Sig Digs, Sci notation, rounding, show work

ALL NUMBER ANSWERS MUST BE BOXED IN. INCLUDE ALL UNITS AS

NEEDED! GO VIKINGS!!!

Give the correct number of sig digs for the following:

1) a. 4000   1

    b. 0.000514   3

    c. 0.000000030008   5

    d. 60001   5

    e. 7.10000   6

    f. 9.42×10^3 3

    g. 0.027402   5

    h. 50,000.   5

    i. 0.000823000   6

    j. 80   1

Place the following into scientific notation: (keep same # of sig digs)

2) a. 567,000 5.67×10^5

    b. 0.0000223 2.23×10^{-5}

    c. 0.0300 3.00×10^{-2}

    d. 500 5×10^2

    e. 2001 2.001×10^3

    f. 0.0000520 5.20×10^{-5}

Take the following out of scientific notation: (keep same # of sig digs)

2) a. 5.43×10^3 5,430

    b. 8.76×10^{-5} 0.0000876

TRICKY ✗ c. 9.0×10^6 ~~9,000,000~~ → 9,100,000

    d. 7.12×10^{-3} 0.00712

3) Perform the operation and round to correct # of sig digs.
   a. (2.1 ft) + (15 ft) + (0.634 ft)   17.734   18 ft

   b. (152.00g)/(50.0mL)   3.04 g/mL

   c. (2.00 x 10⁶m) (12m) $2.4 \times 10^7 m^2$

   d. (14.2 x 10⁻⁴) / (3.16 x 10⁻²) 4.49×10^{-2}

4) ROUND to three sig digs.
   a. 3.05555 g   3.06 g
   b. 0.004097 mL   0.00410 mL OR $4.10 \times 10^{-3} mL$
   c. 8.499 miles   8.50 miles
   d. 16.5143 mm   16.5 mm
   e. 223.924 kg   224 kg

5) ROUND to one sig dig.
   a. 150 cm   200 cm or $2 \times 10^2 cm$
   b. 0.0345 g   0.03 g or $3 \times 10^{-2} g$
   c. 249 inches   200 in or $2 \times 10^2 in$
   d. 84 cubits   80 cubits or $8 \times 10^1 cubits$

6) WRITE four rules for determining sig digs. To the **left** of each letter SHOW an example of the rule. ~~Cross out~~ the zeros if they do not count, underline the zeros if they DO count.
   a. Sandwich rule   10̲4
   b. Leading (count)   0.003
   c. Trailing count   3.0̲0̲
   d. Whole (count) w/ decimal   20̲. but 2̶0̶

** REMINDER ~ once you complete the entire packet ~ go back through and check your work. You MUST complete EVERYTHING and turn this in by MONDAY!

7) SHOW your work and find the volume of 125.00g of Iron. (Hint, use your text to find the density of Iron). Follow the steps to show your work!!!

    1) LIST THE GIVEN
    2) SOLVE THE EQUATION FOR THE UNKNOWN (arrow method!)
    3) PLUG AND CHUG
    4) EVALUATE ANSWER, box in the answer and make sure you have UNITS and SIG DIGS!

$M = 125.00 g$
$V = ?$
$D = 7.87 \, g/mL$

$D = \dfrac{M}{V}$

$V = \dfrac{M}{D} = \dfrac{(125.00 \, g)}{(7.87 \, g/mL)} = \boxed{15.9 \, mL}$

8) Make the following conversions. USE KHDodcm method and SHOW YOUR WORK of dragging the decimals. BOX in your answer with UNITS!!:

    a) 322 L → mL $\boxed{322,000 \, mL}$

    b) 0.0064 kg → g $\boxed{6.4 \, g}$

    c) 35 cm → m $\boxed{.35 \, m}$

    d) 3,000 m → km $\boxed{3 \, Km}$

KHD g d c m (L, m)
a)
b)
c)
d)
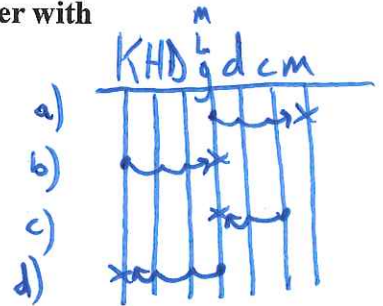
9) USE FACTOR label method to make the following conversions. Follow the UNITS! Show how they cross off. BOX in your answer! Keep the same number of SIG DIGS:

    a. 3 miles → inches

$\dfrac{3 \, mi}{} \cdot \dfrac{5,280 \, ft}{1 \, mi} \cdot \dfrac{12 \, in}{1 \, ft} = 190080 \, in \to \boxed{2 \times 10^5 \, in}$

    b. 14 gallons → L

$\dfrac{14 \, gal}{} \cdot \dfrac{3.79 \, L}{1 \, gal} = \boxed{53 \, L}$

    c. 5,290 feet → km

$\dfrac{5,290 \, ft}{} \cdot \dfrac{1 \, mi}{5,280 \, ft} \cdot \dfrac{1.61 \, Km}{1 \, mi} = \boxed{1.61 \, Km}$

Ex. 364-7161

10) Write the FIRST five numbers of your phone number: __36471__

Now round your phone number to the following number of SIG DIGS:

    a. Four   36471 $\boxed{36470}$
    b. Three   36471 $\boxed{36500}$
    c. Two   36471 $\boxed{36000}$
    d. One   36471 $\boxed{40000}$

11) USING one CONCISE (it means short and to the point or brief) sentence for each, explain the following:

a. The number of SIG DIGS your answer can have if you are adding or subtracting.

fewest towards the right of the decimal

→ Try it: $0.004 + 32 + 6.1 =$ _38.104_ | 38 |

b. The number of SIG DIGS your answer can have if you are multiplying or dividing.

fewest SIG DIGS

→ Try it: $(303)*(12)*(4.00) =$ _14544_ | 15000 | or | 1.5×10^4 |

* Now place that number into scientific notation: _____

12) When converting from Celsius to Kelvin you must add _273.15_ . Kelvin temperature scale is based on _Absolute_ _Zero_ . The Kelvin scale cannot have _Negative_ numbers. Water would boil at ~~373.15~~ degrees Celsius and _373.15_ Kelvin.

$100°C$

13) Write two numbers that are not identical but would be considered precise with:

11.4, _____ , _____

14) If the density of gold is 19.6 g/mL. Write two numbers that are not identical but would be considered accurate:

19.6, _____ , _____

→ Suppose you ask your calculator to divide 12.00 g by 6.00 mL. The calculator will say "2." This answer has only 1 SIG DIG but you are allowed to have 3 SIG DIGS ~ so your calculator can help you but YOU have to realize the answer should be "2.00 g/mL"

→ Now suppose you use your calculator to divide 12.00 g by 5.72 mL. The calculator will say "2.097902098." This answer has TEN SIG SIGS, but you are only allowed to have 3 SIG DIGS ~ so YOU have know that the answer should be "2.10 g/mL"

** AFTER COMPLETING THIS PACKET ~ I rate my understanding on this as a _____/10. One lingering (staying around) question I STILL have is:

Go VIKINGS!!