

Academic Chemistry – Unit 1 Review

KEY

Chapter 2 – Matter & Change

- Which phase best describes an apple?
 - Heterogeneous mixture
 - Homogeneous compound
 - Heterogeneous substance
 - Homogeneous mixture
- Which of the following is *not* a chemical change?
 - Paper being shredded
 - Steel rusting
 - Charcoal burning
 - A newspaper yellowing in the sun
- Which of these properties could *not* be used to distinguish between table salt and table sugar?
 - Boiling point
 - Melting point
 - Density
 - Color
- Which description correctly identifies each of the following materials:

(A) compound	(B) heterogeneous mixture	(C) element	(D) homogeneous mixture
a. Air D	b. Carbon monoxide A	c. Zinc C	d. Mushroom pizza B
- Name the elements found in each of the following compounds.

a. Ammonia (NH ₃) N - Nitrogen H - Hydrogen	b. Potassium carbonate (K ₂ CO ₃) K - potassium C - carbon O - oxygen
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- Classify the following properties of the element silicon as chemical or physical properties.
 - Blue-gray color **P**
 - Brittle **P**
 - Reacts vigorously with fluorine **C**
 - Doesn't dissolve in water **P**
 - Melts at 1410°C **P**
- Identify the factors that indicate a chemical change has occurred. *Temperature change, odor, gas, color change, solid forms*
- Identify the 3 states of matter and give an example of each.

Solid - pencil liquid - water gas - oxygen

Chapter 3 – Scientific Measurement

- Arrange the following units in order of smallest to largest: cg, kg, mg, g, µg *µg, mg, cg, g, Kg*
- Identify the number of significant figures in the following examples:

a. 7,230,000,000 3	d. 80.1 3
b. 7,230,000,001 10	e. 0.00234 3
c. 23,652,678 8	f. 0.00130 3
- An over-the-counter medicine has 325 mg of its active ingredient per tablet. How many grams does this mass represent?

1g = 10³mg 325mg | 1g / 10³mg = 0.325g
- Convert 436 kg to cg

436 kg | 10³g | 10²cg = 436 000 000 cg
- Perform the following calculations and report the answer to the correct number of significant figures.

a. 11.31 ÷ 5.04 2.24 (<i>2.244047619</i>)	c. 5.50 - 2.1 3.4
b. 2.75 × 3.1 × 5.789 490 (<i>493.51225</i>)	d. 10 + 15.75 26 (<i>25.75</i>)
- Put the following examples into scientific notation or standard notation:

a. 0.000000000532 5.32 × 10⁻¹⁰	c. 4.51 × 10 ⁻³ 0.00451
b. 62,000 6.2 × 10⁴	d. 5.6 × 10 ⁸ 560,000,000
- The density of dry air measured at 25°C is 1.19 × 10⁻³ g/cm³. What is the volume of 50.0 g of air?

Diagram: Triangle with M at top, D at bottom left, V at bottom right.

V = M / D = 50.0 / 1.19 × 10⁻³ = 4.20 × 10⁴ L
- A graduated cylinder contains 44.2 mL of water. A 48.6-g piece of metal is carefully dropped into the cylinder. When the metal is completely covered with water, the water rises to the 51.3-mL mark. What is the density of the metal?

51.3 mL - 44.2 mL = 7.1 mL = V

48.6 g = m

D = M / V = 48.6 g / 7.1 = 6.8 g/mL
- Convert 3.34 nm/min to cm/sec

3.34 nm | 1 cm | 1 min

min | 10⁷nm | 60s = 5.57 × 10⁻⁹ cm/s
- Convert 17°C to Kelvin.

K = °C + 273

K = 17 + 273 = 290