significant digits (s.d.)

Significant Digits

1. All non-zero digits are always significant.

   e.g. 1234 → 4 s.d.
   222 → 3 s.d.

2. Zeroes placed before the first non-zero digit are not significant.

   e.g. 0.022 → 2 s.d.
   0.0003 → 1 s.d.

3. Zeroes placed between other significant digits are significant.

   e.g. 1401 → 4 s.d.
   208 → 3 s.d.

4. Zeroes placed after other non-zero digits and following a decimal are significant.

   e.g. 0.220 → 3 s.d.
   0.50 → 2 s.d.

5. Zeroes placed after a non-zero digit but before a decimal may or may not be significant. In this case, scientific notation is used.

   e.g. 1400 should be written as 1.4×10^3 ∴ 2 s.d.

* If in doubt, assume insignificant *

Calculations

Multiplication of Division:
Multiply or divide, then round off to the least number of significant digits.

e.g. $12.2 \times 3.1 = 37.82$

but s.d. limit therefore round to 2 s.d.

3 2

37.82 → 38

Addition or Subtraction: (Precision Rule)
Round off all values to the least number of decimal places and then add or subtract.

e.g. $10.99 - 5.2 = 5.79$

but decimal places limit therefore round to 1 decimal

2 1

5.79 → 5.8