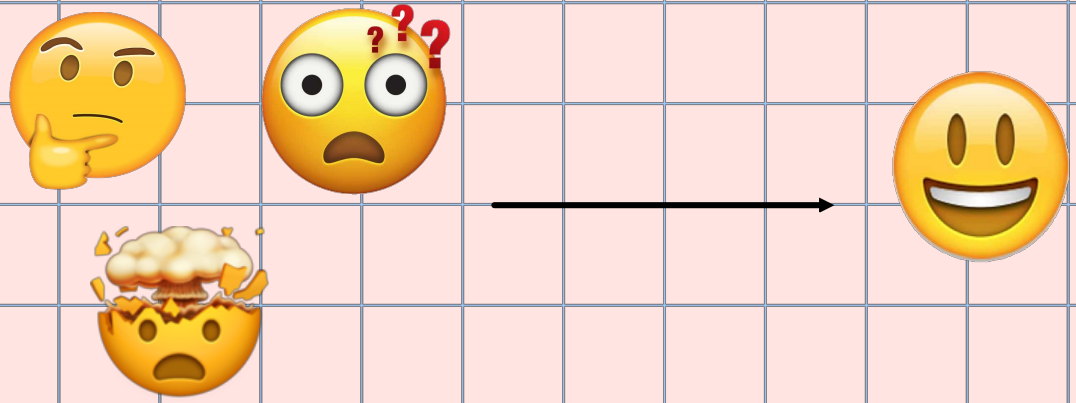
Long Division



Short division or long division?

Short division is used when dividing numbers by a 1 digit number

e.g. 9 5 ÷ 5

1 3 2 ÷ 4

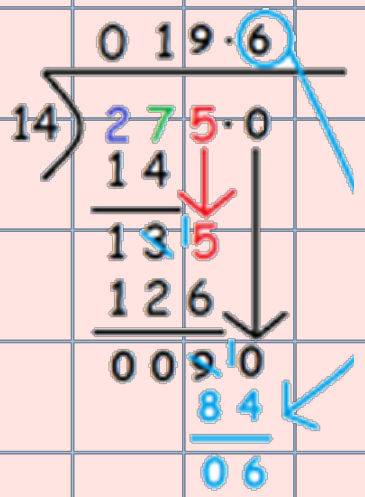
$$5\overline{)7^{2}5\ 5}\quad 1\ 5\ 1$$

Long division is used when dividing numbers by a larger number e.g. a 2 or 3 digit number

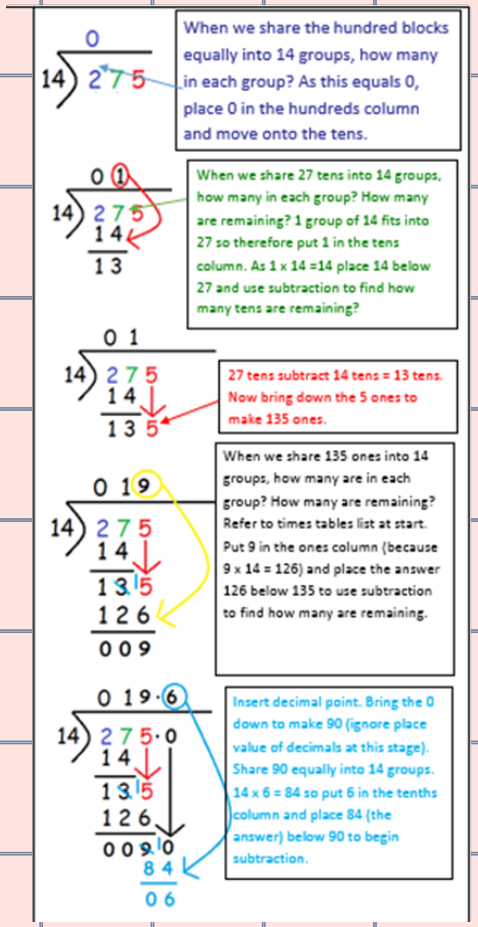
e.g 3 9 5 ÷ 2 5

7 3 2 ÷ 4 7

It is called long division because the calculation is extended down.

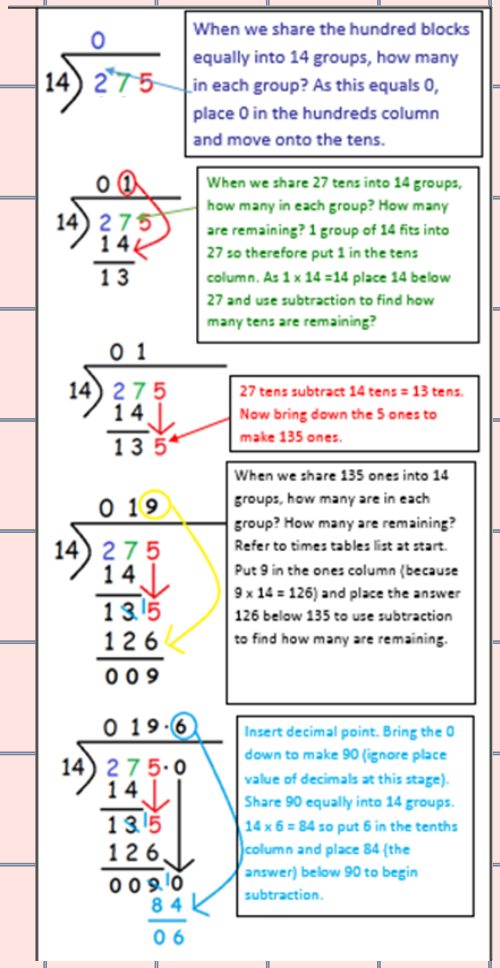


How to teach long division



These are our Steps to Success (there is a printed copy for you to take home).

How to teach long division



It's a good idea to train the children into jotting down key multiplication facts before they start.

$$16\overline{)895}$$

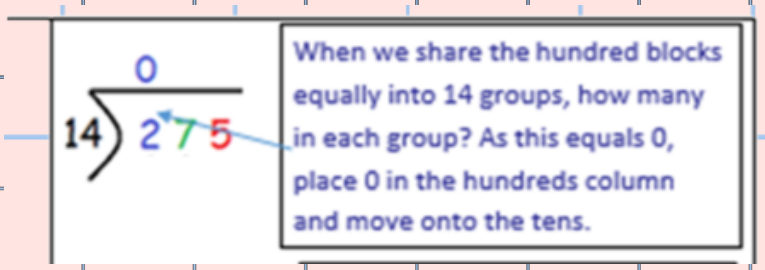
2 x 16 = 32

3 x 16 = 48

4 x 16 = 64

5 x 16 = 80

6 x 16 = 96



Step 1

$$\begin{array}{r} 0 \\ 16\overline{)895} \end{array}$$

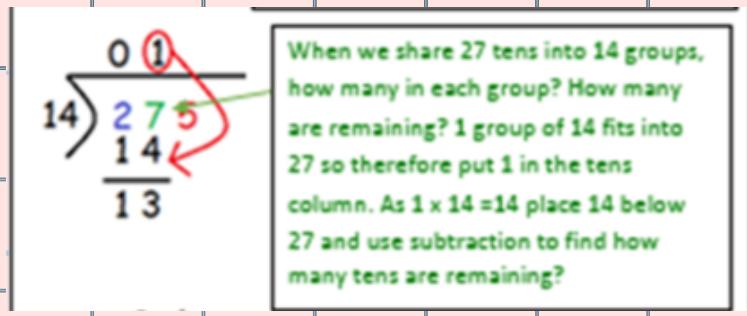
2 x 16 = 32

3 x 16 = 48

4 x 16 = 64

5 x 16 = 80

6 x 16 = 96



Step 2

2 x 16 = 32

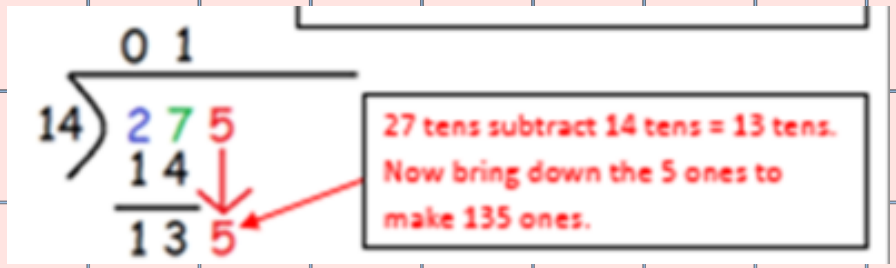
3 x 16 = 48

4 x 16 = 64

5 x 16 = 80

6 x 16 = 96

```
      0  5
    ------
16 | 8  9  5
     8  0
    ------
        9
```



Step 3

2 x 16 = 32

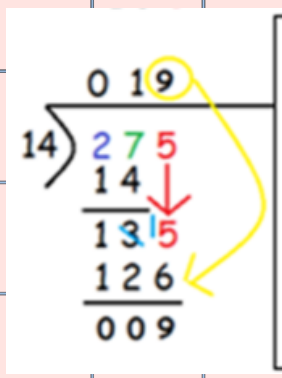
3 x 16 = 48

4 x 16 = 64

5 x 16 = 80

6 x 16 = 96

```
      0 5
   ┌──────
16 │ 8 9 5
     8 0
   ──────
       9 5
```



When we share 135 ones into 14 groups, how many are in each group? How many are remaining? Refer to times tables list at start. Put 9 in the ones column (because 9 x 14 = 126) and place the answer 126 below 135 to use subtraction to find how many are remaining.

Step 4

```
      0 5 5
    ---------
16 | 8 9 5
     8 0
     -----
       9 5
       8 0
       ---
       1 5
```

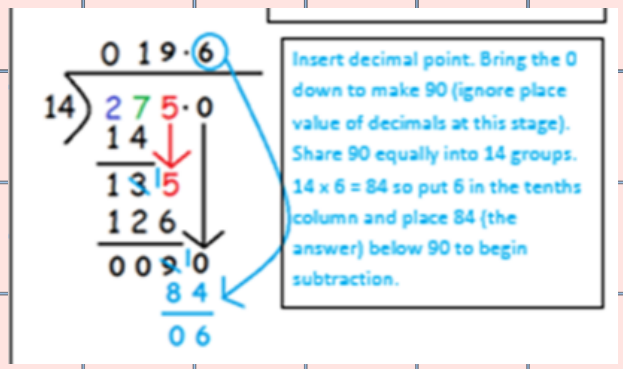
2 x 16 = 32

3 x 16 = 48

4 x 16 = 64

5 x 16 = 80

6 x 16 = 96



2 x 16 = 32

3 x 16 = 48

4 x 16 = 64

5 x 16 = 80

6 x 16 = 96

7 x 16 = 112

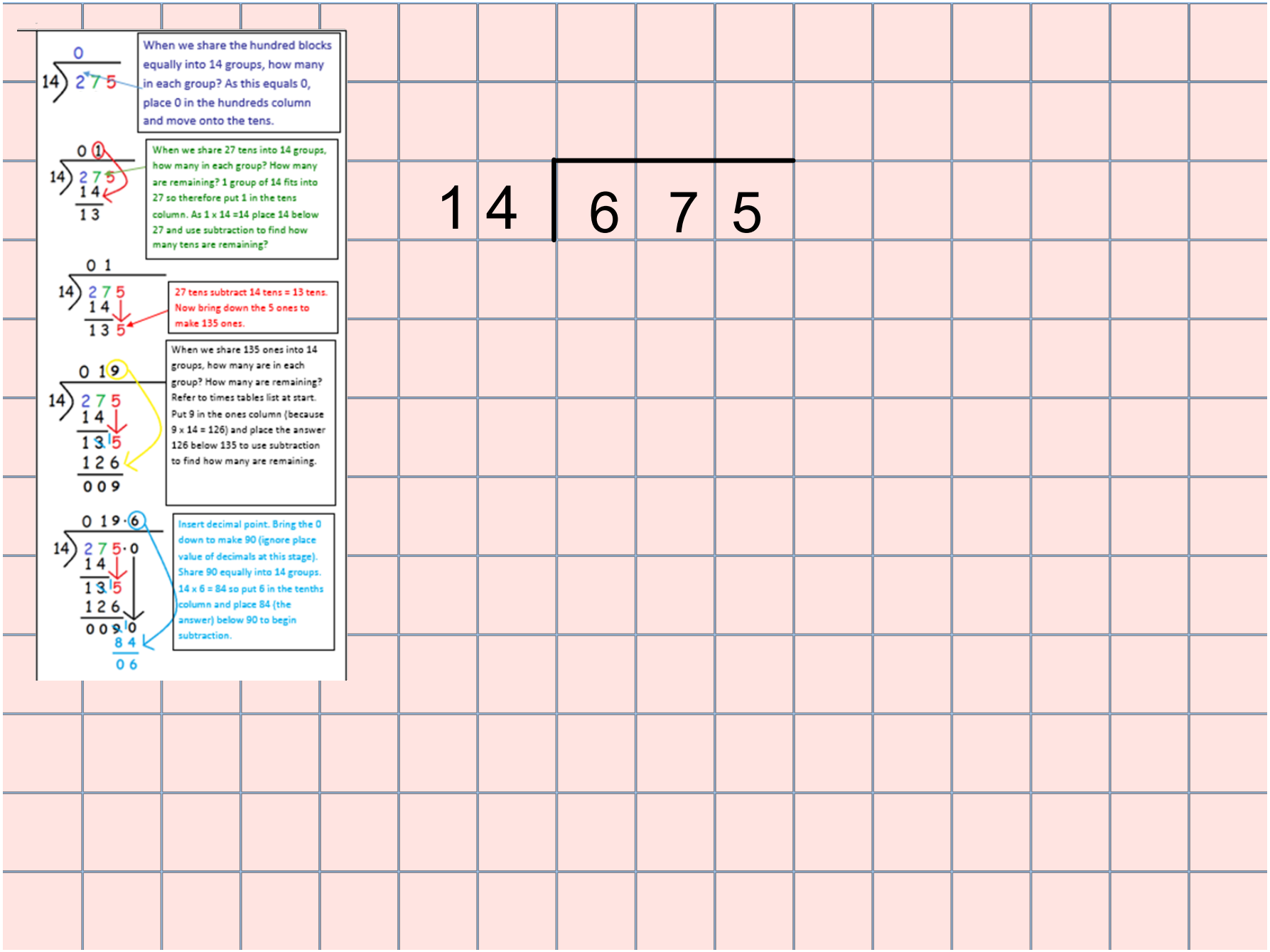
8 x 16 = 128

9 x 16 = 144

Step 5

Stop at 2 decimal places

```
          0  5  5 · 9  3
       ┌──────────────────
1  6   │ 8  9  5 · 0  0
         8  0
       ──────
            9  5
            8  0
          ──────
          1  4  5  0
          1  4  4
          ────────────
                6  0
```


When we share the hundred blocks equally into 14 groups, how many in each group? As this equals 0, place 0 in the hundreds column and move onto the tens.
When we share 27 tens into 14 groups, how many in each group? How many are remaining? 1 group of 14 fits into 27 so therefore put 1 in the tens column. As 1 x 14 =14 place 14 below 27 and use subtraction to find how many tens are remaining?
27 tens subtract 14 tens = 13 tens. Now bring down the 5 ones to make 135 ones.
When we share 135 ones into 14 groups, how many are in each group? How many are remaining? Refer to times tables list at start. Put 9 in the ones column (because 9 x 14 = 126) and place the answer 126 below 135 to use subtraction to find how many are remaining.
Insert decimal point. Bring the 0 down to make 90 (ignore place value of decimals at this stage). Share 90 equally into 14 groups. 14 x 6 = 84 so put 6 in the tenths column and place 84 (the answer) below 90 to begin subtraction.
14 | 6 7 5

Example SATs questions

13 A box contains 2.6 kg of washing powder.

Jack uses 65 grams of powder for each wash.

He uses all the powder.

How many washes did Jack do?

Show your method

washes

22 $4\,3\overline{)6\,4\,5}$

Show your method

2 marks

36 $9\,7\overline{)8\,8\,2\,7}$

Show your method

2 marks

Please take a Steps to Success

Short division

Short Division

Step One: Write the question out using the formal style.

$5\overline{)7\,5\,5}$

Step Two: Calculate how many times 5 goes into the first number (7). It goes into it 1 time, so write 1 above the line.

$\begin{array}{r}1\\5\overline{)7\,5\,5}\end{array}$

Step Three: 5 goes into 7 once, remainder 2. We need to carry this remainder:

$\begin{array}{r}1\\5\overline{)7\,5\,5}\end{array}$

Step Four: Now calculate how many times 5 goes into 25. Write this above the line.

$\begin{array}{r}1\,5\\5\overline{)7\,5\,5}\end{array}$

There's no remainder this time, so we don't need to carry anything.

Step Five: Continue this method until you reach the end of the number.

$\begin{array}{r}1\,5\,1\\5\overline{)7\,5\,5}\end{array}$

The number above the line is your answer!

Step Six: Check your work.

Does the answer seem right?

If unsure, check the question and work it out again.

Long division