Rounding numbers

Rules for rounding

Rounding means making a number simpler but keeping its value close to what it was.

Rules for rounding

- Decide which is the last digit to keep.
- Leave it the same if the next digit is less than 5 (this is called rounding down).
- But increase it by 1 if the next digit is 5 or more (this is called rounding up).

Rounding numbers

Rules for rounding

Rounding Whole Numbers

Round to ones, tens, hundreds, thousands, etc.
In this case, we replace the removed digits with zero.

For example:

Round 76053.52 to the nearest ones.	76053.52 (one)	≈ 76054	Rounded to the nearest 1 or the Ones Place.
Round 76053.52 to the nearest tens.	76053.52 (ten)	≈ 76050	Rounded to the nearest 10 or the Tens Place.
Round 76053.52 to the nearest hundreds.	76053.52 (hundred)	≈ 76100	Rounded to the nearest 100 or the Hundreds Place.
Round 76053.52 to the nearest thousands.	76053.52 (thousand)	≈ 76000	Rounded to the nearest 1,000 or the Thousands Place.
Round 76053.52 to the nearest ten thousands.	76053.52 (ten thousand)	≈ 80000	Rounded to the nearest 10,000 or the Ten Thousands Place.

Rounding numbers

Rules for rounding

Rounding Whole Numbers

Rounding Decimals (d.p.)

- **Rounding to the nearest one decimal place**

  Rounding to tenths means to leave one number after the decimal point.

- **Rounding to the nearest two decimal places**

  Rounding to hundredths means to leave two numbers after the decimal point, etc.

For example:

write 302.1705 to 1 d.p.	302.1705	≈302.2	Rounded to the nearest 0.1 or the Tenths Place.
write 302.1705 to 2 d.p.	302.1705	≈302.17	Rounded to the nearest 0.01 or the Hundredths Place.
write 3.9996 to 3 d.p.	3.9996	≈4.000	Rounded to the nearest 0.001 or the Thousandths Place..

Rounding numbers

Rules for rounding

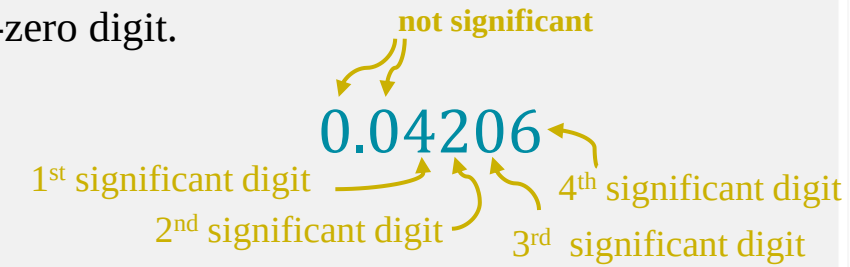
Rounding Whole Numbers

Rounding Decimals (d.p.)

Rounding to Significant Digits (s.f.)

To round to "so many" significant digits, count digits from left to right, and then round off from there.

The first significant figure of a decimal number is the first (left-most) non-zero digit.



For example:

write 30.5705 to 3 s.f.	30.5705	≈ 30.6
write 0.004056 to 3 s.f.	0.004056	≈ 0.00406
write 0.954 to 1 s.f.	0.954	≈ 1.0
write 4365 to 2 s.f.	4365	≈ 4400

Estimating an answer

You can estimate answers by rounding to the nearest whole number or to the number of significant figures or decimal places.

ONE FIGURE APPROXIMATIONS

A fast way of estimating a calculation is to perform a one figure approximation. We round each number in the calculation to one significant figure, then perform the calculation with these approximations.

For example:

Estimate the value of $\frac{69.24\times231}{2.125\times18.372}$.

$$\frac{69.24 \times 231}{2.125 \times 18.372} = \frac{70 \times 200}{2 \times 20} \sim 350$$

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