Chemistry
Ch 3. Study Guide

Read pp. 51-53 and then answer the following

1. What are the 2 parts when a number is written in scientific notation?
2. What do you do with coefficients and what do you do with exponents when doing the following in scientific notation?
   a) Multiplication
   b) Division
   c) Addition
   d) Subtraction
3. What does a negative exponent indicate in scientific notation?
4. What does a positive exponent indicate in scientific notation?

Know: 1) Do the exponent what you would do to the decimal
2) standard scientific notation contains only one digit which can not be a zero, to the left of the decimal

Answer 1-4 on p 53. Chem ASAP on p 53.
Read p 54-62 and then answer the following

5. Know the difference between accuracy and precision.
   precision means reproducibility.
6. _____ means parts out of 100.
7. What is the equation for percent error (leave out the absolute value sign)?
8. I **do not** use absolute value signs when I do percent error. What would a negative percent error indicate?
   What would a positive percent error indicate?
   What does a zero percent error indicate?

Significant figures (significant digits) is a method of approximating he uncertainty in a **measured** or **calculated** numerical value.

9. How many significant digits should be contained in a measurement or answer to a calculation?
10. Answer the questions on Fig 3.6 on p 56

Know: Sig. Digs. in a measurement are all the digits that are known with certainty plus the first digit that is estimated.
Numerical values resulting from counting are absolute numbers and do not contain significant digits.

11. Cover the answer to problems 1-5 on p. 58 and then try them to test you understanding of sig digs.
12. In general, an answer cannot be more precise than the _____precise measurement

from which is calculated. (A chain is only as
strong as its weakest link).
13. Cover the answers to the problems on p. 59, and then try them to test your understanding.
14. The answer to an addition or subtraction calculation should be rounded to the same number of
_____ _____.
15. Try all of the problems on p. 60 to test your understanding.
16. The answer to multiplication and division is rounded to the same number of _____ _____ as the measurement
with the _____ number of significant figures.
17. Try the problems on p. 61 to test your understanding.

Answer 14-16 on p 62. Chem. ASAP
Read p 63-67 and then answer the following

18. The **International System of Units** (abbreviated ___ ___ is also called the _____system).

19. What does each prefix indicate? M k d c
m μ n
20. Does nanotechnology deal with very large or very small technology?

Know: 1 mL = 1 cm^3 = cc 1 L = 1000 cm^3 = 1 dm^3 1 L H_2O = 1 kg 1 mL H_2O = 1 g

21. What is the relationship between a kilogram and a gram?

Know: a nickel has a mass of about 5 grams.

Answer 17-22 on p 67 Chem. ASAP
Read p. 68-72 and then answer the following

22. What 2 measurements must be made to determine the density of a substance?
23. Study table 3.6 What do all four cubes have in common?
Why do they have different densities if they all have the same mass?
24. Try the problems on p 71 to test your understanding. **Know: density of H_2O = 1.0 g/mL = 1.0 g/cm^3**
25. When water at 4°C is used as the reference substance, how does density compare to specific gravity?
26. Why does specific gravity not have units?
27. A _____ is a device to measure specific gravity

Answer 25-29 on p 72. Chem. ASAP
Read p. 74 and 75 and then answer the following.

28. Heat moves from the object of _____ temperature to the object of _____ temperature until the two objects are the same temperature.
29. Liquids in glass thermometers work on what principal.
30. What is the lowest possible temperature on the Celsius scale? Kelvin scale?
31. Study Fig 3.19. If the temperature of a room increases 8^{o}C, what is the increase in temperature on the Kelvin scale?
32. Try the Sample problems and Practice problems on p 75 to test you understanding.

Answer 33-35 on p 75 Chem. ASAP
Answer the following on p 78-81 36, 37, 39, 42-44, 48, 57, 59, 61, 65-68, 70, 71, 74, 75, 84, 91