 2	~~0.~~420 g 3	92.00 cm 4	781 m 3

Adding & Subtracting Sig Fig Rules

1. add or subtract the numbers
2. keep all whole numbers
3. round the decimal to the **least number** of **decimal** places

5.00 cm
- 4.352 cm
0.648 cm = **0.65 cm**

4. Determine the answer in terms of sig figs:

43.8316 sec -29.5706 sec 14.2610 sec	0.0677 mL 48.1 mL +82.7655 mL 130.9 mL	27.34 km 6.90 km +13.124 km 47.36 km	2.8023 grams -4.762 grams 1.960 gram
334.540 grams + 198.9916 grams 533.532 gram	248.01010 kilograms +84.097 kilograms 332.107 kg	0.0610 m − 0.18 m 0.12 m	50.2 miles − 0.500 miles 49.7 mile
0.04216 days - 0.0004134 days 0.04175 day	23.1 hours + 4.77 hours + 125.39 hours + 3.581 hours 156.8 hr	3.461728 grams + 14.91 grams + 0.980001 grams + 5.2631 grams 24.61 g	349.0 cm + 1.10 cm + 100. cm 450 cm

Multiplying & Dividing Sig Fig Rules

1. multiply or divide # s
2. count the TOTAL number of sig figs in each
3. Round to the least # of TOTAL sig figs

6.7 cm x 1.1 cm= 7.37 cm^2 = **7.4 cm^2**

5. Determine the answer in terms of sig figs:

2.61×10^6 joules / 0.0034 seconds $7.7 \frac{J}{s}$	24.1 miles / 0.005 hour $5 \times 10^3 \frac{mi}{hr}$	34 grams / 10.1 mL $3.4 \frac{g}{mL}$	252 meters / 910 seconds $0.28 \frac{m}{s}$
0.0222 mm x 0.7000mm x 8.702mm $0.135\ mm^3$		0.32cm x 14.50cm x 120cm $560\ cm^3$	1.80m x 25.3m $45.5\ m^2$
1010 cm x 3001cm x 216 cm 1.010×10^3 3.001×10^3 2.16×10^2 $6.55 \times 10^8\ cm^3$		6.450dm x 1.010dm $6.515\ dm^2$	0.61mm x 42.1mm $26\ mm^2$

6. Determine the answer in terms of sig figs:

(320. - 22.7) x 3.8 1.1×10^3	(1.80 x 3.4) + 32.00 38.1	(1.80 x 25.3) + 32 78
$\frac{(6.8 + 4.701)}{(21.25 - 18)}$ 4	$\frac{(3.65 \times 2.10)}{(2.1134 \times 42.1)}$ 0.0862	$\frac{(14.86 + 13.7) \times (65.346 - 4.10)}{(43.888 - 32.888)}$ 159

Average the following masses: 0.621g, 1.614g, 0.08456g, 0.4g

0.7g