

An Example: Long Division

A photograph of a piece of paper with handwritten long division. The problem is 715 divided by 3. The quotient is 238 with a remainder of 1. The steps are: 3 goes into 7 one time (3), leaving a remainder of 4. Bring down the 1 to make 41. 3 goes into 41 thirteen times (39), leaving a remainder of 2. Bring down the 5 to make 25. 3 goes into 25 eight times (24), leaving a remainder of 1.

$$\begin{array}{r} \boxed{2} \boxed{3} \boxed{8} \text{ r. } 1 \\ 3 \overline{) 715} \\ \underline{-6} \\ 115 \\ \underline{-9} \\ 25 \\ \underline{-24} \\ 1 \end{array}$$



$$\begin{array}{r} \boxed{2} \quad \boxed{} \quad \boxed{} \\ 3 \overline{) 715} \\ \underline{- 6} \\ \end{array}$$

Step 1: Divide in the hundreds place

*How many times can 3 “fit” in to 7?

*TWICE

*2 groups of 3 is 6.

*Subtract and regroup



$$\begin{array}{r} \begin{array}{|c|c|c|} \hline 2 & 3 & \\ \hline \end{array} \\ 3 \overline{) 715} \\ \underline{- 6} \quad \downarrow \downarrow \\ 115 \\ \underline{- 9} \quad \downarrow \\ 15 \end{array}$$

Step 2: Divide in the tens place

- *Can 3 “fit” in to 1? NO!
- *Look up – has the box above been filled in? YES!
- *Take the one with you and move on to try 11



$$\begin{array}{r} \boxed{2} \boxed{3} \boxed{} \\ 3 \overline{) 715} \\ \underline{- 6} \downarrow \downarrow \\ 115 \\ \underline{- 9} \downarrow \\ \end{array}$$

Step 2: Divide in the tens place

*How many times can 3 “fit” in to 11?

*THREE TIMES

*3 groups of 3 is 9.

*Subtract and regroup



$$\begin{array}{r} \boxed{2} \boxed{3} \boxed{8} \\ 3 \overline{) 715} \\ \underline{-6} \\ 1 \\ \underline{-9} \\ 2 \\ \underline{-24} \\ \hline \end{array}$$

Step 3: Divide in the ones place

- *Can 3 “fit” in to 2? NO!
- *Look up – has the box above been filled in? YES!
- *Take the two with you and move on to try 25



$$\begin{array}{r} \boxed{2} \boxed{3} \boxed{8} \\ 3 \overline{) 715} \\ \underline{- 6} \quad \downarrow \downarrow \\ 115 \\ \underline{- 9} \quad \downarrow \\ 25 \\ \underline{24} \\ \hline \end{array}$$

Step 3: Divide in the ones place

*How many times can 3 “fit” in to 25?

*EIGHT TIMES

*8 groups of 3 is 24.

*Subtract and regroup

2	3	8	r.1
3	7	1	5
	- 6	↓	↓
	1	1	5
	- 9	↓	
	2	5	
	- 24		
	1		

Step 4: The remainder

*Can 3 “fit” in to 1? NO!
 *This becomes our
 REMAINDER

Check by Multiplying

$$\begin{array}{r} 238 \text{ (quotient)} \\ \times 3 \text{ (divisor)} \\ \hline \end{array}$$

Step 5: Check by Multiplying

*Take the QUOTIENT (Your answer to the division problem) and multiply it by your DIVISOR

Check by Multiplying

① ②

238 (quotient)

x 3 (divisor)

714

+ 1 (remainder)

Step 6: Check by
Multiplying

*Add the REMAINDER
to your answer

$$\begin{array}{r}
 \boxed{238} \text{ r.1} \\
 3 \overline{) 715} \\
 \underline{- 6} \downarrow \downarrow \\
 115 \\
 \underline{- 9} \downarrow \\
 25 \\
 \underline{- 24} \\
 \textcircled{1}
 \end{array}$$

It matches!



Check by
Multiplying

$$\begin{array}{r}
 \textcircled{1} \quad \textcircled{2} \\
 238 \text{ (quotient)} \\
 \times 3 \text{ (divisor)} \\
 \hline
 714 \\
 + 1 \text{ (remainder)} \\
 \hline
 \boxed{715}
 \end{array}$$

Step 7: Check Your Answer

*Does the answer match your DIVIDEND (What you're dividing)?

*If yes, you've correctly divided!