Rules for Significant Figures

- **Significant Figures are used to indicate the precision of a measured number or to express the precision of a calculation with measured numbers. This is the significance of significant figures!**
- **Significant figures in a measurement include the known digits plus one estimated digit.**

Summary of Rules for Determining if a digit is significant:

Rule	Measured Number	Number of Significant Figures
1. A number is a *significant figure* if it is		
a. not a zero	4.5 g	2
	122.35 m	5
b. one or more zeros between nonzero digits	205 m	3
	5.008 kg	4
c. one or more zeros at the end of a decimal number	50. L	2
	25.0 °C	3
	16.00 g	4
d. in the coefficient of a number written in scientific notation	4.8×10^5 kg	2
	5.70×10^{-3} m	3
2. A zero is *not significant* if it is		
a. at the beginning of a decimal number	0.0004 s	1
	0.075 cm	2
b. used as a placeholder in a large number without a decimal point	850 000 m	2
	1 250 000 g	3

Rules for Significant Figures

When calculating measured numbers, significant figures must be taken into consideration when reporting your answer.

Addition and Subtraction with Measured Numbers

In addition or subtraction, the final answer is written so that it has the same number of decimal places as the measurement having the fewest decimal places.

For example,

2.367	Thousandths place
+ 34.1	Tenths place
36.467	Calculator display
36.5	Answer, rounded off to tenths place

For example,

58.925	Thousandths place
–18.2	Tenths place
40.725	rounds to 40.7

Multiplication and Division with Measured Numbers

In multiplication and division, the final answer is written to have the same number of significant figures (SFs) as the measurement with the fewest SFs.

For example,

24.65 × 0.67	= 16.5155 →	17	
4 SF	2 SF	Calculator	Final answer (2 SF)

When the calculator answer is a small whole number and more significant figures are needed, we can add one or more zeros. For example,

8.00 / 2.00	= 4	→	4.00
3 SF	Calculator		Final answer