Extra Practice – Conversions & Dimensional Analysis Name KEY

Per _____

Complete the following conversions.

1. 74 cm = 0.74 m
   10^{-2} 10^{0}

2. 0.0832 km = 832 dm
   10^{3} 10^{-1}

3. 5043 mL = 0.005043 kL
   10^{-3} 10^{3}

4. 0.00527 L = 0.00000527 kL
   10^{0} 10^{3}

5. 0.000952 g = 952 µg
   10^{0} 10^{-6}

6. 41.0 mL = 0.00410 daL
   10^{-3} 10^{1}

7. 0.66 g = 660. mg
   10^{0} 10^{-3}

8. 8340000000 cg = 83400000 g
   10^{-2} 10^{0}

9. 5000 hm = 500000 m
   10^{2} 10^{0}

10. 1 second = 1000000000 nanosecond
    10^{0} 10^{-9}

11. 55.5 mL = 55.5 cm^3

12. 0.0000000000071 kg = 7.1 ng
    10^{3} 10^{-9}

K H D b d c m __ µ __ n

Use **dimensional analysis** to complete the following problems.

13. How many hours in 1 year?

$$1\ \text{yr} \times \frac{365\ \text{days}}{1\ \text{yr}} \times \frac{24\ \text{hrs}}{1\ \text{day}} = \boxed{8800\ \text{hrs}}$$

14. How many inches in 1 mile?

$$1\ \text{mile} \times \frac{5280\ \text{ft}}{1\ \text{mile}} \times \frac{12\ \text{in}}{1\ \text{ft}} = \boxed{63{,}360\ \text{in}}$$

15. How many centiliters in 3.6 liters?

$$3.6\ \text{L} \times \frac{100\ \text{cL}}{1\ \text{L}} = \boxed{360\ \text{cL}}$$

16. How many nickels could you trade for 250 yen? (150 yen = $1)

$$250\ \text{yen} \times \frac{\$1}{150\ \text{yen}} \times \frac{20\ \text{nickels}}{\$1} = \boxed{33\ \text{nickels}}$$

17. The booster club sold 600 tickets to a chili supper. The chili recipe (that would feed 10 people) requires two teaspoons of chili powder. How many teaspoons of chili powder will you need altogether?

$$600\ \text{tickets} \times \frac{1\ \text{recipe}}{10\ \text{tickets}} \times \frac{2\ \text{tsp}}{1\ \text{recipe}} = \boxed{120\ \text{tsp}}$$

18. How many teaspoons of flour are in 4.5 cups? (3 tsp = 1 TBS 16 TBS = 1 cup)

$$4.5\ \text{cups} \times \frac{16\ \text{TBS}}{1\ \text{cup}} \times \frac{3\ \text{tsp}}{1\ \text{TBS}} = \boxed{220\ \text{tsp}}$$

20. How many inches long is a football field, including end zones?
(That would be 120 yards, for you non-football fans!)

$$120\ \text{yd} \times \frac{3\ \text{ft}}{1\ \text{yd}} \times \frac{12\ \text{in}}{1\ \text{ft}} = \boxed{4300\ \text{in}}$$

19. What is the mass (in grams) of 83 mL of aluminum?
It is helpful to know that the density of aluminum is 2.7 g/mL. Hmm.

$$D = \frac{m}{V} \qquad 2.7\ \text{g/mL} = \frac{m}{83\ \text{mL}} \qquad m = \boxed{220\ \text{g}}$$

21. Chloroform is a liquid once used for anesthetic. What is the volume (in mL) of 0.0059 kg of chloroform?
The density of chloroform is 1.49 g/mL.

$$D = \frac{m}{V} \qquad 1.49\ \text{g/mL} = \frac{5.9\ \text{g}}{V} \qquad V = \boxed{4.0\ \text{mL}}$$

(5.9 g)

22. How many m^3 is 4.6 cm^3?

$$4.6\ \text{cm}^3 \times \frac{1\ \text{m}}{100\ \text{cm}} \times \frac{1\ \text{m}}{100\ \text{cm}} \times \frac{1\ \text{m}}{100\ \text{cm}} = \boxed{0.0000046\ \text{m}^3}$$

23. How many in^3 in 0.038 yd^3?

$$0.038\ \text{yd}^3 \times \frac{3\ \text{ft}}{1\ \text{yd}} \times \frac{3\ \text{ft}}{1\ \text{yd}} \times \frac{3\ \text{ft}}{1\ \text{yd}} \times \frac{12\ \text{in}}{1\ \text{ft}} \times \frac{12\ \text{in}}{1\ \text{ft}} \times \frac{12\ \text{in}}{1\ \text{ft}} = \boxed{1800\ \text{in}^3}$$