

# Rounding Numbers

The method for significant figures is **identical** to that for decimal places except that locating the **last digit** is more difficult — it wouldn't be so bad, but for the **zeros...**

## Significant Figures (s.f.)



1) The **1st significant figure** of any number is simply the **first digit which isn't a zero**.

2) The **2nd, 3rd, 4th, etc. significant figures** follow on immediately after the 1st, **regardless of being zeros or not zeros**.

0.002309                      2.03070

SIG. FIGS:    1st 2nd 3rd 4th                      1st 2nd 3rd 4th

(If we're rounding to say, 3 s.f., then the LAST DIGIT is simply the 3rd sig. fig.)

3) After **rounding the last digit, end zeros** must be filled in up to, **but not beyond**, the decimal point.

No **extra zeros** must ever be put in **after** the decimal point.



### EXAMPLES:

	to 3 s.f.	to 2 s.f.	to 1 s.f.
1) 54.7651	54.8	55	50
2) 17.0067	17.0	17	20
3) 0.0045902	0.00459	0.0046	0.005
4) 30895.4	30900	31000	30000

## Estimating



This is **very easy**, so long as you don't **over-complicate it**.

- 1) **Round everything off to nice, easy, convenient numbers.**
- 2) Then **work out the answer** using these nice easy numbers — that's it!

### EXAMPLE:

Estimate the value of  $\frac{127.8 + 41.9}{56.5 \times 3.2}$ , showing all your working.

- 1) Round all the numbers to **easier ones**  
— **1 or 2 s.f.** usually does the trick.
- 2) You can **round again** to make later steps easier if you need to.

$$\frac{127.8 + 41.9}{56.5 \times 3.2} \approx \frac{130 + 40}{60 \times 3}$$

$$= \frac{170}{180} \approx 1$$

In the exam you'll need to **show all the steps**, to prove you didn't just use a calculator.

## Julius Caesar, Henry VIII, Einstein — all significant figures...

If a question says 'give your answer to an appropriate degree of accuracy', work out how many significant figures the numbers in the question are rounded to, and use the same number of s.f. in your answer.

Now, learn the whole of this page, turn over and write down everything you've learned. And for pudding...

Q1 Round these to 3 s.f. :    a) 567.78    b) 23445    c) 0.04563    d) 0.90876    [4 marks]



Q2 Estimate the value of  $\frac{4.23 \times 11.8}{7.7}$

[2 marks]

