

## Calculations with Significant Digits

### Adding + Subtracting

$$\begin{array}{r}
 3.125 \text{ m} \\
 102.5 \text{ m} \\
 + 27.81 \text{ m} \\
 \hline
 133.435 \text{ m}
 \end{array}$$

↑ you can only have 1 uncertain digit

$$133.4 \text{ m}$$

When adding and subtracting, round the final answer to the least precise place value.

### Multiplying and Dividing

$$\begin{array}{r}
 123.4 \text{ m} \\
 \times 1.3 \text{ m} \\
 \hline
 3702 \\
 1234 \\
 \hline
 160.42 \text{ m}^2
 \end{array}$$

(4sd)

(2sd)

↑ round to this place value (1 uncertain digit)

$$1.6 \times 10^2 \text{ m}^2$$

(2sd)

When multiplying + dividing, use the least number of significant digits in the final answer.

Basic Skill

$$21. \quad \frac{2.674 \text{ m}}{2.0 \text{ m}} = 1.337$$

$\leftarrow 4 \text{sd}$  (above 2.674)       $\leftarrow 2 \text{sd}$  (above 1.337)  
 $\uparrow$  (above 2.0)       $\Rightarrow 1.3$

$$22. \quad 5.25 \text{ L} \times 1.3 \text{ L} = 6.825 \text{ L}^2$$

$\underbrace{5.25}_{3 \text{sd}} \times \underbrace{1.3}_{2 \text{sd}} = 6.825 \text{ L}^2$   
 $\leftarrow 2 \text{sd}$  (above 6.825)  
 $\Rightarrow 6.8 \text{ L}^2$

What if your answer was  $6.825 \text{ L}^2$   
and you want 3 sd?

$$\begin{array}{l} \cancel{6.83} \\ 6.82 \end{array} \leftarrow \begin{array}{l} \text{round to} \\ \text{the even \#} \end{array}$$

$$6.835 \Rightarrow 6.84$$

$\uparrow$

$$23. \quad 9.0 \text{ cm} + 7.66 \text{ cm} + 5.44 \text{ cm} = 22.10 \text{ cm}$$

$= 22.1 \text{ cm}$

$$24. \quad 10.07 \text{ g} - 3.1 \text{ g} = 6.97 \text{ g}$$

$\Rightarrow 7.0 \text{ g}$