CHE101 - Practice Exam Ch 3-4 - Fall 16,17,18 - Ver 1

Name: _____ Class: _____ Date: _____

Instructions: Answer the following questions. Show ALL work for problems to receive full credit. Make sure to include proper units and significant figures for all answers.

1. How many Significant Figures are in each of the following numbers:

(a) 0.00032 — 1(a) **2**

(b) 53,500,000 — 1(b) **3**

(c) 190.00 — 1(c) **5**

(d) 0.0250 — 1(d) **3**

(e) 19.2014×10^{-3} — 1(e) **6**

(f) 50,000. — 1(f) **5**

(g) 1.905×10^{3} — 1(g) **4**

(h) 45,000 — 1(h) **2**

(i) 1000.040 — 1(i) **7**

(j) 10.2 — 1(j) **3**

(k) 0.0000107 — 1(k) **3**

(l) 50,124,000 — 1(l) **5**

(m) 40.0 — 1(m) **3**

(n) 0.0001300 — 1(n) **4**

(o) 1.014×10^{-3} — 1(o) **4**

(p) 355,400. — 1(p) **6**

(q) 3.400×10^{3} — 1(q) **4**

(r) 38,600 — 1(r) **3**

(s) 2005.050 — 1(s) **7**

(t) 3.50×10^{2} — 1(t) **3**

(u) 1250. — 1(u) **4**

(v) 0.000002208 — 1(v) **4**

(w) 30.00 — 1(w) **4**

(x) 2.004×10^{7} — 1(x) **4**

2. Write each of the following numbers in **Standard Notation**, showing the proper number of significant figures.

   (a) 25.30 (rounded to 2 SF) — 2(a) **25**

   (b) 0.003608 (rounded to 3 SF) — 2(b) **0.00361**

   (c) 25,352,000 (rounded to 4 SF) — 2(c) **25,350,000**

   (d) 0.00000250 (rounded to 1 SF) — 2(d) **0.000 003**

   (e) 5.3625×10^3 (rounded to 2 SF) — 2(e) **5,400**

3. Write each of the following numbers in **Scientific Notation**, showing the proper number of significant figures.

   (a) 365,000,000 (rounded to 2 SF) — 3(a) 3.7×10^8

   (b) 500,000 rounded to 3 SF — 3(b) 5.00×10^5

   (c) 182.19 (rounded to 2 SF) — 3(c) 1.8×10^2

   (d) 0.000205 (rounded to 2 SF) — 3(d) 2.1×10^{-4}

   (e) 0.000 000 850 (rounded to 3 SF) — 3(e) 8.50×10^{-7}

   (f) 500. — 3(f) 5.00×10^2

   (g) 698,340,000 — 3(g) 6.9834×10^8

   (h) 197.85 (rounded to 3 SF) — 3(h) 1.98×10^2

   (i) 0.000 483 289 (rounded to 2 SF) — 3(i) 4.8×10^{-4}

   (j) 0.000 000 000 153 85 (rounded to 2 SF) — 3(j) 1.5×10^{-10}

   (k) 0.02818 (rounded to 3 SF) — 3(k) 2.82×10^{-2}

   (l) 3,985,000 (rounded to 2 SF) — 3(l) 4.0×10^6

   (m) 37,520,000 (rounded to 3 SF) — 3(m) 3.75×10^7

   (n) 26.5 (rounded to 2 SF) — 3(n) 2.7×10^1

4. Write each of the following numbers in Scientific Notation, showing the proper number of significant figures.

(a) 18.5 (rounded to 2 SF) 4(a) 1.9×10^{1}

(b) 438,000,000 4(b) 4.38×10^{8}

(c) 63.19 (rounded to 2 SF) 4(c) 6.3×10^{1}

(d) 235.85 (rounded to 3 SF) 4(d) 2.36×10^{2}

(e) 0.000 000 173 (rounded to 2 SF) 4(e) 1.7×10^{-7}

(f) 0.000 567 35 (rounded to 2 SF) 4(f) 5.7×10^{-4}

(g) 0.01008 (rounded to 3 SF) 4(g) 1.01×10^{-2}

(h) 6,982,000,000 (rounded to 2 SF) 4(h) 7.0×10^{9}

(i) 48,620,000 (rounded to 3 SF) 4(i) 4.86×10^{7}

(j) 4,000. 4(j) 4.000×10^{3}

5. Solve the following mathematical problems. Show all work. Express your answers to the proper number of Significant Figures, rounding where needed.

(a) $(35.00)(8.2)$ — 5(a) **290**

(b) $1.256 + 0.32$ — 5(b) **1.58**

(c) $\frac{(0.250)(1250.)}{1234}$ — 5(c) **0.253**

(d) $(8.537 \times 10^{-22})(2.0 \times 10^{-9})$ — 5(d) 1.7×10^{-30}

(e) $12,500 + 2,363.32$ — 5(e) **14,900**

(f) $(6200)(7.210)$ — 5(f) $4.5 \times 10^4 or 45,000$

(g) $27,500 + 150 + 235.8$ — 5(g) **27900 or** 2.79×10^4

(h) $\frac{(0.00566)(2.800)}{1,234.0}$ — 5(h) **0.000 00128 or** $1.28 \times 10^{-}$

(i) $0.0850 + 1.23 + 0.1123$ — 5(i) **1.43**

(j) $(6243)(721,000)$ — 5(j) 4.50×10^9

(k) $27,500 + 150 + 235.8$ — 5(k) **27,900 or** 2.79×10^4

(l) $\frac{(0.018)(15.25)}{250.}$ — 5(l) **0.0011 or** 1.1×10^{-3}

(m) $(8.2 \times 10^{-5})(6.35 \times 10^{-7})$ — 5(m) **0.000 000 000 0052 or** 5.2×10^{-11}

(n) $0.025 + 1.520 + 3.80$ — 5(n) **5.35**

(o) $(6243)(721,000)$ — 5(o) 4.50×10^9

(p) $27,500 + 150 + 235.8$ — 5(p) **27,900 or** 2.79×10^4

(q) $\frac{(0.018)(15.25)}{250.}$ — 5(q) **0.0011 or** 1.1×10^{-3}

(r) $(8.2 \times 10^{-5})(6.35 \times 10^{-7})$ — 5(r) **0.000 000 000 0052 or** 5.2×10^{-11}

(s) $0.025 + 1.520 + 3.80$ — 5(s) **5.35**

6. Perform the following conversions. Show all work. Express your answers to the proper number of significant figures and with the proper units.

(a) Convert 18.25 GL to fL

6(a) 1.825×10^{25} **fL**

$$\frac{18.25\,\text{GL}}{} \times \frac{1 \times 10^{9}\,\text{L}}{1\,\text{GL}} \times \frac{1\,\text{fL}}{1 \times 10^{-15}\,\text{L}} = 1.825 \times 10^{25}\,\text{fL}$$

(b) 1.58×10^{6} drams to tons

6(b) **3.09 tons**

$$\frac{1.58 \times 10^{6}}{} \times \frac{1\,\text{oz}}{16\,\text{dram}} \times \frac{1\,\text{lb}}{16\,\text{oz}} \times \frac{1\,\text{ton}}{2000\,\text{lb}} = 3.09\,\text{ton}$$

(c) 895 cm^2 to ft^2

6(c) **0.963** ft^2

$$\frac{895\,\text{cm cm}}{} \times \frac{1\,\text{in}}{2.54\,\text{cm}} \times \frac{1\,\text{in}}{2.54\,\text{cm}} \times \frac{1\,\text{ft}}{12\,\text{in}} \times \frac{1\,\text{ft}}{12\,\text{in}} = 0.963\,\text{ft}^{\,2}$$

(d) 1.50×10^{-4} rods to nm

6(d) **754,000 nm**

$$\frac{1.50 \times 10^{-4}\,\text{rods}}{} \times \frac{100\,\text{links}}{4\,\text{rods}} \times \frac{0.66\,\text{ft}}{1\,\text{links}} \times \frac{1\,\text{mi}}{5280\,\text{ft}} \times \frac{1.609\,\text{km}}{1\,\text{mi}} \times \frac{1000\,\text{m}}{1\,\text{km}} \frac{1\,\text{nm}}{1 \times 10^{-9}\,\text{m}} = 754,218.75$$

(e) 2.4×10^{6} lb to ng

6(e) 1.1×10^{18} **ng**

$$\frac{2,400,000lb}{} \times \frac{453.59g}{1lb} \times \frac{1ng}{1 \times 10^{-9}g}$$

(f) 150 Tm to am

6(f) 1.5×10^{32} **fm**

$$\frac{150Tm}{} \times \frac{1 \times 10^{12}m}{1Tm} \times \frac{1am}{1 \times 10^{-18}m}$$

(g) 2.80×10^{8} pL to kL

6(g) 2.80×10^{-7} **kL**

$$\frac{2.80 \times 10^{8}\,\text{pL}}{} \times \frac{1 \times 10^{-12}L}{1\,\text{pL}} \times \frac{1kL}{1 \times 10^{3}L}$$

(h) 2.58×10^{6} drams/min to kg/day

6(h) **6,580,000 or** 6.58×10^{6}**kg**

$$\frac{2.58 \times 10^{6}drams}{min} \times \frac{16oz}{256drams} \times \frac{1lb}{16oz} \times \frac{453.59g}{1lb} \times \frac{1kg}{1 \times 10^{3}g} \times \frac{60min}{1hr} \times \frac{24hours}{1day}$$

(i) 1,200 mg to lbs

6(i) 2.6×10^{-3} **lb**

$$\frac{1,200mg}{} \times \frac{1 \times 10^{-3}g}{1mg} \times \frac{1lb}{453.59g}$$

(j) 150 nm to fm

6(j) 1.5×10^{8} **fm**

$$\frac{150nm}{} \times \frac{1 \times 10^{-9}m}{1nm} \times \frac{1fm}{1 \times 10^{-15}m}$$

(k) 1.345×10^{8} μL to PL

6(k) 1.345×10^{-13} **PL**

$$\frac{1.345 \times 10^{8}\mu L}{} \times \frac{1 \times 10^{-6}L}{1\mu L} \times \frac{1PL}{1 \times 10^{15}L}$$

(l) 1.80 ft^3 to in^3

6(l) 3.11×10^{3} **or 3100** in^3

$$\frac{1.8ft \cdot ft \cdot ft}{} \times \frac{12in}{1ft} \times \frac{12in}{1ft} \times \frac{12in}{1ft}$$

(m) 2.200×10^{6} pints/day to kL/minute

6(m) **0.7228 kL/min**

$$\frac{2.200 \times 10^{6}pints}{day} \times \frac{1qt}{2pint} \times \frac{1gal}{4qt} \times \frac{3.785L}{1gal} \times \frac{1kL}{1 \times 10^{3}L} \times \frac{1day}{24hours} \times \frac{1hr}{60min}$$

7. If your radiator freezes at -24.5. °C what is the freezing point in °F Explain. 7. **-12.1 ^{o}F**

$(1.8)(-24.5) + 32$ * too easy because just multiplication/add and SF is easy

8. If water on Jupiter boils at at -2010. °F what is the boiling point in °C Explain. 8. **-1134 ℃**

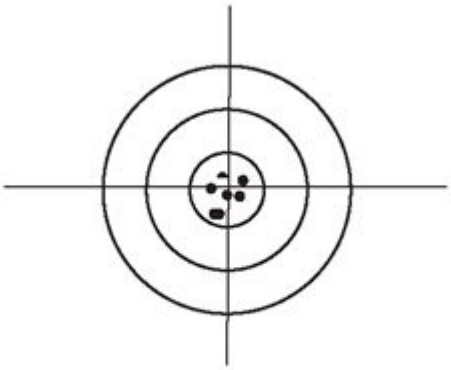
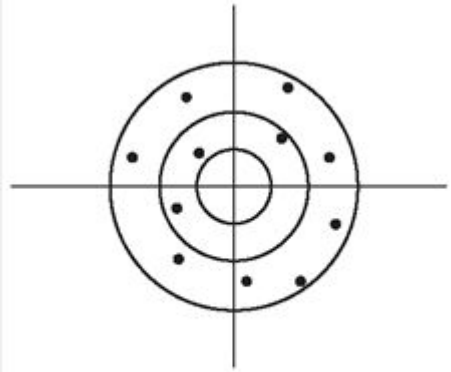
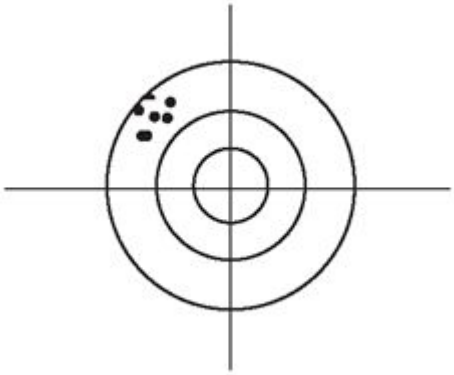
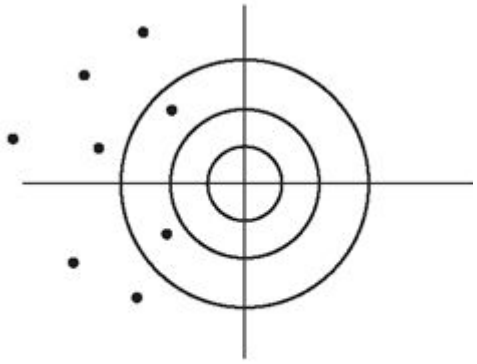
$$℃ = \frac{°F - 32}{1.8} = -1134.444℃$$

This is a bit silly of a question because your instructor was not paying attention. The coldest possible temperature is - 273.15 ℃. However, you can still solve the problem and keep track of SF, so lets ignore your instructors poor choice of temperature in the problem.

9. If beer freeze's at -10. °C what is the freezing point in °F. 9. **14 ^{o}F**

$(1.8)(-10) + 32$ * too easy because just multiplication/add and SF is easy

10. Define the terms Accuracy and Precision. In the boxes below draw an example illustrating each situation.

Accurate and Precise	**Accurate and NOT Precise**
 Both accurate and precise	 Accurate, but not precise
NOT Accurate but Precise	**NOT Accurate and NOT Precise**
	 Neither accurate nor precise

Accuracy - How close the measurement is to the correct answer (how close to the bullseye)

Precision - How reproducible measurement are to each other. (how tight of grouping)

11. Answer the following questions about Accuracy and Precision.

(a) If I make multiple measurements in lab I am determining? 11(a) **Precision**

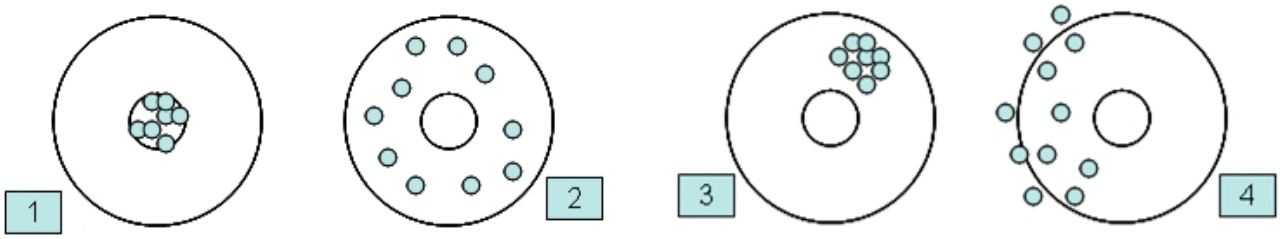
(b) If I measure an object and compare my result to the known value I am determining? 11(b) **Accuracy**

(c) Which Archer is Accurate but not Precise? 11(c) **2**

(d) Which Archer is Precise but not Accurate? 11(d) **3**

(e) Which Archer is neither Accurate nor Precise? 11(e) **4**

(f) Which Archer is Accurate and Precise? 11(f) **1**



12. In lab a student measured a wooden block that is 12.562 cm x 2.450 cm x 1.250 cm.

(a) What is the volume of the wooden block in mL? 12(a) **38.47 mL**

(b) What is the volume in gallons? 12(b) **0.01016 gallons**

Volume = LxWxH = 38.47 cm^3

$$\frac{38.47\,\text{cm}^3}{} \times \frac{1\,\text{mL}}{1\,\text{cm}^3} \times \frac{0.001\,\text{L}}{1\,\text{mL}} \times \frac{1\,\text{gal}}{3.785\,\text{L}} = 0.010163804 gal$$

13. In lab you are requested to weight out 10.0 grams of a solid chemical.

(a) What is the minimum mass you should weigh out? 13(a) **9.9 g**

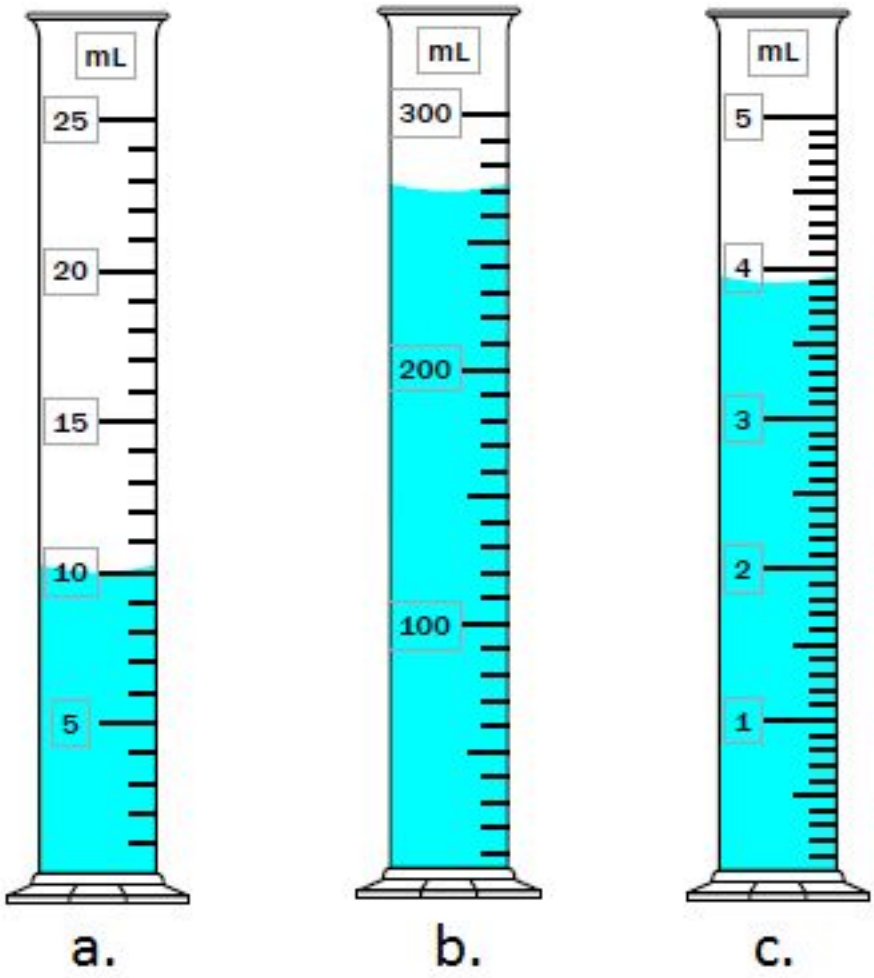
(b) What is the maximum mass you should weigh out? 13(b) **10.1 g**

14. What is the uncertainty of each of the graduated cylinders pictured?

    (a) $\pm 0.5\ mL$
    (b) $\pm 5\ mL$
    (c) $\pm 0.05\ mL$

    What value would you write in your lab book?

    (a) $10.0\ mL$
    (b) $270.\ mL$
    (c) $3.90\ mL$

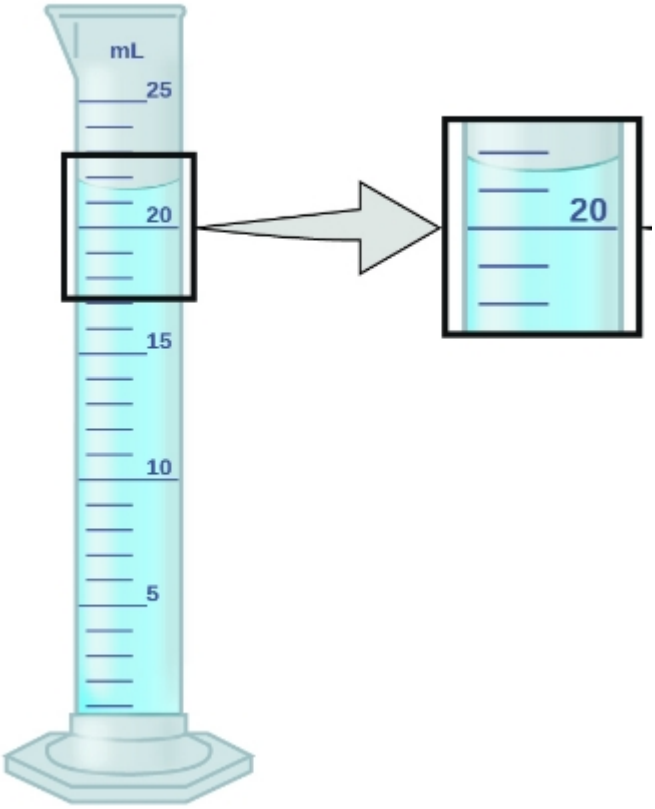


15. Janet received a gold necklace from her boyfriend for her birthday. While working in chemistry lab she accidentally dropped it in a beaker of water. She noted that the volume of the water increased from 34.5 mL to 63.2 mL. How much does her necklace weigh (in grams)?

15. **554 g**

$$\frac{28.7mL}{} \times \frac{19.3g}{1mL} = 553.91\text{ g}$$

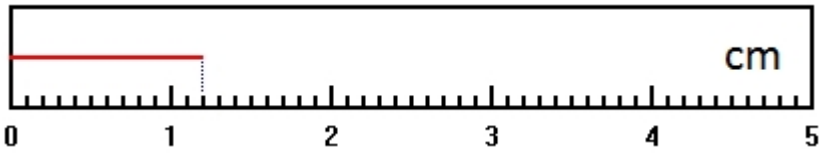
16. Answer the following questions about the graduated cylinder in the figure below.



(a) Uncertainty? 16(a) ±0.5 **mL**

(b) Volume of water? 16(b) **21.5 mL**

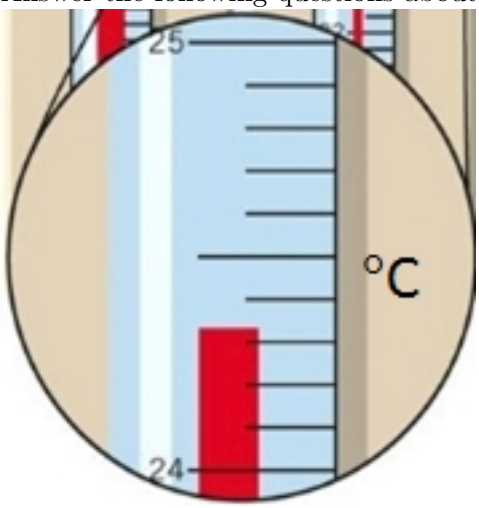
17. Answer the following questions about the ruler in the figure below.



(a) Uncertainty? 17(a) ±0.05 **cm**

(b) Length of Line? 17(b) **1.20 cm**

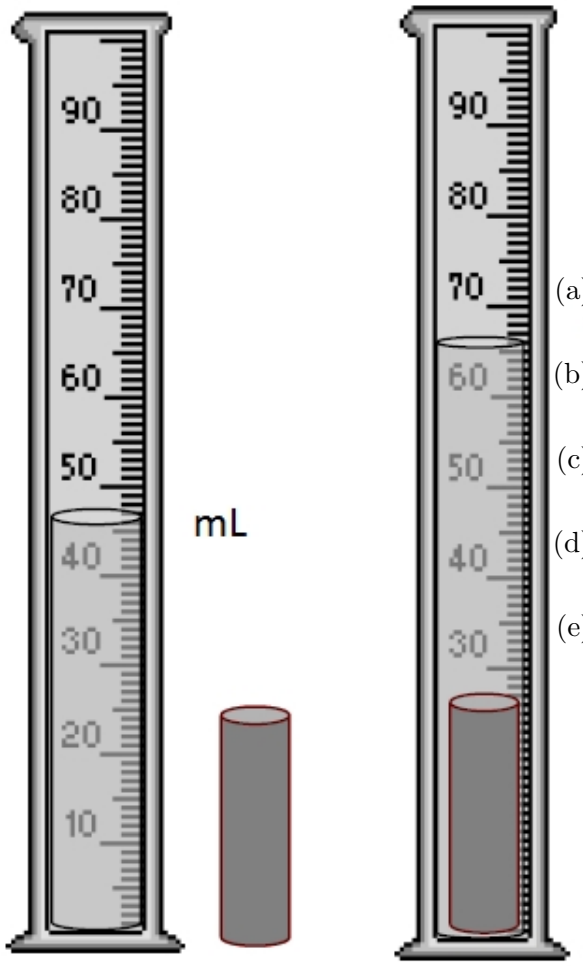
18. Answer the following questions about the thermometer in the figure below.



(a) Uncertainty? 18(a) ±0.05 **°C**

(b) Temperature? 18(b) **24.35 °C**

19. Answer the following questions about the displacement experiment a student provided. The metal object weighted 209.856 grams and displaced water as shown in the figure below. Explain.



(a) Initial volume of water — 19(a) **46.0 mL**

(b) Final volume of water — 19(b) **66.0 mL**

(c) Amount of water displaced — 19(c) **20.0 mL**

(d) Density — 19(d) **10.5 g/mL**

(e) Identity of the metal — 19(e) **Silver or Ag**

20. For each of the symbols in the heat equation (q = msΔT) define what the variable represents, and give the standard units for each variable.

q = heat (J)
m = mass (g)
S = Specific Heat ($\frac{\text{J}}{\text{g} \cdot ℃}$)
ΔT = Change in Temperature (℃)

21. An unknown mass of Tin metal required 450 KJ of energy to increase in temperature from 45.0 ℃ to 175.0 ℃. What is the mass of the metal in grams? 21. **16,000 g (2 SF)**

$$\frac{450\,\text{K J}}{} \times \frac{1000\,\text{J}}{1\,\text{K J}} \times \frac{\text{g} \cdot ℃}{0.222\,\text{J}} \times \frac{1}{130.0\,℃} = 15,592.5$$

22. What is the specific heat (in standard units) of a 125.0 gram block of metal that when heated from 115.0 ℃ to 225.0 ℃ required 954.0 J of energy. 22. $\underline{0.06938 \frac{J}{\text{g} \cdot ℃}}$ **(3 or**

$$\frac{954.0\,\text{J}}{} \times \frac{1}{125\,\text{g}} \times \frac{1}{110.0\,℃} = 0.0693818 \frac{J}{\text{g} \cdot ℃}$$

23. What is the temperature change of 250.0 mL of Ethanol (Ethyl Alcohol) to which 600. J of energy is supplied. 23. **1.42 ℃**

$$\frac{600.\,\text{J}}{} \times \frac{1}{250.0\,\text{mL}} \times \frac{1\,\text{mL}}{0.789\,\text{g}} \times \frac{\text{g} \cdot ℃}{2.138\,\text{J}} = 1.4227\,℃$$

24. How much energy (in Joules) is required to heat 12.00 g of Pb from 25.0 ℃ to 95.0 ℃? 24. **108 J**

$$\frac{12.00\,\text{g Pb}}{} \times \frac{0.128\,\text{J}}{\text{g} \cdot ℃} \times \frac{70.0\,℃}{}$$

25. What is the mass of Au that requires 6000. J of heat to raise in temperature from 125 ℃ to 450. ℃? 25. **141 g Au**

$$\frac{6000.\,\text{J}}{} \times \frac{\text{g} \cdot ℃}{0.131\,\text{J}} \times \frac{}{325\,℃}$$

26. How much energy (in Joules) is required to raise the temperature of 75.0 mL of Sulfuric Acid 25.0 ℃ ? The specific heat of Sulfuric Acid is 1.250 J/g·℃. 26. **4310 J**

$$\frac{75.0\,\text{mL}\,H_2SO_4}{} \times \frac{1.84\,\text{g}\,H_2SO_4}{1\,\text{mL}\,H_2SO_4} \times \frac{1.250\,\text{J}}{\text{g} \cdot ℃} \times \frac{25.0\,℃}{}$$

27. What is the specific heat (in standard units) of a 15.25 kilogram block of metal that when heated from 100.0 ℃ to 735.0 ℃ required 5280.0 mJ of energy. 27. **0.545 J/g· ℃**

$$\frac{5280.0\,\text{m J}}{} \times \frac{1000\,\text{J}}{1\,\text{m J}} \times \frac{}{15.25\,\text{kg}} \times \frac{1\,\text{kg}}{1000\,\text{g}} \times \frac{}{635\,℃}$$

28. How much energy (in Joules) is required to heat 250 g of Cu from 45.0 ℃ to 85.0 ℃? 28. **3900 J**

$$250 \times 0.385 \times 40.0 = 3850J$$

29. How much energy (in Joules) is required to heat 2550 mg of Au from 35. ℃ to 75. ℃? 29. **13 J**

$$2550 \times 0.001 \times 0.131 \times 40. = 13.362$$

30. What is the specific heat (in standard units) of a 75.0 gram block of metal that when heated from 105.0 ℃ to 235.0 ℃ required 1250.0 J of energy. 30. **0.128 J/g·℃**

$s = 1250 \div 75 \div 130 =$

31. What is the temperature change of 150.0 mL of Ethanol (Ethyl Alcohol) to which 600. kJ of energy is supplied. 31. **2370 °C**

$\Delta T = 600 \times 1000 \div 150 \div 0.789 \div 2.138 = 2371$

32. Give the Formula and/or Name for the 10 common acids given in class

HCL,HF, HBr, HI
$HClO_4$, H_2SO_4, HNO_3, H_2CO_3, $HC_2H_3O_2$, H_3PO_4

33. Sketch or write the formation reaction for a Sulfide ion from a neutral Sulfur atom.

$S + 2\,e^- \longrightarrow S^{-2}$ or picture

34. Sketch or write the formation reaction for a Aluminum ion from a neutral Aluminum atom.

$Al \longrightarrow Al^{+3} + 3\,e^-$ or picture

35. Draw a chemical reaction showing the formation of a Calcium ion from a neutral Calcium atom

$Ca \longrightarrow Ca^{+2} + 2\,e^-$

36. Draw a chemical reaction showing the formation of a Chlorine ion from a neutral Chlorine atom

$Cl + e^- \longrightarrow Cl^{-1}$

37. Give the formula for the following compounds:

(a) Sodium Chloride — 37(a) **$NaCl$**

(b) Antimony (II) Chromate — 37(b) **$SbCrO_4$**

(c) Gold (III) Sulfate — 37(c) **$Au_2(SO_4)_3$**

(d) Iron (VI) Carbonate — 37(d) **$Fe(CO_3)_3$**

(e) Barium Thiosulfate — 37(e) **BaS_2O_3**

(f) Carbon Tetrafluoride — 37(f) **CF_4**

(g) Calcium Fluoride — 37(g) **CaF_2**

(h) Mercury (IV) Oxalate — 37(h) **$Hg(C_2O_4)_2$**

(i) Potassium Thiosulfate — 37(i) **$K_2S_2O_3$**

(j) Phosphorus Octaoxide — 37(j) **PO_8**

(k) Vanadium (I) Phosphate — 37(k) **V_3PO_4**

(l) Ammonium Sulfate — 37(l) **$(NH_4)_2SO_4$**

(m) Titanium (IV) Sulfide — 37(m) **TiS_2**

(n) Hexacarbon Pentachloride — 37(n) **C_6Cl_5**

(o) Titanium (VI) Oxide — 37(o) **TiO_3**

(p) Phosphoric Acid — 37(p) **H_3PO_4**

(q) Antimony (I) Carbonate — 37(q) **Sb_2CO_3**

(r) Lithium Permanganate — 37(r) **$LiMnO_4$**

(s) Dibromine Sulfide — 37(s) **Br_2S**

38. Give the IUPAC name for the following compounds:

(a) CO — 38(a) **Carbon Monoxide**

(b) $Pb_2(CrO_4)_3$ — 38(b) **Lead (III) Chromate**

(c) $Zn_3(PO_4)_2$ — 38(c) **Zinc Phosphate**

(d) Li_2SO_4 — 38(d) **Lithium Sulfate**

(e) P_9Br_3 — 38(e) **Nonaphosphorus Tribromide**

(f) H_2CO_3 — 38(f) **Carbonic Acid**

(g) $VCrO_4$ — 38(g) **Vanadium (II) Chromate**

(h) $Sb(PO_4)_2$ — 38(h) **Antimony (VI) Phosphate**

(i) $(NH_4)_2CO_3$ — 38(i) **Ammonium Carbonate**

(j) $TiCl_4$ — 38(j) **Titanium (IV) Chloride**

(k) NH_4Cl — 38(k) **Ammonium Chloride**

(l) ClF — 38(l) **Chlorine Monofluoride**

(m) CrO_2 — 38(m) **Chromium (IV) Oxide**

(n) $Co_3(PO_4)_2$ — 38(n) **Cobalt (II) Phosphate**

(o) $Ba(NO_3)_2$ — 38(o) **Barium Nitrate**

(p) $NaHCO_3$ — 38(p) **Sodium Hydrogen Carbonate (bicarbonate)**

(q) $Ba(OH)_2$ — 38(q) **Barium Hydroxide**

(r) Sn_3PO_4 — 38(r) **Tin (I) Phosphate**

(s) Cl_7S_3 — 38(s) **Heptachlorine trisulfide**

(t) MnC_2O_4 — 38(t) **Manganese (II) Oxalate**

For each name, write the correct chemical formula.

39. FeF_3
40. $Sb_3(AsO_4)_4$
41. $Zn_3(PO_4)_2$
42. Br_4I_3
43. $V(SO4)_3$
44. $HC_2H_3O_2$
45. LiOH
46. $Pb(NO_3)_2$
47. TiO
48. C_5Cl
49. $Fe2(S_2O_3)$
50. SnO_4
51. Ag_3N
52. $Mn_2(CrO_4)_3$
53. $Cd(SCN)_2$

39. **Iron (III) Fluoride**
40. **Antimony (IV) Arsenat**
41. **Zinc Phosphate**
42. **Tetrabromine Triiodide**
43. **Vandium (VI) Sulfate**
44. **Acetic Acid**
45. **Lithium Hydroxide**
46. **Lead (II) Nitrate**
47. **Titanium (II) Oxide**
48. **Pentacarbon Monochlor**
49. **Iron (I) Thiosulfate**
50. **Tin (IV) Oxide**
51. **Silver Nitride**
52. **Manganese (III) Chrom**
53. **Cadmium Thiocynate**

For each formula, write the correct chemical name.

54. Vanadium (II) Perchlorate — 54. $\mathbf{V(ClO_4)_2}$

55. Carbonic Acid — 55. $\mathbf{H_2CO_3}$

56. Zinc Chloride — 56. $\mathbf{ZnCl_2}$

57. Hexaphosphorus Monofluoride — 57. $\mathbf{P_6F}$

58. Lead (I) Thiosulfate — 58. $\mathbf{Pb_2S_2O_3}$

59. Mercury (III) Nitrate — 59. $\mathbf{Hg(NO_3)_3}$

60. Arsenic (IV) Oxide — 60. $\mathbf{AsO_2}$

61. Barium Hydroxide — 61. $\mathbf{Ba(OH)_2}$

62. Potassium Oxide — 62. $\mathbf{K_2O}$

63. Silicon Nonabromide — 63. $\mathbf{SiBr_9}$

64. Cobalt (I) Arsenate — 64. $\mathbf{Co_3AsO_4}$

65. Chromium (II) Permanganate — 65. $\mathbf{Cr(MnO_4)_2}$

66. Cesium Bromide — 66. $\mathbf{CsBr}$

67. Iron (III) Nitrate — 67. $\mathbf{Fe(NO_3)_3}$

68. Zinc Phosphate — 68. $\mathbf{Zn_3(PO_4)_2}$

For each name, write the correct chemical formula.

69. AuF_3 — 69. **Gold (III) Fluoride**

70. $Hg_3(AsO_4)_4$ — 70. **Mercury (IV) Arsenate**

71. LiCN — 71. **Lithium Cynide**

72. $C_{10}I_2$ — 72. **Decacarbon Diiodide**

73. As_3P_5 — 73. **Arsenic (V) Phosphide**

74. HNO_3 — 74. **Nitric Acid**

75. $Sn(NO_3)_2$ — 75. **Tin (II) Nitrate**

76. $Al_2(SO_4)_3$ — 76. **Aluminium Sulfate**

77. Si_5F — 77. **Pentasilicon Monofluoride**

78. $Fe(S_2O_3)_2$ — 78. **Iron (IV) Thiosulfate**

79. $Sn_2(SO_4)_3$ — 79. **Tin (III) Sulfate**

80. $Co(C_2O_4)_2$ — 80. **Cobalt (IV) Oxalate**

81. Mn_2CrO_4 — 81. **Manganese (I) Chromate**

82. $Ni(SCN)_2$ — 82. **Nickel Thiocynate**

83. Ag_3N — 83. **Silver Nitride**

For each formula, write the correct chemical name.

84. Mercury (II) Thiocynate — 84. **$Hg(SCN)_2$**

85. Hydroiodic Acid — 85. **HI**

86. Scandium Selenide — 86. **Sc_2Se_3**

87. Tetraphosphorus Monofluoride — 87. **P_4F**

88. Antimony (I) Thiosulfate — 88. **$Sb_2S_2O_3$**

89. Mercury (II) Nitride — 89. **Hg_3N_2**

90. Tin (IV) Selenide — 90. **$SnSe_2$**

91. Calcium Nitrite — 91. **$Ca(NO_2)_2$**

92. Sodium Oxide — 92. **Na_2O**

93. Phosphorus Heptabromide — 93. **$P_{10}Br_7$**

94. Tin (I) Arsenate — 94. **Sn_3AsO_4**

95. Mercury (II) Dichromate — 95. **$HgCr_2O_7$**

96. Sodium Bromide — 96. **NaBr**

97. Iron (III) Nitrate — 97. **$Fe(NO_3)_3$**

98. Silver Phosphate — 98. **Ag_3PO_4**