

CHEMISTRY: SIGNIFICANT DIGITS

A. Determine the number of significant digits in the following numbers:

- _____ 1) 5600
 _____ 2) 45.00
 _____ 3) 105.0
 _____ 4) 0.00565
 _____ 5) 0.005400
 _____ 6) 89.543
 _____ 7) 5 0560 300
 _____ 8) 95.0540
 _____ 9) 93 300 000

B. Perform the indicated operations and express your answer to the correct number of significant digits:

- _____ 10) $(6.92)(7.9)$
 _____ 11) $(8.245)(9.00)$
 _____ 12) $(4.46) / (9.00)$
 _____ 13) $(9.825) / (8.20)$
 _____ 14) $(8.95) (9.162) (4.25) (6.3)$

C. Perform the indicated operations and express your answer to the correct number of significant digits:

- _____ 15) $5.50 + 0.528 + 9.2$
 _____ 16) $420 + 8900 + 620$
 _____ 17) $0.00526 - 0.52$
 _____ 18) $820.0 + 19.5 + 6$
 _____ 19) $4\,285.75 + 520.1 + 386.255$
 _____ 20) $(0.526)(895) + 20.8$

D. How many significant digits are represented by each of the following measurements?

- _____ 21) 21.35 cm
 _____ 22) 200 000 L
 _____ 23) 8.750 g
 _____ 24) 0.02 km
 _____ 25) 38.0 °C

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- _____ 26) 121.200 g
 _____ 27) 0.000009 s
 _____ 28) 0.000823 kg
 _____ 29) 38002 cm
 _____ 30) 1.0370×10^{-7} m
 _____ 31) 0.0910 m

E. Add or subtract as indicated and state the answer with the correct number of significant digits.

- _____ 32) $85.26 \text{ cm} + 4.6 \text{ cm}$
 _____ 33) $1.07 \text{ m} + 0.0607 \text{ m}$
 _____ 34) $186.4 \text{ g} - 57.83 \text{ g}$
 _____ 35) $60.08 \text{ s} - 12.2 \text{ s}$
 _____ 36) $72.60 \text{ m} + 0.0950 \text{ m}$

F. Multiply or divide as indicated and state the answer with the correct number of significant digits.

- _____ 37) $(5.5 \text{ m})(4.22 \text{ m})$
 _____ 38) $(0.0167 \text{ km})(8.525 \text{ km})$
 _____ 29) $2.6 \text{ kg} / 9.42 \text{ m}^3$
 _____ 30) $0.632 \text{ m} / 3.8 \text{ s}$
 _____ 31) $0.0045 \text{ mm}^2 / 0.90 \text{ mm}$

G. Fill in the table below as indicated. The first example is done for you.

Number	# of SDs	Round to 3 SDs	Round to 2 SDs
123.45	5	123	120
100.00			
1 446 000			
8 356.90			
0.000 396			
40.318			
1.0000 E 6			
3.9980 E -4			
0.002 300			
300 000 000			

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H. Perform the indicated operations and express your answer to the correct number of significant digits:

_____ 1) $3.414 \text{ s} + 10.02 \text{ s} + 58.325 \text{ s} + 0.00098 \text{ s}$

_____ 2) $1884 \text{ kg} + 0.94 \text{ kg} + 1.0 \text{ kg} + 9.778 \text{ kg}$

_____ 3) $2104.1 \text{ m} - 463.09 \text{ m}$

_____ 4) $2.326 \text{ s} - 0.10408 \text{ s}$

_____ 5) $10.19 \text{ m} \times 0.013 \text{ m}$

_____ 6) $14001 \text{ cm} \times 26.042 \text{ cm} \times 0.0159 \text{ cm}$

_____ 7) $80.23 \text{ m} / 0.4 \text{ s}$

_____ 8) $4.301 \text{ kg} / 1.9 \text{ cm}^3$

_____ 9) $3.68 + 7.3645 + 0.5$

_____ 10) $0.243 + 76.720 + 4.6494$

_____ 11) $14.745 - 1.60$

_____ 12) $0.5642 - 0.260$

_____ 13) 6.02×2.0

_____ 14) 0.65×427

_____ 15) 0.022×0.467

_____ 16) $174 / 17.5$

_____ 17) $420 / 17.5$

_____ 18) $3.0899 \text{ mm} \times 22.4 \text{ mm}$

_____ 19) $3.4500 \text{ cm}^2 / 450 \text{ cm}$

_____ 20) $13.80 \text{ cm} - 6.0741 \text{ cm}$

I. For each item below determine the number of significant digits in the number or answer to the problem: (don't do the calculation)

_____ 21) 804.58

_____ 22) 250.00

_____ 23) 3000

_____ 24) $10.00 \text{ m} \times 84.787 \text{ m}$

_____ 25) 0.00300900870

_____ 26) 400×87.488

_____ 27) 180.0001

_____ 28) 3.0×4.000

_____ 29) 0.00560

_____ 30) $0.7600 / 1.50$