

### +WS 1.9 - Review

Fill in the blanks with an appropriate unit: **mm, cm, m, km, g, kg, mL, L, kL**

1. The average textbook is 210 mm wide and weighs 2000 g.
2. A tree can grow 0.7 m per year and can require 100 L of water per month.
3. My TV remote weighs 89 g and it has a working range of 1000 cm.

Convert the following:

4)  $22.2 \text{ cm} = \frac{0.000222}{5 \text{ steps}}$  km

5)  $6.1 \times 10^7 \mu\text{L} = \frac{6.1 \times 10^3}{4 \text{ steps}}$  cL OR 6100 cL

How many sig fig's?

6) 104.01 g 5

7)  $4.10 \times 10^3$  g 3

8) 40 g 1

9) 40. g 2

10) 140.0 g 4

11) .0140 g 3

Round off to specified # of sig fig's:

12) Round 14.989 to... 4 sf: 14.99 3 sf: 15.0 2 sf: 15 1 sf: 10

13) Round 31,011 to... 4 sf: 31010 3 sf: 31000 2 sf: 31000 1 sf: 30000

Calculate the following, using appropriate sig figs:

- 14) What is the volume of a shoebox whose dimensions are 125 cm by 25.5 cm by 30.0 cm?

$$125 \times 25.5 \times 30.0 = 95600 \text{ cm}^3 \quad (3 \text{ sig figs})$$

- 15) A woman has a purse weighing 954.4 g. From it was stolen: a 121.23 g cell phone and a 11.29 g tube of lipstick! How much does the purse weigh now? 821.9 g

Density: Round to  $\frac{1}{10}$ ths place  $\rightarrow$

- 16) A graduated cylinder is placed on an electronic balance, and the scale reads 81.19 g. 15.5 mL of acetone are added, and the scale reads 95.33 g. What is the density of acetone?

$$95.33 - 81.19 = 14.14 \text{ g} \quad D = \frac{14.14 \text{ g}}{15.5 \text{ mL}} = \text{Ans } \underline{0.912 \text{ g/mL}}$$

- 17) Mystery object "A" has a density of 3.90 g/mL. If it weighs 450 g, what is its volume?

$$450 \text{ g} \times \frac{1 \text{ mL}}{3.90 \text{ g}} = \boxed{120 \text{ mL}} \quad 2 \text{ sig figs} \quad \text{Ans } \underline{\hspace{2cm}}$$

**For the following:** Indicate whether it is a **D**eterminate or **I**ndeterminate error (Use "D" or "I"):

- 18) D There was a rock stuck in the bottom of your graduated cylinder
- 19) D The temperature knob on the hot-plate is off by 10°C
- 20) I Someone dropped some German potato salad into your experiment
- 21) D Misunderstanding the instructions, you used hydrochloric acid instead of water.

+WS1.9 review (side 2)

Use Dimensional Analysis to convert the following:

22) 4.11 qt ---> mL

$$4.11 \text{ qt} \times \frac{0.946 \text{ L}}{1 \text{ qt}} \times \frac{1000 \text{ mL}}{1 \text{ L}} = 3890 \text{ mL}$$

23) 0.709 cm/sec ---> ft/day

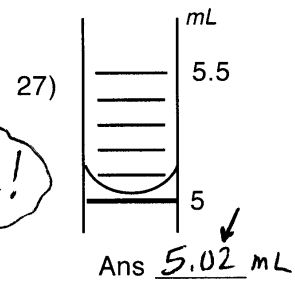
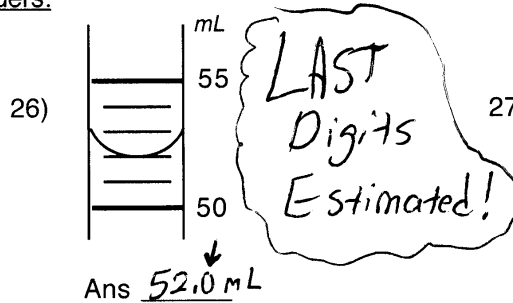
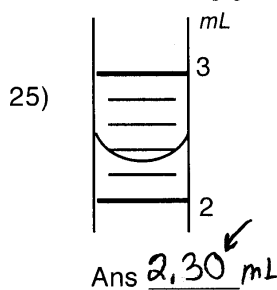
$$\frac{0.709 \text{ cm}}{1 \text{ sec}} \times \frac{1 \text{ in}}{2.54 \text{ cm}} \times \frac{1 \text{ ft}}{12 \text{ in}} \times \frac{60 \text{ sec}}{1 \text{ min}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{24 \text{ hr}}{1 \text{ day}} = 2010 \text{ ft/day}$$

24) 7.5 mi<sup>2</sup> ---> in<sup>2</sup>

$$7.5 \text{ mi}^2 \times \frac{5280^2 \text{ ft}^2}{1 \text{ mi}^2} \times \frac{12^2 \text{ in}^2}{1 \text{ ft}^2} = 3.0 \times 10^{10} \text{ in}^2$$

1 ft = 12 in
1 mi = 5280 ft
1 lb = 16 oz
1 gal = 4 qt
1 in = 2.54 cm
1 mi = 1.61 km
1 lb = 454 g
1 qt = 0.946 L
1 m = 100 cm
1 km = 1000 m
1 kg = 1000 g
1 L = 1000 mL

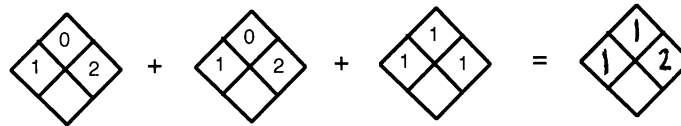
Read the following graduated cylinders:



For the following: Indicate whether is it a Determinate or Indeterminate error (Use "D" or "I"):

- 28) I Someone drank some of your experiment  
 29) D Your electronic balance is off by 0.4 grams  
 30) I A fly landed (and dissolved) in your highly acidic experiment

31) Combine these NFPA codes into one:



32) An object has a mass of 60.00 g, but appears to weigh 50.00 g when submerged in water. What is the objects density?

$$V_{\text{object}} = 10.00 \text{ mL}$$

$$V_{\text{fluid displaced}} = 10.00 \text{ mL}$$

$$W_{\text{fluid displaced}} = 10.00 \text{ g}$$

$$W_{\text{lost (BF)}} = 10.00 \text{ g}$$

$$D = \frac{m}{V} = \frac{60.00 \text{ g}}{10.00 \text{ mL}} = 6.00 \text{ g/mL}$$

\*\*\* All answers are posted on solutions page, on website \*\*\*