

## Estimation

Pupils can become confused with the meanings of *round*, *approximate* and *estimate*.

- Rounding:** A number can be *rounded* to make it easier to handle.  
So, 392 rounded to the nearest ten is 390 and rounded to the nearest hundred is 400.  
When a number is at a halfway point, it can be *rounded up*.  
So, 375 rounded to the nearest ten is 380, whereas 350 rounded to the nearest hundred is 400.
- Approximate:** Rounding a number is one way of giving it an *approximate* value.  
So, 400 is an approximate value of 390, 392 and 375.
- Estimate:** You can *estimate* a length, a weight, a capacity or something that you could measure but decide not to measure exactly. The height of the classroom door could be *estimated* as 2 metres.  
You can also *estimate* the answer to a calculation without working it out exactly. To find an estimate, work with approximate values of the numbers which are easier to handle. Compare the estimate with the calculated answer to see if the answer is about the right size. If the answer is very different, check to see if there is a mistake.

### Step 1: Two-digit addition

- To estimate  $56 + 33$ , round the two numbers to the nearest ten.
- Think of  $60 + 30$ . The estimate is 90.
- The exact answer should be somewhere near 90. If it is not, check your working.

There can be different estimates for the same addition. You could also think of  $50 + 30$ . The estimate would then be 80.

### Steps 2 to 5: Three-digit addition

The example in Step 2 is  $526 + 143$ . To find an estimate, you can do either of the following.

- Round to the nearest ten and think of  $530 + 140$  to get an estimate of 670.
- Round to the nearest hundred and think of  $500 + 100$  to get an estimate of 600.

The exact answer is 669. The estimate of 670 is closer, but it needed more mental effort to work out.

### Step 6: Three-digit addition of three numbers

The example in Step 6 is  $629 + 619 + 233$ .

- Round to the nearest hundred and think of  $600 + 600 + 200$ . (Or  $6 + 6 + 2 = 12 + 2 = 14$ )
- An estimate of the answer is 1400.

### Steps 7 to 11: Four-digit addition

The example in Step 7 is  $4724 + 1535$ . To find an estimate, you can do either of the following.

- Round to the nearest thousand and think of  $5000 + 1000$  to get an estimate of 6000.
- Use the approximate values  $4700 + 1500$  and think of  $47 + 15$  to get an estimate of 6200.