

# Prep for Basic Chemistry: Competency 3 Practice **Key**

NOTE: Please be careful to use the significant digit rules, round correctly, and include the correct units.

- Which of the following lists arranges units from smallest to largest?  
 A 1 dg, 1 kg, 1 mg, 1 cg, 1 g  
 B 1 cg, 1 dg, 1 mg, 1 g, 1 kg  
 C **1 mg, 1 cg, 1 dg, 1 g, 1 kg**  
 D 1 g, 1 dg, 1 cg, 1 mg, 1 kg
- At 100° F, water boils.  
 A True  
 B **False**
- Fahrenheit scale (F)  
 A sets the freezing point of water at 0°F and the boiling point of water at 100°F  
 B **sets the freezing point of water at 32°F and the boiling point of water at 212°F**
- Density equals mass divided by volume.  
 A **True**  
 B False
- A colorless substance that boils at 100°C and freezes at 32°C would most likely be water.  
 A True  
 B **False**
- “Mass” is  
 A **a measure of the amount of matter in an object.**  
 B the same as weight  
 C the starting substance in a chemical reaction.
- 123 mm = **12.3** cm
- 12030 m = **12.03** km
- 20,000 L = **20** kL
- 33 mg = **3.3** cg
- 80 °F = **30** °C
- 24 °C = **-11** °F
- 0.0 °F = **-20** °C
- 32 °C = **90** °F

\*Continued\*

15. There are five boxes, each a different color- pink, orange, red, blue, and purple. Each box has a different mass and a different volume. Figure out the mass, volume, or density of each object from the following information:

- The orange box has a volume of  $45.0 \text{ cm}^3$  and a density of  $0.756 \text{ g/cm}^3$ . **M= 34.0 g**

- The pink box has a volume of  $48 \text{ cm}^3$  and a density of  $0.50 \text{ g/cm}^3$ . **M= 24 g**

15. The red box has a volume of  $70.0 \text{ cm}^3$  and a mass of 74 g. **D= 1.1 g/cm<sup>3</sup>**

16. The blue box has a density  $2.70 \text{ g/cm}^3$  and a mass of 64.0 g. **V= 23.7 cm<sup>3</sup>**

16. An object has a volume of  $55.9 \text{ cm}^3$  and a density of  $0.751 \text{ g/cm}^3$ .

Its specific gravity= **0.751**

17. An object has a specific gravity of 1.35 and a mass of 11.5 g.

Its density= **1.35 g/cm<sup>3</sup>**

18. An object has a mass of 50.8 g and a volume of  $18.2 \text{ cm}^3$ . Its specific gravity= **2.79**

19. 122 pounds = **55.5** Kg

20. 122 cm = **48.0** inches

21.  $125 \text{ cm}^3$  = **125** mL

22.  $13 \text{ cm}^3$  of water weighs **13** g.

23. 1.2 mL of water weighs **1.2** g.

24. 2.5 L of milk = **2.6** quarts

25. 6.37 km = **3.98** miles

Please use these Customary (English)  $\leftrightarrow$  SI (Metric) measurement conversion factors:

- 1 inch = 2.54 centimeters
- 2.2 pounds = 1 kilogram
- 1 quart = 0.95 liter
- 1 mile = 1.6 kilometers