To get the most out of this Practice Exam:

- Feel free to use a periodic table, scrap paper, and a non-programmable calculator, but do not use your textbook or lecture notes.
- Set a timer for 50 minutes (the amount of time you'll have for the exam). When the time is up, grade yourself using the **Answer Key** on page 6. It is important to get a sense of the length of time you'll have for the exam. If you are doing well on the questions you complete, but aren't getting to the end of the practice exam, see if you can find areas where you can speed up by practicing.
- Each question is worth 5 pts. If you earn < 73% (less than a "C") you are not yet ready to pass Exam #2.
- Complete the **Practice Exam – Self Reflection** on page 7. It will help you identify your strength/weaknesses and possible resources for getting help.
- Print out one copy of **Practice Exam – Correction Template** on page 8 for each question you get wrong. Use the space on the page to analyze your mistake.
- Get help and/or extra practice with questions you don't understand.

Potentially useful information:

1 in. = 2.54 cm (exactly) 1 mile = 5280 ft 1 mile = 1.609 km	1 L = 1000 cm^3 1 gal = 4 qt 1 gal = 3.785 L	1 kg = 2.205 lb 1 lb = 16 oz 1 ton = 2000 lb 1 lb = 453.6 g
1 cal = 4.184 J 1 Cal = 1000 cal K = °C + 273 °C = (°F – 32)/1.8	density (water) = 1.00 g/mL density (propane) = 0.79 g/mL density (gasoline) = 0.67 g/mL	C_{water} = 4.18 J/g•°C C_{lead} = 0.128 J/g•°C C_{copper} = 0.385 J/g•°C

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1) Which of the following is the formula for hydrosulfuric acid?

A) $HSO_4(aq)$ **B)** HS (aq) **C)** $H_2SO_4(aq)$
D) $HSO_3(aq)$ **E)** $H_2SO_3(aq)$ **F)** H_2S (aq)

2) What is the correct name for $MnCr_2O_7$?

A) manganese(I) dichromate **B)** manganese(II) dichromate
C) magnesium(I) chromate **D)** magnesium(II) dichromate
E) manganese(I) chromate **F)** manganese(II) chromate

3) What is the correct name for Al_2O_3?

A) aluminum(III) oxide **B)** dialuminum trioxide **C)** aluminum oxide
D) aluminum(II) oxide **E)** aluminum(III) peroxide **F)** aluminum peroxide

4) Which of the following is the formula for hypochlorous acid?

A) HCl (aq) **B)** $HClO_4$ (aq) **C)** HCl_2 (aq)
D) $HClO$ (aq) **E)** H_2ClO_2 (aq) **F)** $HClO_2$ (aq)

5) What is the correct formula for nickel(II) oxalate?

A) $Ni(C_2O_2)_2$ **B)** $Ni(C_2O_4)_2$ **C)** NiC_2O_2
D) $Ni_2C_2O_2$ **E)** NiC_2O_4 **F)** $Ni_2C_2O_4$

6) How many significant figures are in the following measurements: 0.001001 and 56.00010

A) 4 and 7 **B)** 7 and 7 **C)** 2 and 3
D) 6 and 6 **E)** 4 and 6 **F)** 7 and 6

7) What is the exponent that goes with the metric prefix giga- (G)?

A) 10^{6} **B)** 10^{-12} **C)** 10^{-9}
D) 10^{-15} **E)** 10^{12} **F)** 10^{9}

8) Report the answer to this calculation with the correct significant figures: $\frac{5005 - 0.9}{325}$

A) 15.3972 **B)** 15.397 **C)** 2×10^{2}
D) 15.4 **E)** 15 **F)** 15.40

9) Report the answer to this calculation with the correct significant figures: 2.13 x 18.0 x 2.6

A) 1.0×10^{2} **B)** 99.7 **C)** 1.0×10^{1}
D) 100 **E)** 99.68 **F)** 99

10) Which choice correctly ranks the following distances from longest to shortest?

10 mm 0.1 m 100 cm

A) 10 mm > 0.1 m > 100 cm
B) 10 mm > 100 cm > 0.1 m
C) 0.1 m > 10 mm > 100 cm
D) 100 cm > 10 mm > 0.1 m
E) 100 cm > 0.1 m > 10 mm
F) 0.1 m > 100 cm > 10 mm

11) A classroom has a volume of 285 m^3. What is its volume in in^3?

A) 4.67×10^{-3} in^3
B) 1.12×10^{8} in^3
C) 4.42×10^{7} in^3
D) 7.24 in^3
E) 1.74×10^{7} in^3
F) 1.12×10^{4} in^3

12) How many Ms are in 55 ns?

A) 5.5×10^{4} Ms
B) 5.5×10^{16} Ms
C) 5.5×10^{9} Ms
D) 5.5×10^{-2} Ms
E) 5.5×10^{-14} Ms
F) 5.5×10^{-11} Ms

13) 55.0 calories of heat are added to a small lead block. If the temperature of the lead increases from 27.0°C to 59.2°C, what must be the mass of the lead block?

A) 5.75×10^3 g **B)** 55.8 g **C)** 13.3 g
D) 948 g **E)** 28.6 g **F)** 0.915 g

14) A German car has a gas mileage rating of 15.8 km/L. What is its rating in miles per gallon?

A) 96.2 mpg **B)** 25.8 mpg **C)** 6.71 mpg
D) 41.0 mpg **E)** 1.69 mpg **F)** 37.2 mpg

15) Driving his hybrid car, Miguel can save as much as 5.0×10^2 gallons of gas each year. How many tons of gas is this?

A) 21 tons **B)** 3.9 tons **C)** 1.4 tons
D) 0.89 tons **E)** 8.0 tons **F)** 18 tons

16) A copper block weighing 37.0 g is warmed to 55.6°C. The warm copper block is then added to 75.0 g of water at 24.0°C. Assuming that no heat is lost, what is the final temperature of the copper and the water?

A) 25.4 °C **B)** 18.4 °C **C)** 32.8 °C
D) 26.0 °C **E)** 29.4 °C **F)** 40.7 °C

17) A backpacker wants to carry enough propane fuel to heat 2.5 x 10^3 g of water from 28.0°C to boiling. If each gram of fuel can generate 29.5 kJ of heat, how many mL of propane fuel should she bring with her?

A) 18 mL **B)** 25 mL **C)** 62 mL
D) 32 mL **E)** 87 mL **F)** 4.9 mL

18) What is the exponent that goes with the metric prefix pico- (p)?

A) 10^{-15} **B)** 10^{-9} **C)** 10^{-12} **D)** 10^{-6} **E)** 10^{9} **F)** 10^{12}

19) Which of the following relationships does not have an infinite number of significant figures?

A) 1 gal = 4 qt **B)** 1 ft = 12 in. **C)** 1 kg = 10^3 g
D) 1 lb = 16 oz **E)** 1 in. = 2.54 cm **F)** 1 L = 1.057 qt

20) How many cm^2 are there in 0.056 ft^2?

A) 52 cm^2 **B)** 0.0025 cm^2 **C)** 3.8 cm^2
D) 12 cm^2 **E)** 6.0 x 10^{-5} cm^2 **C)** 47 cm^2

Answer Key: Each question is worth 5 pts

1) F	2) B	3) C	4) D	5) E
6) A	7) F	8) D	9) A	10) E
11) E	12) E	13) B	14) F	15) C
16) A	17) D	18) C	19) F	20) A

Practice Exam – Self Reflection

A) What grade did you earn on this practice exam?

B) Are you satisfied with your grade on this practice exam? YES _____ NO _____

C) What is your current grade in CHEM 4? (check Canvas)

D) Are you satisfied with your current grade in CHEM 4? YES _____ NO _____

E) Why do you think you made mistakes on this practice exam? *[Check all that apply.]*

- ☐ Did not study enough
- ☐ Difficulty with the mathematics
- ☐ Did not understand the concepts
- ☐ Felt rushed during the exam
- ☐ Family/personal issues
- ☐ Other (explain):
- ☐ Unfamiliar with terminology
- ☐ Difficulty applying the concept to new contexts
- ☐ Careless mistakes
- ☐ Thought I knew the material better than I did
- ☐ Test anxiety/panicked

F) Which of these resources have you been taking advantage of? *[Check all that apply.]*

- ☐ PAL sessions
- ☐ PAL leader office hours
- ☐ Instructor office hours
- ☐ Commit to Study mentoring
- ☐ Review posted clicker questions
- ☐ Study groups
- ☐ Practice exams
- ☐ Optional *MasteringChemistry* homework
- ☐ PARC tutoring
- ☐ Other (explain):

G) Discuss your weakness and strengths in terms of your study skills and how you approached the class up until taking this practice exam <u>and</u> discuss any changes you plan on making moving forward.

a. Strengths:

b. Weaknesses:

c. Changes you plan on making (be as specific as possible):

Practice Exam – Correction Template

(print out 1 copy of this template for each question you got wrong)

1) What question # from the practice exam are you correcting?

2) What concepts are being dealt with in the question? In other words, what type of problem is it?

3) Where in your textbook (what page) and when in your lecture notes (what date) is this type of problem dealt with?

Part I: Working a similar problem to the one you got wrong

4) Write out a similar problem and all the work needed for you to fully understand it. [Continue on back as needed.]

Part II: Correcting the problem you got wrong

5) Write out the question that you got wrong and all the work needed for you to fully understand it. Include clarifying/explanatory comments. [Continue on back as needed.]