Rounding R

2.46192 (to 12dp) - Is this closer to 246 or 247

246 247

2.46 | 192

This shows the number is closer to 246

Significant Figures

370 to 1 significant figure is 400
37 to 1 significant figure is 40
3.7 to 1 significant figure is 4
0.37 to 1 significant figure is 0.4
0.00000037 to 1 significant figure is 0.0000004

SF: Round to the first nonzero number

Estimation R

Round to 1 significant figure to estimate

$21.4 \times 3.1 \approx 20 \times 3 \approx 60$

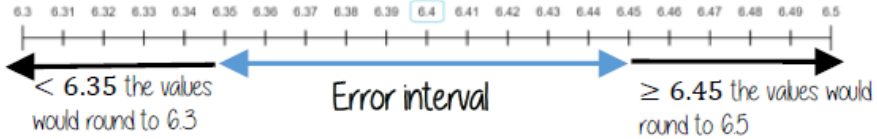
The equal sign changes to show it is an estimation

This is an **underestimate** because both values were rounded down

It is good to check all calculations with an estimate in all aspects of maths – it helps you identify calculation errors.

Limits of accuracy

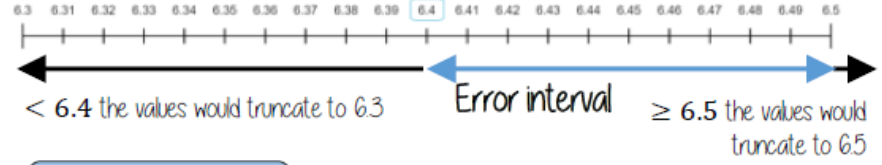
A width w has been rounded to 6.4cm correct to 1dp.



The error interval $6.35 \leq w < 6.45$

Any value within these limits would round to 6.4 to 1dp

A width w has been truncated to 6.4cm correct to 1dp.



$6.4 \leq w < 6.5$

Any value within these limits would truncate to 6.4 to 1dp

Bounds calculations

Calculation	Lower bound	Upper bound
a + b	LB + LB	UB + UB
a - b	LB - UB	UB - LB
ab	LB x LB	UB x UB
$\frac{a}{b}$	$\frac{LB}{UB}$	$\frac{UB}{LB}$

10 and 7 have been rounded to the nearest whole number.

Calculate the upper and lower bounds for 10 x 7.

$10 < \begin{matrix} 10.5 \\ 9.5 \end{matrix}$ $7 < \begin{matrix} 7.5 \\ 6.5 \end{matrix}$

$UB = UB \times UB$
$= 10.5 \times 7.5 = 78.75$

$LB = LB \times LB$
$= 9.5 \times 6.5 = 61.75$

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