

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) _____ |
| (b) 53,500,000 | 1(b) _____ |
| (c) 190.00 | 1(c) _____ |
| (d) 0.0250 | 1(d) _____ |
| (e) 19.2014×10^{-3} | 1(e) _____ |
| (f) 50,000. | 1(f) _____ |
| (g) 1.905×10^3 | 1(g) _____ |
| (h) 45,000 | 1(h) _____ |
| (i) 1000.040 | 1(i) _____ |
| (j) 10.2 | 1(j) _____ |
| (k) 0.0000107 | 1(k) _____ |
| (l) 50,124,000 | 1(l) _____ |
| (m) 40.0 | 1(m) _____ |
| (n) 0.0001300 | 1(n) _____ |
| (o) 1.014×10^{-3} | 1(o) _____ |
| (p) 355,400. | 1(p) _____ |
| (q) 3.400×10^3 | 1(q) _____ |
| (r) 38,600 | 1(r) _____ |
| (s) 2005.050 | 1(s) _____ |
| (t) 3.50×10^2 | 1(t) _____ |
| (u) 1250. | 1(u) _____ |
| (v) 0.000002208 | 1(v) _____ |
| (w) 30.00 | 1(w) _____ |
| (x) 2.004×10^7 | 1(x) _____ |

CHE 101 - Practice Exam 2

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) _____

(b) 0.003608 (rounded to 3 SF) 2(b) _____

(c) 25,352,000 (rounded to 4 SF) 2(c) _____

(d) 0.00000250 (rounded to 1 SF) 2(d) _____

(e) 5.3625×10^3 (rounded to 2 SF) 2(e) _____

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) _____

(b) 500,000 rounded to 3 SF 3(b) _____

(c) 182.19 (rounded to 2 SF) 3(c) _____

(d) 0.000205 (rounded to 2 SF) 3(d) _____

(e) 0.000 000 850 (rounded to 3 SF) 3(e) _____

(f) 500. 3(f) _____

(g) 698,340,000 3(g) _____

(h) 197.85 (rounded to 3 SF) 3(h) _____

(i) 0.000 483 289 (rounded to 2 SF) 3(i) _____

(j) 0.000 000 000 153 85 (rounded to 2 SF) 3(j) _____

(k) 0.02818 (rounded to 3 SF) 3(k) _____

(l) 3,985,000 (rounded to 2 SF) 3(l) _____

(m) 37,520,000 (rounded to 3 SF) 3(m) _____

(n) 26.5 (rounded to 2 SF) 3(n) _____

CHE 101 - Practice Exam 2

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) _____

(b) 438,000,000 4(b) _____

(c) 63.19 (rounded to 2 SF) 4(c) _____

(d) 235.85 (rounded to 3 SF) 4(d) _____

(e) 0.000 000 173 (rounded to 2 SF) 4(e) _____

(f) 0.000 567 35 (rounded to 2 SF) 4(f) _____

(g) 0.01008 (rounded to 3 SF) 4(g) _____

(h) 6,982,000,000 (rounded to 2 SF) 4(h) _____

(i) 48,620,000 (rounded to 3 SF) 4(i) _____

(j) 4,000. 4(j) _____

CHE 101 - Practice Exam 2

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) _____

(b) $1.256 + 0.32$ 5(b) _____

(c) $\frac{(0.250)(1250.)}{1234}$ 5(c) _____

(d) $(8.537 \times 10^{-22})(2.0 \times 10^{-9})$ 5(d) _____

(e) $12,500 + 2,363.32$ 5(e) _____

(f) $(6200)(7.210)$ 5(f) _____

(g) $27,500 + 150 + 235.8$ 5(g) _____

(h) $\frac{(0.00566)(2.800)}{1,234.0}$ 5(h) _____

(i) $0.0850 + 1.23 + 0.1123$ 5(i) _____

(j) $(6243)(721,000)$ 5(j) _____

(k) $27,500 + 150 + 235.8$ 5(k) _____

(l) $\frac{(0.018)(15.25)}{250.}$ 5(l) _____

(m) $(8.2 \times 10^{-5})(6.35 \times 10^{-7})$ 5(m) _____

(n) $0.025 + 1.520 + 3.80$ 5(n) _____

(o) $(6243)(721,000)$ 5(o) _____

(p) $27,500 + 150 + 235.8$ 5(p) _____

(q) $\frac{(0.018)(15.25)}{250.}$ 5(q) _____

(r) $(8.2 \times 10^{-5})(6.35 \times 10^{-7})$ 5(r) _____

(s) $0.025 + 1.520 + 3.80$ 5(s) _____

CHE 101 - Practice Exam 2

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) _____

(b) 1.58×10^6 drams to tons 6(b) _____

(c) 895 cm² to ft² 6(c) _____

(d) 1.50×10^{-4} rods to nm 6(d) _____

(e) 2.4×10^6 lb to ng 6(e) _____

(f) 150 Tm to am 6(f) _____

(g) 2.80×10^8 pL to kL 6(g) _____

(h) 2.58×10^6 drams/min to kg/day 6(h) _____

(i) 1,200 mg to lbs 6(i) _____

(j) 150 nm to fm 6(j) _____

(k) 1.345×10^8 μ L to PL 6(k) _____

(l) 1.80 ft³ to in³ 6(l) _____

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

CHE 101 - Practice Exam 2

7. If your radiator freezes at $-24.5\text{ }^{\circ}\text{C}$ what is the freezing point in $^{\circ}\text{F}$ Explain. 7. _____

8. If water on Jupiter boils at $-2010\text{ }^{\circ}\text{F}$ what is the boiling point in $^{\circ}\text{C}$ Explain. 8. _____

9. If beer freeze's at $-10\text{ }^{\circ}\text{C}$ what is the freezing point in $^{\circ}\text{F}$. 9. _____

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

Accurate and Precise	Accurate and NOT Precise
NOT Accurate but Precise	NOT Accurate and NOT Precise

CHE 101 - Practice Exam 2

11. Answer the following questions about Accuracy and Precision.

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

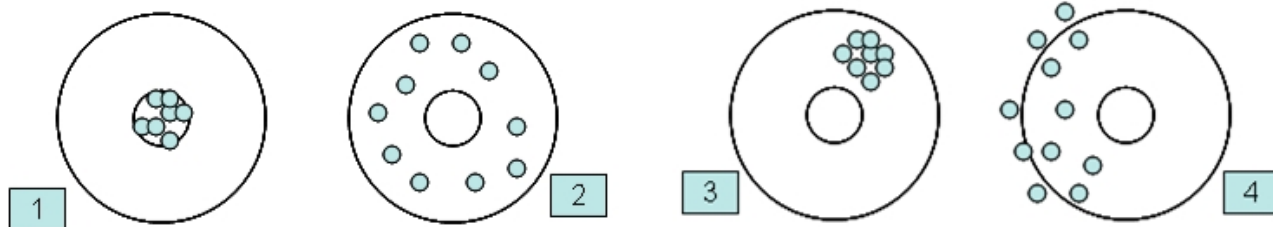
(b) If I measure an object and compare my result to the known value I am determining? 11(b) _____

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

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

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

(f) Which Archer is Accurate and Precise? 11(f) _____



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) _____

(b) What is the volume in gallons? 12(b) _____

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

(a) What is the minimum mass you should weigh out? 13(a) _____

(b) What is the maximum mass you should weigh out? 13(b) _____

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

(a)

(b)

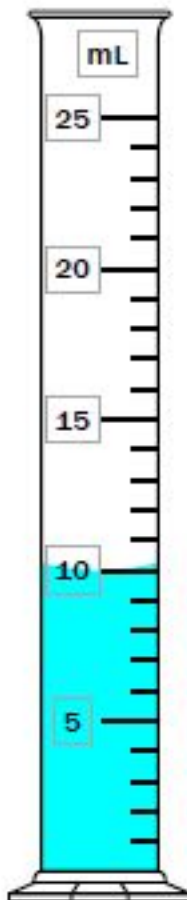
(c)

What value would you write in your lab book?

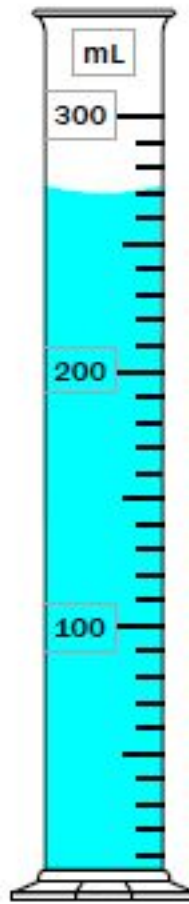
(a)

(b)

(c)



a.



b.

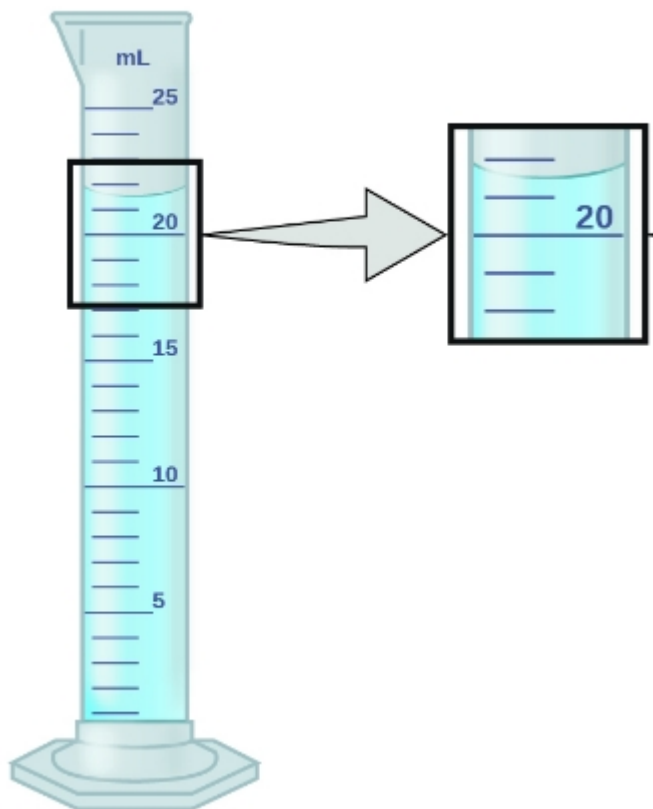


c.

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. _____

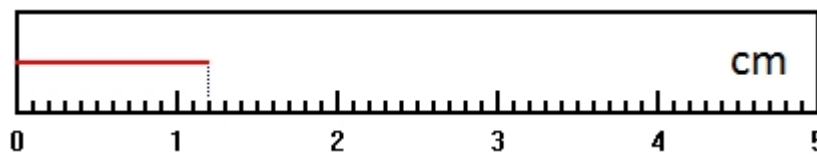
16. Answer the following questions about the graduated cylinder in the figure below.



(a) Uncertainty? 16(a) _____

(b) Volume of water? 16(b) _____

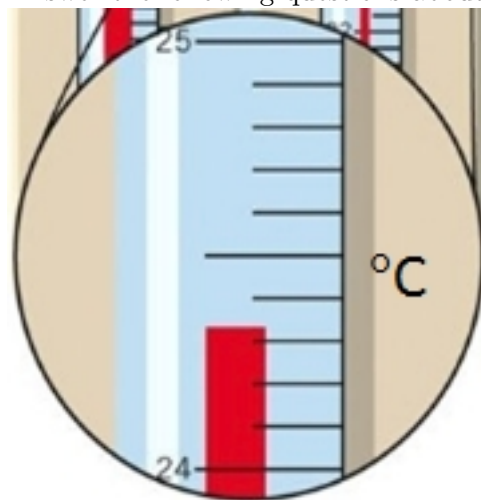
17. Answer the following questions about the ruler in the figure below.



(a) Uncertainty? 17(a) _____

(b) Length of Line? 17(b) _____

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

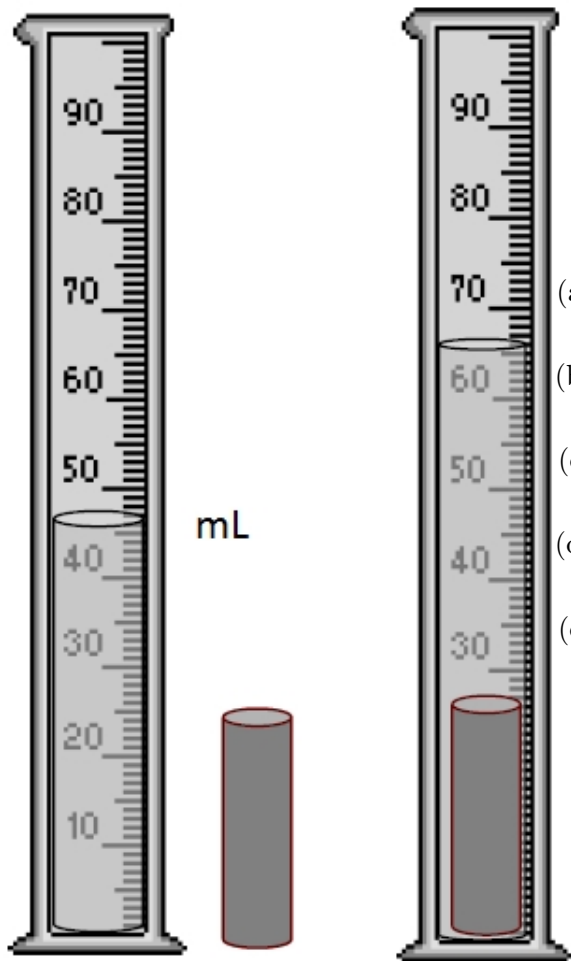


(a) Uncertainty? 18(a) _____

(b) Temperature? 18(b) _____

CHE 101 - Practice Exam 2

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



- (a) Initial volume of water 19(a) _____
mL
- (b) Final volume of water 19(b) _____
- (c) Amount of water displaced 19(c) _____
- (d) Density 19(d) _____
- (e) Identity of the metal 19(e) _____

CHE 101 - Practice Exam 2

20. For each of the symbols in the heat equation ($q = ms\Delta T$) define what the variable represents, and give the standard units for each variable.
21. An unknown mass of Tin metal required 450 KJ of energy to increase in temperature 21. _____ from 45.0 °C to 175.0 °C . What is the mass of the metal in grams?
22. What is the specific heat (in standard units) of a 125.0 gram block of metal that when 22. _____ heated from 115.0 °C to 225.0 °C required 954.0 J of energy.
23. What is the temperature change of 250.0 mL of Ethanol (Ethyl Alcohol) to which 600. 23. _____ J of energy is supplied.
24. How much energy (in Joules) is required to heat 12.00 g of Pb from 25.0 °C to 95.0 °C? 24. _____
25. What is the mass of Au that requires 6000. J of heat to raise in temperature from 125 °C to 450. °C? 25. _____
26. How much energy (in Joules) is required to raise the temperature of 75.0 mL of Sulfuric Acid 25.0 °C ? The specific heat of Sulfuric Acid is 1.250 J/g·°C. 26. _____
27. What is the specific heat (in standard units) of a 15.25 kilogram block of metal that when heated from 100.0 °C to 735.0 °C required 5280.0 mJ of energy. 27. _____
28. How much energy (in Joules) is required to heat 250 g of Cu from 45.0 °C to 85.0 °C? 28. _____
29. How much energy (in Joules) is required to heat 2550 mg of Au from 35. °C to 75. °C? 29. _____
30. What is the specific heat (in standard units) of a 75.0 gram block of metal that when heated from 105.0 °C to 235.0 °C required 1250.0 J of energy. 30. _____
31. What is the temperature change of 150.0 mL of Ethanol (Ethyl Alcohol) to which 600. kJ of energy is supplied. 31. _____

CHE 101 - Practice Exam 2

32. Give the Formula and/or Name for the 10 common acids given in class
33. Sketch or write the formation reaction for a Sulfide ion from a neutral Sulfur atom.
34. Sketch or write the formation reaction for a Aluminum ion from a neutral Aluminum atom.
35. Draw a chemical reaction showing the formation of a Calcium ion from a neutral Calcium atom
36. Draw a chemical reaction showing the formation of a Chlorine ion from a neutral Chlorine atom

CHE 101 - Practice Exam 2

37. Give the formula for the following compounds:

- (a) Sodium Chloride 37(a) _____
- (b) Antimony (II) Chromate 37(b) _____
- (c) Gold (III) Sulfate 37(c) _____
- (d) Iron (VI) Carbonate 37(d) _____
- (e) Barium Thiosulfate 37(e) _____
- (f) Carbon Tetrafluoride 37(f) _____
- (g) Calcium Fluoride 37(g) _____
- (h) Mercury (IV) Oxalate 37(h) _____
- (i) Potassium Thiosulfate 37(i) _____
- (j) Phosphorus Octaoxide 37(j) _____
- (k) Vanadium (I) Phosphate 37(k) _____
- (l) Ammonium Sulfate 37(l) _____
- (m) Titanium (IV) Sulfide 37(m) _____
- (n) Hexacarbon Pentachloride 37(n) _____
- (o) Titanium (VI) Oxide 37(o) _____
- (p) Phosphoric Acid 37(p) _____
- (q) Antimony (I) Carbonate 37(q) _____
- (r) Lithium Permanganate 37(r) _____
- (s) Dibromine Sulfide 37(s) _____

CHE 101 - Practice Exam 2

38. Give the IUPAC name for the following compounds:

- (a) CO 38(a) _____
- (b) $\text{Pb}_2(\text{CrO}_4)_3$ 38(b) _____
- (c) $\text{Zn}_3(\text{PO}_4)_2$ 38(c) _____
- (d) Li_2SO_4 38(d) _____
- (e) P_9Br_3 38(e) _____
- (f) H_2CO_3 38(f) _____
- (g) VCrO_4 38(g) _____
- (h) $\text{Sb}(\text{PO}_4)_2$ 38(h) _____
- (i) $(\text{NH}_4)_2\text{CO}_3$ 38(i) _____
- (j) TiCl_4 38(j) _____
- (k) NH_4Cl 38(k) _____
- (l) ClF 38(l) _____
- (m) CrO_2 38(m) _____
- (n) $\text{Co}_3(\text{PO}_4)_2$ 38(n) _____
- (o) $\text{Ba}(\text{NO}_3)_2$ 38(o) _____
- (p) NaHCO_3 38(p) _____
- (q) $\text{Ba}(\text{OH})_2$ 38(q) _____
- (r) Sn_3PO_4 38(r) _____
- (s) Cl_7S_3 38(s) _____
- (t) MnC_2O_4 38(t) _____

CHE 101 - Practice Exam 2

For each name, write the correct chemical formula.

39. FeF_3 39. _____
40. $\text{Sb}_3(\text{AsO}_4)_4$ 40. _____
41. $\text{Zn}_3(\text{PO}_4)_2$ 41. _____
42. Br_4I_3 42. _____
43. $\text{V}(\text{SO}_4)_3$ 43. _____
44. $\text{HC}_2\text{H}_3\text{O}_2$ 44. _____
45. LiOH 45. _____
46. $\text{Pb}(\text{NO}_3)_2$ 46. _____
47. TiO 47. _____
48. C_5Cl 48. _____
49. $\text{Fe}_2(\text{S}_2\text{O}_3)$ 49. _____
50. SnO_4 50. _____
51. Ag_3N 51. _____
52. $\text{Mn}_2(\text{CrO}_4)_3$ 52. _____
53. $\text{Cd}(\text{SCN})_2$ 53. _____

CHE 101 - Practice Exam 2

For each formula, write the correct chemical name.

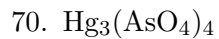
54. Vanadium (II) Perchlorate 54. _____
55. Carbonic Acid 55. _____
56. Zinc Chloride 56. _____
57. Hexaphosphorus Monofluoride 57. _____
58. Lead (I) Thiosulfate 58. _____
59. Mercury (III) Nitrate 59. _____
60. Arsenic (IV) Oxide 60. _____
61. Barium Hydroxide 61. _____
62. Potassium Oxide 62. _____
63. Silicon Nonabromide 63. _____
64. Cobalt (I) Arsenate 64. _____
65. Chromium (II) Permanganate 65. _____
66. Cesium Bromide 66. _____
67. Iron (III) Nitrate 67. _____
68. Zinc Phosphate 68. _____

CHE 101 - Practice Exam 2

For each name, write the correct chemical formula.



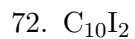
69. _____



70. _____



71. _____



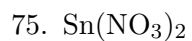
72. _____



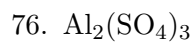
73. _____



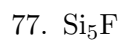
74. _____



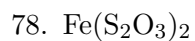
75. _____



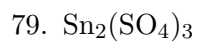
76. _____



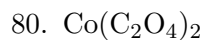
77. _____



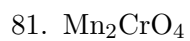
78. _____



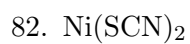
79. _____



80. _____



81. _____



82. _____



83. _____

CHE 101 - Practice Exam 2

For each formula, write the correct chemical name.

84. Mercury (II) Thiocyanate 84. _____

85. Hydroiodic Acid 85. _____

86. Scandium Selenide 86. _____

87. Tetraphosphorus Monofluoride 87. _____

88. Antimony (I) Thiosulfate 88. _____

89. Mercury (II) Nitride 89. _____

90. Tin (IV) Selenide 90. _____

91. Calcium Nitrite 91. _____

92. Sodium Oxide 92. _____

93. Phosphorus Heptabromide 93. _____

94. Tin (I) Arsenate 94. _____

95. Mercury (II) Dichromate 95. _____

96. Sodium Bromide 96. _____

97. Iron (III) Nitrate 97. _____

98. Silver Phosphate 98. _____