

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) If the radius of a potassium atom is 2.27×10^{-7} mm, what is the radius in μm ? 1) _____
A) 2.27×10^{-4} μm
B) 2.27×10^{-16} μm
C) 2.27×10^5 μm
D) 2.27×10^{-10} μm
E) none of the above
- 2) Which of the following English-metric equivalents is correct? 2) _____
A) 1 qt = 946 mL
B) 1 in. = 454 cm
C) 1 lb = 2.54 g
D) all of the above
E) none of the above
- 3) Calculate a length of copper wire having a diameter of 0.200 cm and a mass of 15.620 g. The density of copper is 8.92 g/cm^3 . The volume of wire equals $\pi d^2 L/4$, and $\pi = 3.14$, d = diameter, and L = length) 3) _____
A) 1.80×10^{-4} cm
B) 55.8 cm
C) 5.50×10^{-2} cm
D) 1.75 cm
E) 4.00×10^{-4} cm
- 4) A hybrid vehicle has a mileage rating of 22 km/L. What is the gas mileage in miles per gallon? 4) _____
(Given: 1 mi = 1.61 km, and 1 gal = 3.78 L)
A) 3.6 mi/gal B) 130 mi/gal C) 52 mi/gal D) 9.4 mi/gal E) 35 mi/gal
- 5) How many significant digits are justified by the unit factor 1 lb/454 g? 5) _____
A) 1
B) 2
C) 3
D) impossible to determine
E) infinite
- 6) The density of water at 3.98°C is 1.00 g/mL. What is the density in g/cm^3 ? 6) _____
A) 16.4 g/cm^3
B) 2.54 g/cm^3
C) 62.4 g/cm^3
D) 3.98 g/cm^3
E) 1.00 g/cm^3

- 7) When 100.0 g of gasoline undergoes combustion, 9560 kJ of energy are released. Express the heat released in kilocalories. (Given: $4.184 \text{ J} = 1 \text{ cal}$) 7) _____
- A) $4.00 \times 10^4 \text{ kcal}$
 - B) $2.28 \times 10^3 \text{ kcal}$
 - C) $2.28 \times 10^6 \text{ kcal}$
 - D) $4.00 \times 10^7 \text{ kcal}$
 - E) $2.28 \times 10^9 \text{ kcal}$
- 8) A block of aluminum has a mass of 39.589 g and measures 5.10 cm by 2.50 cm by 1.15 cm. What is the density of the rectangular aluminum block? 8) _____
- A) 3.11 g/cm^3
 - B) 14.7 g/cm^3
 - C) 22.3 g/cm^3
 - D) 0.370 g/cm^3
 - E) 2.70 g/cm^3
- 9) A sapphire contains 52.7% aluminum, 47.1% oxygen, and traces of titanium. If the sapphire contains 0.155 g of oxygen, what is the mass of the gemstone? 9) _____
- A) 0.294 g B) 0.155 g C) 0.329 g D) 0.0730 g E) 0.775 g
- 10) Stainless steel is an alloy of iron, chromium, nickel, and manganese metals. If a 5.00g sample is 2.00% manganese, what is the mass of manganese in the sample? 10) _____
- A) 0.0500 g B) 0.100 g C) 0.200 g D) 0.0100 g E) 0.00500 g