Math Review 3 Answers

DIRECTIONS

Work in small groups to solve the following problems. Ask questions of one another first, and if you cannot determine the answer as a group, consult with the instructor. Your group may be asked to present a problem to the full class. Show all units and express answers to the correct number of significant digits.

SIGNIFICANT DIGITS

1. 80 cm + 13.0 cm =

   90 cm

2. 3.4×10^{-9} m + 1.27×10^{-7} m =

   1.30×10^{-7} m

3. 750. g + 677.4 g =

   1427 g

4. 1100 cm + 8 cm =

   1100 cm

5. 0.7600 mm^3 / 0.0152 mm =

   50.0 mm^2

6. 3 cm x 6 cm =

   20 cm^2

7. (8.6 g + 7.8 g) / 23.51 cm^3 =

   0.698 g/cm^3

8. 6.000×10^{-3} m x 0.0020 m =

   1.2×10^{-5} m^2

SCIENTIFIC NOTATION

Express the following numbers in scientific notation with the proper number of significant digits:

9. 0.000 002 158

   2.158×10^{-6}

10. 6,024,000

    6.024×10^{6}

11. 500.0

    5.000×10^{2}

12. 0.00120

    1.20×10^{-3}

13. 125.2 x 10^{-2}

    1.252×10^{0}

14. 0.0000552 x 10^{3}

    5.52×10^{-2}

15. 35.882 x 10^{-6}

    3.5882×10^{-5}

Express the following numbers in long form with the proper number of significant digits:

16. 3.56×10^{-3}

    0.00356

17. 6.85×10^{5}

    685,000

18. 9.500×10^{2}

    950.0

19. 3.000×10^{3}

    3000. or $3000\bar{}$

20. 1.20×10^{-2}

    0.0120

21. 5.00×10^{5}

    $500\bar{},000$

DIMENSIONAL ANALYSIS

22. Convert 32.5 oz to cg 9.21×10^{4} cg	25. Convert 9.86×10^{8} dm^2 to km^2 $9.86\ km^2$
23. Convert 3.55 mL to gallons 9.38×10^{-4} gal	26. Convert 65 mi/hr to m/s 29 m/s
24. Convert 8.6 μg to dg 8.6×10^{-5} dg	27. Convert 13.6 g/mL to lb/ft^3 $849\ lb/ft^3$

DENSITY

30. Ethylene glycol, used in antifreeze, has a density of 1.11 g/mL. What is the mass in kg of 1.00 gallons of the compound?

4.20 kg

31. If 5.25 g of silver is added to a graduated cylinder containing 11.2 mL of water, to what level will the water level rise? (You can find the density of silver on the Sargent-Welch Periodic Table.)

11.7 mL

32. Wood floats on water because it is less dense than water. If a cubic piece of metal has sides of 1.25 cm and a mass of 37.7 g, will the metal float on a pool of mercury?

$D = \frac{37.7\ g}{(1.25\ cm)^3} = 19.3\ g/cm^3 \rightarrow$ Will NOT float, b/c it is more dense than Mercury ($13.55\ g/cm^3$)

Numbers 28) & 29) are the same as questions 15) and 17) on the Math Review 1 Worksheet