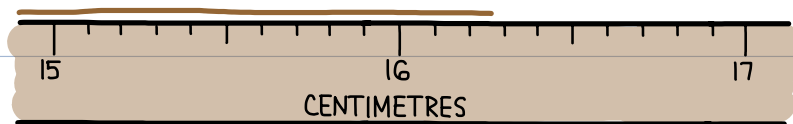


SIGNIFICANT FIGURES

- **SIGNIFICANT FIGURES** ARE THE MEANINGFUL DIGITS IN ANY MEASURED OR COMPUTED VALUE.
- IN A MEASURED VALUE, THE SIGNIFICANT FIGURES INCLUDE ALL CERTAIN DIGITS PLUS ONE UNCERTAIN DIGIT

EXAMPLE



LENGTH OF STICK = 16.28 cm

CERTAIN ESTIMATE

- COUNTING SIGNIFICANT FIGURES:
 1. ALL NON-ZERO DIGITS ARE SIGNIFICANT.

EXAMPLE

4.357 m 4 S.F.

152.63 g 5 S.F.

2. ZEROS AT THE BEGINNING OF A NUMBER ARE NOT SIGNIFICANT.

EXAMPLE

0.00215 km 3 S.F.

0.006 L 1 S.F.

3. TRAILING ZEROS IN A NUMBER WITHOUT A DECIMAL POINT ARE NOT SIGNIFICANT.

EXAMPLE

1200 kg 2 S.F.

345000 mL 3 S.F.

4. TRAILING ZEROS IN A NUMBER WITH A DECIMAL POINT ARE SIGNIFICANT.

EXAMPLE

78.200 s 5 S.F.

20.0 $\frac{m}{s}$ 3 S.F.

5. ALL ZEROS BETWEEN SIGNIFICANT FIGURES ARE SIGNIFICANT.

EXAMPLE

5050 nm 3 S.F.

9090.9 L 5 S.F.

6. IN SCIENTIFIC NOTATION, ALL DIGITS ARE SIGNIFICANT.

EXAMPLE

$$2.304 \times 10^{-2} \text{ s} \quad 4 \text{ S.F.}$$

$$1.00 \times 10^7 \text{ kg} \quad 3 \text{ S.F.}$$

EXAMPLE

IDENTIFY THE NUMBER OF SIGNIFICANT FIGURES.

1. 7002 L

2. $8.2704 \frac{\text{m}}{\text{s}}$

3. 98700 mg

4. 0.00730 g

5. 321.0123 km

6. 0.03210 mL

7. 730.01 m

8. 77800.0 s

9. $9.870 \times 10^{-3} \frac{\text{km}}{\text{h}}$

10. 7 000 000 000 ms

- MULTIPLYING AND DIVIDING:
- ROUND OFF TO FEWEST NUMBER OF SIGNIFICANT FIGURES IN DATA USED.

EXAMPLE

$$\begin{array}{r}
 4057 \text{ m} \leftarrow 4 \text{ S.F.} \\
 \times 650 \text{ m} \leftarrow 2 \text{ S.F.} \\
 \hline
 2637050 \text{ m}^2
 \end{array}$$

① IDENTIFY THE NUMBER OF SIGNIFICANT FIGURES OF EACH VALUE USED.

$$\begin{array}{r}
 4057 \text{ m} \leftarrow 4 \text{ S.F.} \\
 \times 650 \text{ m} \leftarrow 2 \text{ S.F.} \\
 \hline
 2637050 \text{ m}^2 \\
 \downarrow \\
 \boxed{2600000 \text{ m}^2}
 \end{array}$$

② ROUND YOUR ANSWER TO THE FEWEST NUMBER OF SIGNIFICANT FIGURES IN DATA USED (FROM PART 1).

· ADDING AND SUBTRACTING :

- YOUR ANSWER CAN BE NO MORE PRECISE THAN THE LEAST PRECISE VALUE USED. (PRECISION IS THE FINENESS OF A MEASUREMENT, I.E. THE NUMBER OF DECIMAL PLACES / SMALLEST SIGNIFICANT PLACE VALUE.)

EXAMPLE

$$\begin{array}{r} 10.23 \text{ mL} \\ + 3.2 \text{ mL} \\ \hline 13.43 \text{ mL} \end{array}$$

- ① IDENTIFY THE SMALLEST SIGNIFICANT PLACE VALUE OF EACH VALUE USED.

LARGEST/LEFTMOST

TENTHS HUNDRETHS

$$\begin{array}{r} 10.23 \text{ mL} \\ + 3.2 \text{ mL} \\ \hline 13.43 \text{ mL} \end{array}$$

- ② IDENTIFY THE LARGEST OF THOSE PLACE VALUES (LEFTMOST).

$$\begin{array}{r} 10.23 \text{ mL} \\ + 3.2 \text{ mL} \\ \hline 13.43 \text{ mL} \\ \downarrow \\ \boxed{13.4 \text{ mL}} \end{array}$$

- ③ ROUND YOUR ANSWER TO THE SAME PLACE VALUE IDENTIFIED IN PART 2.

EXAMPLE

$$\begin{array}{r} 70.4 \text{ s} \\ + 31.56 \text{ s} \\ \hline 101.96 \text{ s} \\ \downarrow \\ \boxed{102.0 \text{ s}} \end{array}$$

$$\begin{array}{r} 260 \text{ L} \\ - 32.5 \text{ L} \\ \hline 227.5 \text{ L} \\ \downarrow \\ \boxed{230 \text{ L}} \end{array}$$

$$\begin{array}{r} 2.0 \text{ m} \times 1.234 \text{ s} = 2.468 \text{ m} \\ \text{2 S.F.} \quad \text{4 S.F.} \\ \downarrow \\ \boxed{2.5 \text{ m}} \end{array}$$

$$\begin{array}{r} 3 \text{ S.F.} \\ 6.50 \text{ m}^2 \\ \text{2 S.F.} \quad \hline 0.15 \text{ m} \\ \downarrow \\ \boxed{43 \text{ m}} \end{array}$$