

Precision & Measurement

EEFL

precision - the level of detail that an instrument can measure.

significant digits - the digits in a measurement that carry meaning contributing to the precision of the measurement.

| <u>Rule</u> | <u>Example</u> | <u>Sig Digits</u> | <u># of Sig Digits</u> |
|--|----------------|-------------------|------------------------|
| all nonzero digits | 281.39 | 281.39 | 5 |
| zeros that are to the <u>right</u> of <u>BOTH</u> the last nonzero digit and the decimal point | 0.0070 | 0.0070 | 2 |
| zeros between significant digits | 500.7 | 500.7 | 4 |

** zeros at the end of a whole # are usually assumed to be nonsignificant.**

EX: 220 has 2 sig digits, while 202 has 3 sig digits

Calculations with Significant Digits

** the # of sig digits that you write in your ^{answer} solution depends on the # of sig digits in the given measurements ^{problem}**

Operations

Add & Subtract
(place value)

Rule

^{add} ^{subtract}

round the sum or difference to the same place as the last sig digit of the least precise measurement

Example

3.24
+ 7.3
10.54 = 10.5

← least precise

Multiply & Divide
(# sig digits)

^{multiply} ^{division}
the product or quotient must have the same number of sig digits as the least precise measurement

40 → 1 sig digit
× 31 → 2 sig digit
1240 = 1000

↑
1 sig digit