Review Questions for Metric System topic

Review questions will not be collected and are not worth any points. Doing them will, however, help you prepare for the midterms and quizzes in this course. Furthermore, some of these review questions will appear on the final exam (although the numbers within the questions may be changed).

For the metric unit conversion questions, use the unit conversion factor method and clearly show all the appropriate units canceling.
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1) List the four basic units of the metric system. After each one, write its single letter abbreviation.
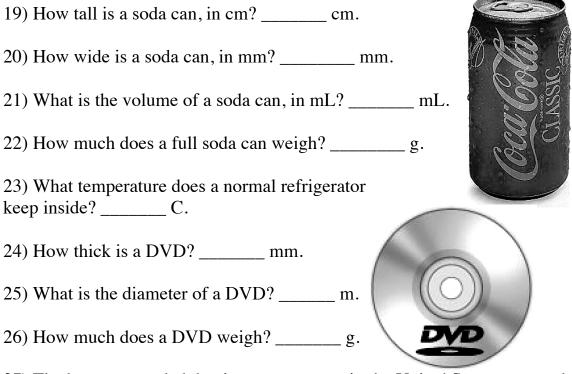
2) List the five metric system derived unit prefixes that were shown in your metric system handout. After each derived unit prefix, write a unit conversion factor that relates it to one of the basic units (your choice of basic unit you use in your unit conversion factor).

For problems 3 – 18, show your work using the unit conversion factor method.
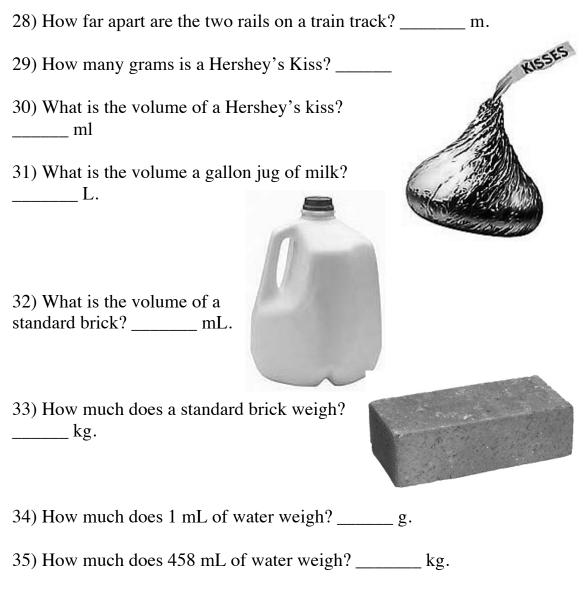
3) 98 m = _____ cm

4) 0.34 mL = _____ L

5) 123,766 uL = _____ L

6) 5.34 dg = _____ g

7) 102 L = _____ kL

8) 66 cg = _____ g

9) 3459 cc = _____ L

10) 6.6 L = _____ dL

11) 19 kg = _____ mg

12) 2.34 kg = _____ ug

13) 450 dL = _____ mL

14) 3458 mL = _____ μL

15) 0.03 cm = _____ mm

16) 0.008 mm = _____ cm

17) 50 μL = _____ mL

18) 0.023 cc = _____ μL

For review problems 19 - 33, you will estimate in metric units the size, mass, volume, or temperature of various items. When you do these questions, make your estimation first. Do not begin by measuring the item or by looking at the label of the item to find its size, mass, etc. The point is to practice estimating, not to practice measuring. Usually, when I ask metric estimation questions on quizzes and exams, I give full credit for answers that are between 2X larger to 2X smaller than the actual answer.

19) How tall is a soda can, in cm? _____ cm.

20) How wide is a soda can, in mm? _____ mm.

21) What is the volume of a soda can, in mL? _____ mL.

22) How much does a full soda can weigh? _____ g.

23) What temperature does a normal refrigerator keep inside? _____ C.

24) How thick is a DVD? _____ mm.

25) What is the diameter of a DVD? _____ m.

26) How much does a DVD weigh? _____ g.

27) The hottest recorded daytime temperature in the United States occurred on July 10, 1913, in Death Valley, California. The temperature was 134 degrees Fahrenheit. Estimate the temperature in degrees Celsius: _____ C.

28) How far apart are the two rails on a train track? _____ m.

29) How many grams is a Hershey's Kiss? _____

30) What is the volume of a Hershey's kiss?
_____ ml

31) What is the volume a gallon jug of milk?
_____ L.

32) What is the volume of a
standard brick? _____ mL.

33) How much does a standard brick weigh?
_____ kg.

34) How much does 1 mL of water weigh? _____ g.

35) How much does 458 mL of water weigh? _____ kg.

36) What is the volume of 124 g of water? _____ mL.

37) What is the volume of 54.3 kg of water? _____ L.

38) What are the units of density? _____

39) A certain piece of glass has a volume of 4.5 mL. It has a mass of 14 grams. What is the density of this piece of glass? Include the digits and the correct units in your answer: _____

40) A certain piece of iron has a volume of 34 mL and a mass of 280 grams. What is the density of this piece of iron? Include the digits and the correct units in your answer: _____

41) Wood from black oak trees has a density of 0.7 g/mL. A certain piece of black oak wood has a volume of 83 mL. What does it weigh? _____ g.

42) Balsa wood had a density of 0.15 g/mL. A certain piece of balsa wood weighs 120 g. What is its volume? _____ mL.

43) A balsa tree weighs 75 kg. What its volume? _____ L.

<u>Answers for Review Questions for Metric System topic</u>
1)   Meter (m)
      liter (L) or (l)
      gram (g)
      degree Celsius (C)

2)   Kilo   (1000 g/1 kg)
      Deci   (10 dm/1 m)
      Centi (100 cm/1 m)
      Milli (1000 mL/L)
      Micro (1,000,000 ug/1 g)

3) 98 m   x   (100 cm/1 m)   = 9800 cm

4) 0.34 mL x   (1 L/1000 mL)   = 0.00034 L

5) 123,766 uL   x   (1 L/1,000,000 uL)   =   0.123766 L

6) 5.34 dg   x   (1 g/10 dg) =   0.534 g

7) 102 L   x   (1 kL/1000 L)   =   0.102 kL

8) 66 cg   x   (1 g/100 cg)   =   0.66 g

9) (The cc is the same as the mL, so 3459 cc = 3459 mL)
      3459 mL   x   (1 L/1000 mL)   =   3.459 L

10) 6.6 L   x   (10 dL/1 L) =   66 dL

11) 19 kg   x   (1000 g/1 kg)   x   (1000 mg/ 1 g)
                                                = 19,000,000 mg

12) 2.34 kg   x   (1000 g/1 kg)   x   (1,000.000 ug/ 1 g)
                                                                                = 2,340,000,000 ug

13) 450 dL   x   (1 L/10 dL)   x   (1000 mL/ 1 L)
                                                              = 45,000 mL

14) 3458 mL   x   (1 L/1000 mL)   x   (1,000,000 uL/1 L)
                                                        = 3,458,000 uL

15) 0.03 cm   x   (1 m/100 cm)   x   (1000 mm/1 m)
                                                       = 0.3 mm

16) 0.008 mm   x   (1 m/1000 mm)   x   (100 cm/1 m)
                                                       = 0.0008 cm

17) 50 uL   x   (1 L/1,000,000 uL)x   (1000 mL/1 L)
                                                       = 0.05 mL

18) (0.023 cc = 0.023 mL)
     0.023 mL   x   (1 L/1000 mL)   x   (1,000,000 uL/1 L)
                                                       = 23 uL

19) 12 cm

20) 64 mm

21) 355 mL

22) 390 g

23) Most refrigerators are between 2 – 10 degrees C.

24) 1.2 mm

25) 0.12 m

26) 16 g

27) 57 degrees C

28) 1.4 m

29) 4.5 g

30) 2 – 3 mL

31) 3.8 L

32) 1017 mL

33) 2 – 3 kg

34) 1 g

35) 0.458 kg

36) 124 mL

37) 54.3 L

38) g/mL (grams per milliliter)

39) 3.1 g/mL

40) 8.2 g/mL

41) 83 mL   x   (0.7 g/mL)   =   58 g

42) 120 g   x   (1 mL/0.15 g)   =   800 mL

43) 75 kg   x   (1000 g/1 kg)   x   (1 mL/0.15 g)
                                                              = 500,000 mL

            and then…

        500,000 mL   x   (1 L/1000 mL)   = 500 L