

Significant Figures

(often referred to as “Sig Figs”)

Every non-zero number is significant.

81,282 has **5** sig figs
3,296,934 has **7** sig figs

Zeros between non-zeros are significant (“middle zeros” or “sandwiched zeros”).

201,603 has **6** sig figs
20,503,007 has **8** sig figs

Zeros at the beginning are never significant (“leading zeros”).

0.08 has **1** sig fig
0.000234 has **3** sig figs

Zeros at the end are only significant if the number has a decimal point showing (“trailing zeros”).

0.54900 has **5** sig figs
0.237940 has **6** sig figs
8,315,760. has **7** sig figs because you can see a decimal point
15,840 has only **4** sig figs

Multiplication/Division Rule:

The answer should have the same number of sig figs as the number with the lowest number of sig figs. Use common rounding rules.

$2.5 \times 1.62 = 4.05$ Your answer would be **4.1** (2.5 has only **2** sig figs)
 $3.746 \div 0.0128 = 292.65625$ Your answer would be **293** (0.0128 has only **3** sig figs)

Addition/Subtraction Rule:

Sig figs don’t matter when adding or subtracting. The answer should have the same number of decimal places as the number with the least decimal places (least precise). Use common rounding rules.

$3.4 + 2.51 = 5.91$ Your answer would be **5.9** (3.4 has only **1 decimal place**)
 $5.027 - 4.26 = 0.767$ Your answer would be **0.77** (4.26 has only **2 decimal places**)
 $7401.009 - 3.01 = 7397.999$ Your answer would be **7398.00** (3.01 has only **2 decimal places**)

TIP: Numbers written in scientific notation show only significant figures.

0.002907 would be written as **2.907×10^{-3}** in scientific notation
(negative exponent indicates a number smaller than one) and hence would have only **4** sig figs.
8,305,200 would be written as **8.3052×10^6** in scientific notation
(positive exponent indicates a number larger than one) and hence would have only **5** sig figs.