

Math Review & Problem-Solving 3

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. $80 \text{ cm} + 13.0 \text{ cm} =$	5. $0.7600 \text{ mm}^3 / 0.0152 \text{ mm} =$
2. $3.4 \times 10^{-9} \text{ m} + 1.27 \times 10^{-7} \text{ m} =$	6. $3 \text{ cm} \times 6 \text{ cm} =$
3. $750. \text{ g} + 677.4 \text{ g} =$	7. $(8.6 \text{ g} + 7.8 \text{ g}) / 23.51 \text{ cm}^3 =$
4. $1100 \text{ cm} + 8 \text{ cm} =$	8. $6.000 \times 10^{-3} \text{ m} \times 0.0020 \text{ m} =$

SCIENTIFIC NOTATION

Express the following numbers in scientific notation with the proper number of significant digits:	Express the following numbers in long form with the proper number of significant digits:
9. 0.000 002 158	16. 3.56×10^{-3}
10. 6,024,000	17. 6.85×10^5
11. 500.0	18. 9.500×10^2
12. 0.00120	19. 3.000×10^3
13. 125.2×10^{-2}	20. 1.20×10^{-2}
14. 0.0000552×10^3	21. 5.00×10^5
15. 35.882×10^{-6}	

DIMENSIONAL ANALYSIS

22. Convert 32.5 oz to cg	25. Convert $9.86 \times 10^8 \text{ dm}^2$ to km^2
23. Convert 3.55 mL to gallons	26. Convert 65 mi/hr to m/s
24. Convert 8.6 μg to dg	27. Convert 13.6 g/mL to lb/ft^3

MOLES & DENSITY

28. 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.)

29. 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?

30. Convert 15.22 g $\text{Ba}(\text{NO}_3)_2$ to formula units.

31. What mass is equal to 63.2 mmol (millimole) of benzoic acid, $\text{C}_7\text{H}_6\text{O}_2$?