Significant Digits

52.5729 cm ← doesn't make sense in Bounce that Ball when using 0.5 cm divisions (least count)

52.6 cm → 3sd

52.7 cm → 3sd

Certain ↑ uncertain digit

When counting significant digits, you count all the certain digits and the ONE uncertain digit.

52 cm → 2sd

53 cm → 2sd

17. 2.9910 m → 5sd

Certain Uncertain

zeroes after a non-zero digit after the decimal count as sig digits.

19. 0.006 70 kg → 3sd

leading zeroes Certain Uncertain

leading zeroes never count as sig digits.

20. 809 g → 3 sd

certain

zeroes between non-zero digits count as sig. digits.

18. 5600 km → 2sd (but it could have 3 or 4)

* trailing zeroes that are not after the decimal are not significant

* depends on the precision of the measuring instrument

A better way:

5.6×10^3 km → 2sd

5.60×10^3 km → 3sd

Addition & Subtraction

$$\begin{array}{rr} 421 & g \\ 15.28 & g \\ + \quad 3.1 & g \\ \hline 439.38 & g \end{array}$$

↑ we can have only ONE uncertain digit so we need to round to that place value

$\boxed{439.1\ g}$

Round final answer to the least precise place value.

Multiplication + Division

$$\begin{array}{rr} 124.1 & cm \quad (4sd) \\ \times \quad 2.3 & cm \quad (2sd) \\ \hline 3723 & \\ 2482 & \\ \hline 285.43 & cm^2 \end{array}$$

↑ round -> can only have ONE uncertain digit.

$\boxed{2.9 \times 10^2\ cm^2}$

2sd

Round the final answer to the least number of significant digits

Summary

+/- => least precise place value

x/÷ => least # of sig digs.

21. $\frac{2.674\ m}{2.0\ m}$ (4 sd / 2 sd) $= 1.337$

$\doteq 1.3$

22. $5.25\ L \times 1.3\ L = 6.825\ L^2$ (3 sd, 2 sd, 2 sd)

$\doteq 6.8\ L^2$

$6.825\ L^2 \doteq 6.82\ L^2$ (round to even #)

?

$6.835\ L^2 \doteq 6.84\ L^2$

23. $22.1\ cm$

24. $7.0\ g$