Estimating numbers using rounding

We can use rounding numbers to get a rough idea or an **estimate**. An estimate might be a little **more** or a little **less** than the actual amount.

By carrying out an estimate we can **check** that the answers to problems are sensible. If you were buying 9 identical shirts for the school's sports team that cost **£7.80** each, to get a rough idea of the total cost you could **round up £7.80** to **£8.00**. You could also round up **9** shirts to **10** shirts.

Your calculation would then be:
10 × £8.00 = £80.00

The **actual** cost would be **9 × £7.80 = £70.20**

Notice that the actual cost of **£70.20** is a little less than our **£80.00** estimate. This is because we rounded **up**.

When using a calculator it's a good idea to **estimate** the answer first in case you make keying errors. Estimation is also really useful with multiple-choice test questions. It helps you decide which option is the correct answer, before checking by carrying out calculations.

Examples
You can use rounding when you're buying things in a shop:

1. You've bought 11 pens at **95p** each. To check how much you should be charged, you could round down **11** to **10** pens and round up **95p** to **£1.00.**
2. The estimated cost would then be **10 × £1.00 = £10.00**.
3. The cashier charges you **£10.45**, the correct amount, which is close to the estimate.

You can also use rounding to check your change:

1. You buy some slippers that cost **£12.75** and give the cashier a **£20 note**.
2. You round **£12.75 up** to **£13.00** and estimate that your change should be a **little more** than £7 (£20 – £13 = £7).
3. The cashier gives you **£7.25** change, the correct amount, which is close to the estimate.