

Partial Quotients Division

(Aka – Big 7)

1st Way for Partial Quotients

Dividing by multiples of 10

Partial Quotients Division

8

177

Start by setting up the problem like this – it looks like the algorithm, but the right side has a long line drawn down.

(Just like in the Hangman Game.)

Ask - How many 8's are in 177?

There are at least 10, so that will be the first partial quotient..

$$\begin{array}{r} 8 \overline{) 177} \\ \underline{80} \\ \end{array}$$

10

Use multiples of 10.

Write on the side if you need it.

$$8 \times 1 = 8$$

$$8 \times 10 = 80$$

$$8 \times 100 = 800$$

Multiply $10 * 8$

Write the product under the dividend in the problem.

Then subtract!

$$\begin{array}{r} 8 \overline{) 177} \\ - 80 \\ \hline 97 \end{array} \quad 10$$

Subtract 177 minus 80.

$$8 \times 1 = 8$$

$$8 \times 10 = 80$$

$$8 \times 100 = 800$$

$$\begin{array}{r} 8 \overline{) 177} \\ \underline{80} \\ 97 \\ \underline{80} \\ 17 \end{array}$$

10
10

Start the process over again.

Ask - how many 8's are in 97?

Again, there are at least 10.

Put 10 on the right side and multiply.

$$\begin{array}{r}
 8 \overline{) 177} \\
 \underline{- 80} \quad 10 \\
 97 \\
 \underline{- 80} \quad 10 \\
 17
 \end{array}$$

Subtract 97 minus 80.

$$8 \times 1 = 8$$

$$8 \times 10 = 80$$

$$8 \times 100 = 800$$

$$\begin{array}{r}
 8 \overline{) 177} \\
 \underline{- 80} \\
 97 \\
 \underline{- 80} \\
 17 \\
 \underline{- 16} \\
 1
 \end{array}$$

$$8 \times 1 = 8$$

$$8 \times 10 = 80$$

$$8 \times 100 = 800$$

Start the process again.

Ask - how many 8's are in 17.

There are at least 2.

Subtract.

$$8 \times 1 = 8$$

$$8 \times 10 = 80$$

$$8 \times 100 = 800$$

$$\begin{array}{r} 22 \text{ R}1 \\ 8 \overline{) 177} \\ \underline{- 80} \\ 97 \\ \underline{- 80} \\ 17 \\ \underline{- 16} \\ 1 \end{array}$$

Since the 1 is less than 8, you are finished dividing.

Now add up the partial quotients.

$$10 + 10 + 2 = 22$$

Remainder 1

2nd Way Partial Quotients

This method combines Long Division with Partial Quotients

Dividing by multiples of 10 and other factors

Now, let's try to
same problem
using basic
multiplication facts!

$$\begin{array}{r} 8 \quad \boxed{\begin{array}{r} \underline{177} \\ 160 \\ 20 \end{array}} \end{array}$$

Ask - How many 8's are in 17?

We know that $8 \times 2 = 16$

Using multiples of 10, we
can do:

$$8 \times 20 = 160$$

$$\begin{array}{r}
 8 \overline{) 177} \\
 \underline{- 160} \quad 20 \\
 17 \\
 \underline{- 16} \quad 2 \\
 1
 \end{array}$$

$$8 \times 1 = 8$$

$$8 \times 10 = 80$$

$$8 \times 100 = 800$$

Ask - how many 8's are in 17?

Again, there are at least 2.

Subtract 17 minus 16.

$$\begin{array}{r} 8 \overline{) 177} \\ \underline{- 160} \\ 17 \\ \underline{- 16} \\ 1 \end{array} \quad \begin{array}{l} 20 \\ 2 \end{array}$$

$$8 \times 1 = 8$$

$$8 \times 10 = 80$$

$$8 \times 100 = 800$$

22 R. 1

$$\begin{array}{r} 8 \overline{) 177} \\ \underline{160} \\ 17 \\ \underline{16} \\ 1 \end{array} \quad \begin{array}{r} 20 \\ 2 \\ \hline 22 \end{array}$$

$$8 \times 1 = 8$$

$$8 \times 10 = 80$$

$$8 \times 100 = 800$$

1 is less than your divisor, 8, so you are finished dividing.

Now, add up the partial quotients, 20 and 2 and write their sum with the remainder at the top of the problem.