

Ch11 Rounding Off and Significant Digits

Name KEY.

Indicate the significant digits in each measurement.

- | | | | |
|----------------|------------------|-----------------|-----------------|
| 1) 40.00g
4 | 2) 0.045kg
2 | 3) 409mm
3 | 4) 0.0098L
2 |
| 5) 520mm
2 | 6) 3009.0cm
5 | 7) 0.57km
2 | 8) 654g
3 |
| 9) 41.0s
3 | 10) 530L
2 | 11) 8.70km
3 | 12) 4990mm
3 |

Rewrite the following values using significant digits instead of showing the uncertainty separately.

- | | | | |
|--------------------|----------------|-------------------|----------------|
| 13) 48.3 ± 4L | <u>48 mL</u> | 14) 56.48 ± 0.2mm | <u>56.5 mm</u> |
| 15) 3.221 ± 0.04mL | <u>3.22 mL</u> | 16) 2740 ± 300g | <u>2700 g</u> |

After doing an addition or a subtraction, you will have to round off the value showing on your calculator to a certain column to record the significant digits correctly. Round the following "calculator results" to the column indicated.

- | | | | |
|--------------------------|--------------|-------------------------|-------------|
| 17) 46.933 (hundredths) | <u>46.93</u> | 18) 236 (tens) | <u>240</u> |
| 19) 267.6 (ones) | <u>268</u> | 20) 3459 (hundreds) | <u>3500</u> |
| 21) 0.9555 (thousandths) | <u>0.956</u> | 22) 0.0649 (hundredths) | <u>0.06</u> |
| 23) 273.4 (tens) | <u>270</u> | 24) 6666 (hundreds) | <u>6700</u> |

After doing a multiplication or a division, you will have to round off the value showing on your calculator to a certain number of significant digits. Round the following "calculator results" to show 3 significant digits.

- | | | | |
|-------------|----------------|--------------|----------------|
| 25) 2348.7 | <u>2350</u> | 26) 28.57332 | <u>28.6</u> |
| 27) 0.00664 | <u>0.00664</u> | 28) 45555 | <u>45600</u> |
| 29) 20.044 | <u>20.0</u> | 30) 0.00111 | <u>0.00111</u> |
| 31) 567.89 | <u>568</u> | 32) 0.09999 | <u>0.100</u> |
| 33) 3.0011 | <u>3.00</u> | 34) 1234 | <u>1230</u> |
| 35) 875890 | <u>876000</u> | 36) 2.03567 | <u>2.04</u> |

The following calculations were done with a calculator. Round off the answers according to the rules of significant digits. Rewrite the answer in scientific notation only if necessary.

Remember: Adding or subtracting: think "columns".

Multiplying or dividing: think "least number".

37) $4.57 + 2.444 + 6.1 = 13.114$ -----> 13.1

38) $3.67 \div 4.222 = 0.8692563$ -----> 0.869

39) $245 - 1.37 = 243.63$ -----> 244

40) $12.4 + 26.01 + 23 = 61.41$ -----> 61

41) $2.0003 \times 125 = 250.0375$ -----> 250

42) $650 + 2.4 = 652.4$ -----> 650

43) $0.025 \div 4.35 = 0.0057471$ -----> 0.0057

44) $560 + 14 = 574$ -----> 570

45) $1520 \times 0.0493 = 74.936$ -----> 74.9

46) $68.98 - 2.477 = 66.503$ -----> 66.50

47) $40.0 \times 2.00 = 80$ -----> 80.0

48) $0.090 \div 1.003 = 0.0897308$ -----> 0.090

49) $340 + 3.7 = 343.7$ -----> 340

50) $3.662 \times 3.4569 = 12.659168$ -----> 12.66