TEST 1 REVIEW

1. Round the following measurements to 3 significant figures:

    a) 0.0485624 m   _____

    b) 83000000 s   _____

    c) 1842700 g   _____

2. Convert the following units:

    a) 536 mg to kg

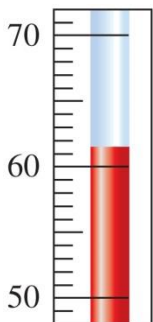   b) 253 mi to cm (1 mi = 1.6093 km)

    c) 120 km/h to miles/min

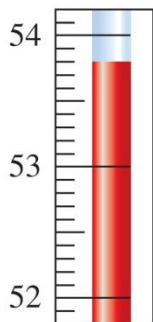3. In each pair below, select the higher temperature.

    a) 10 °C or 40 °F

    b) 300 K or 90 °F

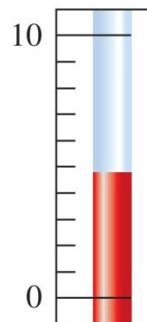4. Read each Celsius thermometer below with the correct number of digits:

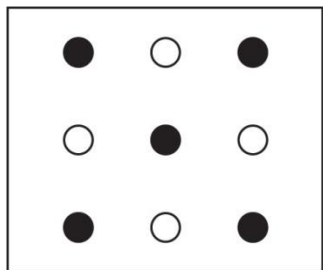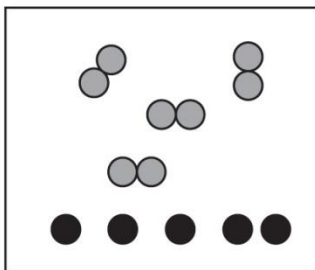A   B   C

_____   _____   _____

5. Which diagram(s) below illustrate heterogeneous mixture?_____

Which diagram below illustrates homogeneous mixture?_____
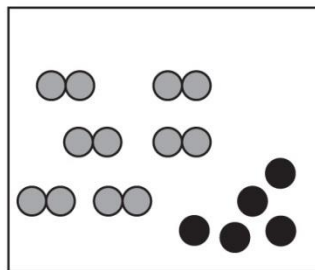

a.   b.   c.

6. An empty graduated cylinder weighs 45.70 g and filled with 40.0 mL of water (d=1.00 g/mL). A piece of lead submerged in the water brings the total volume to 67.4 mL and the mass of the cylinder and the contents to 396.4 g. What is the density of the lead?

7. Shown below are the specific heats of several substances. If equal amounts of each substance are heated at the same temperature,

   a) Which substance will have the highest temperature? Briefly explain.

Substance	Specific heat (J/g°C)
Copper	0.385
Silver	0.235
Titanium	0.523
Iron	0.452

   a) Which substance will have the lowest temperature? Briefly explain.

8. How many kJ of heat are required to raise the temperature of 975 g of aluminum from 0.0°C to 50.0 °C? The specific heat of aluminum is 0.900 J/g°C.

9. 25.0 kJ of heat are added to a 500.0-g bar of iron metal at 25 °C. What is the final temperature of the iron bar? Specific heat of iron is 0.452 J/g°C.

10. What mass (in grams) of a 12.0% sugar water solution is needed to supply 20.0 g of sugar?

11. Suppose your dorm room is 9 ft wide by 12 ft long and 8 ft high and has an air conditioner that exchanges 1000 L air/min. How many minutes would it take for the air conditioner to exchange the air in your room once? (round your answer to 2 sig figs)

12. Your sports car gets 23.4 mi/gal and holds 68.1 L of gasoline.
    a) How far can you drive on a tankful?

    b) If gas costs $0.41/L, how much does the trip cost?

13. What volume (in L) will 300.0 g of mercury occupy? (Density of mercury = 13.6 g/mL)

14. The density of zinc is 455 lb/ft^3. Find the mass (in g) of 9.00 cm^3 of zinc.
    (1 in = 2.54 cm and 1 lb = 453.6 g)

15. An object with a mass of 1.84 kg has a volume of 0.0015 m^3. What is the density of this object in g/cm^3?

ANSWERS:

1) No answers provided.

2a) 5.36×10^{-4} kg

2b) 4.07×10^{7} cm

2c) 1.2 mi/min

3) No answers provided.

4) No answers provided.

5) No answers provided.

6) 11.3 g/cm^3

7) No answers provided.

8) 43.9 kJ

9) 136 °C

10) 167 g

11) 24 min

12a) 421 mi

12b) $28

13) 2.21×10^{-2} L

14) 65.6 g

15) 1.3 g/cm^3