

Name _____

Date _____

Practice in Determining Which Zeros Are Significant

Directions: Indicate the correct number of significant figures in the following numbers.

- | | | |
|--------------------|--------------------|-----------------------|
| 1. 967 _____ | 21. 2.700 _____ | 41. 0.0076009 _____ |
| 2. 967,000 _____ | 22. 304 _____ | 42. 670,000 _____ |
| 3. 96.7 _____ | 23. 51.0 _____ | 43. 670,004 _____ |
| 4. 9.67 _____ | 24. 9 _____ | 44. 45.908 _____ |
| 5. 0.00967 _____ | 25. 90 _____ | 45. 0.00872 _____ |
| 6. 9.6700 _____ | 26. 900.0 _____ | 46. 54,000 _____ |
| 7. 9.067 _____ | 27. 0.009 _____ | 47. 0.000008 _____ |
| 8. 30.4 _____ | 28. 0.90 _____ | 48. 0.800008 _____ |
| 9. 2,700 _____ | 29. 0.090 _____ | 49. 453.9870 _____ |
| 10. 5.10 _____ | 30. 909 _____ | 50. 500,000,000 _____ |
| 11. 0.023 _____ | 31. 0.00881 _____ | 51. 24,091,800 _____ |
| 12. 7.0200 _____ | 32. 0.4900 _____ | 52. 780 _____ |
| 13. 0.04010 _____ | 33. 0.0224 _____ | 53. 708 _____ |
| 14. 54.000 _____ | 34. 0.006007 _____ | 54. 780.0 _____ |
| 15. 34.802 _____ | 35. 0.00005 _____ | 55. 780.000 _____ |
| 16. 0.000065 _____ | 36. 0.500 _____ | 56. 780.00 _____ |
| 17. 4.530 _____ | 37. 0.050 _____ | 57. 78,000 _____ |
| 18. 222 _____ | 38. 5000 _____ | 58. 500 _____ |
| 19. 70,164 _____ | 39. 0.005670 _____ | 59. 0.005 _____ |
| 20. 3.00 _____ | 40. 0.1110 _____ | 60. 16 _____ |

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Addition and Subtraction of Significant Figures

RULE: When adding and subtracting numbers that come from measurements, arrange the numbers in **columnar form**. Retain no figure in a column that is to the **right** of a column containing a doubtful figure.

Since the last figure retained is always doubtful, the addends can be rounded to the correct column before addition, or the sum may be rounded after addition.

Directions: Use a calculator to perform the following operations.

$$\begin{array}{r} 1. \quad 2.1745 \\ \quad 134.2 \\ \quad 56.17 \\ + 18.193 \\ \hline \end{array}$$

$$\begin{array}{r} 2. \quad 0.02178 \\ \quad 0.341 \\ \quad 0.0005 \\ + 0.00008 \\ \hline \end{array}$$

$$\begin{array}{r} 3. \quad 1.175 \\ \quad 2.5931 \\ \quad 4.1 \\ + 16.82 \\ \hline \end{array}$$

$$\begin{array}{r} 4. \quad 5,621 \\ + 17,379 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 325.1 \\ + 817.9 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 273,147 \\ \quad 1,926,853 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 652.137 \\ - 21.1 \\ \hline \end{array}$$

$$\begin{array}{r} 8. \quad 5.9627 \\ - 0.012 \\ \hline \end{array}$$

$$\begin{array}{r} 9. \quad 0.004513 \\ - 0.00121412 \\ \hline \end{array}$$

$$\begin{array}{r} 10. \quad 50,002 \\ - 10,002 \\ \hline \end{array}$$

$$\begin{array}{r} 11. \quad 269.351 \\ - 69.351 \\ \hline \end{array}$$

$$\begin{array}{r} 12. \quad 0.04216 \\ - 0.0004134 \\ \hline \end{array}$$

$$\begin{array}{r} 13. \quad 125.1 \\ \quad 627.133 \\ \quad 457.2 \\ + 21.0 \\ \hline \end{array}$$

$$\begin{array}{r} 14. \quad 0.00251 \\ \quad 0.12 \\ \quad 0.00563 \\ + 0.0007 \\ \hline \end{array}$$

$$\begin{array}{r} 15. \quad 15.871 \\ \quad 165.3 \\ \quad 14.897 \\ + 2.56 \\ \hline \end{array}$$

$$\begin{array}{r} 16. \quad 25,731 \\ \quad 54,269 \\ \hline \end{array}$$

$$\begin{array}{r} 17. \quad 2.6817 \\ - 0.4607 \\ \hline \end{array}$$

$$\begin{array}{r} 18. \quad 25,173 \\ - 4,163 \\ \hline \end{array}$$

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Multiplication and Division of Significant Figures

RULE: In multiplication and division, the result may have *no more* significant figures than the factor with the fewest number of significant figures.

Directions: Perform all the operations on a calculator and write the answers with the correct number of significant figures.

1.
$$\frac{(3.4617 \times 10^2) (5.61 \times 10^{-4})}{(9.87 \times 10^5) (3.1) (1.171 \times 10^4)} =$$

2.
$$\frac{(3.52164 \times 10^2) (3.1741 \times 10^5)}{(8.22 \times 10^7) (4.65217 \times 10^{-3}) (9.711 \times 10^4)} =$$

3.
$$\frac{(1.8741 \times 10^{11})}{(5.6 \times 10^4) (2.173 \times 10^8)} =$$

4.
$$\frac{(1.745 \times 10^{-2}) (9.51 \times 10^{-7})}{(16.21) (9.346 \times 10^{-10})} =$$

5.
$$\frac{(9.714 \times 10^5) (3.1671 \times 10^9)}{(4.1112) (2.631 \times 10^5) (9.7713 \times 10^{11})} =$$

6.
$$\frac{(561.1) (34,731) (23)}{(112) (24.713)} =$$

7.
$$\frac{(134.75) (25.83)}{(45.111) (85) (124.73)} =$$

8.
$$\frac{(3.4721 \times 10^5)}{(5.6145 \times 10^7) (2.183 \times 10^4) (9.5 \times 10^1)} =$$

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Multiplication and Division of Significant Figures (*continued*)

$$9. \frac{(3.951 \times 10^4) (5.6817 \times 10^5) (2.87 \times 10^4)}{(1.57 \times 10^5) (2.99 \times 10^4)} =$$

$$10. \frac{(95.86) (2.117) (15.3)}{(874.11) (11.312) (77.22)} =$$

$$11. \frac{(9.9413 \times 10^{11})}{(1.317 \times 10^{15}) (7.74411 \times 10^6)} =$$

$$12. \frac{(5.5513 \times 10^{17}) (2.1234 \times 10^{-10})}{(1.1741116 \times 10^8) (6.314217 \times 10^{-2})} =$$