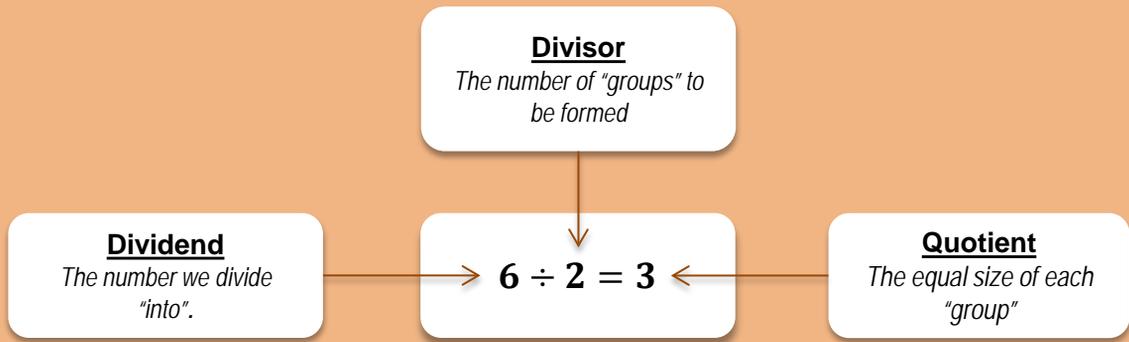


THIS WORKSHEET WILL TEACH YOU:

*The components of long division
The process and steps involved in two methods for long division*



A divisor can also be thought of as a factor: $\frac{6}{2} = 3$ or $6/2 = 3$ or $2 \overline{)6}^3$

Note that when 6 divided by 2 is 3, then 6 divided by 3 will be 2, since $2 \times 3 = 6$, and we are "undoing" the multiplication.

METHOD 1: LONG DIVISION THE LONGER WAY

$$\begin{array}{r}
 16 \text{ R}3 \\
 17 \overline{)275} \\
 \underline{-17} \\
 105 \\
 \underline{-102} \\
 3
 \end{array}$$

The first thing to do is to see if 17 goes into 2 (the first number of the dividend), and it doesn't. So then see if 17 goes into 27, and it does 1 time! Then put the 1 on top of the 27, actually, over the 7.

Then multiply the 1 on the top by the 17 on outside and get 17, which is placed right under the 27 (see how rightmost numbers of the 17 and the 27 have to line up?)

Next **subtract** the 17 from the 27 to get 10, and then bring the right-most 5 down to form 105.

Now see how many times 17 goes into 105, which is 6 (do some multiplication to make sure it doesn't go over 105). We put the 6 over the 5. We multiply again: $17 \times 6 = 102$, which we put under the 105.

Then we subtract 102 from 105, and we have a **remainder** of 3, so we have to indicate R3.

Later we'll see that we can write the remainder as a fraction: $\frac{3}{17}$

REMEMBER THESE FIVE STEPS:

1. Divide
2. Multiply
3. Subtract
4. Bring down
5. Repeat

METHOD 2: LONG DIVISION THE SHORTER WAY

The first thing is to see if **17** goes into **2** (the first number of the dividend), and it doesn't. So then see if **17** goes into **27**, and it does **1** time! So we put the **1** on **top** of the **27**, actually, over the **7**.

$$\begin{array}{r} 16 \text{ R}3 \\ 17 \overline{)275} \end{array}$$

Then – in your head - multiply **1** on the top by the **17** outside and get **17**, and – in your head – **subtract** the **17** from the **27**, to get **10**. Write this **10** as a subscript in front of the **5** in **275**, making **105**.

Next see how many times **17** goes into **105**, which is **6** (since $17 \times 6 = 102$), and put the **6** above the **5**.

Then we subtract **102** from **105**, and there is a **remainder** of **3**, so indicate **R3**. Later we'll see that we can write the remainder as a fraction: $\frac{3}{17}$

ANOTHER EXAMPLE

Longer way:

$$\begin{array}{r} 268 \text{ R}7 \\ 14 \overline{)3759} \\ \underline{-28} \\ 95 \\ \underline{-84} \\ 119 \\ \underline{-112} \\ 7 \end{array}$$

Shorter way:

$$\begin{array}{r} 268 \text{ R}7 \\ 14 \overline{)3759} \end{array}$$



Long Division Problems

a) $1085 \div 31 =$

b) $1680 \div 48 =$

c) $688 \div 16 =$

d) $836 \div 44 =$

e) $6561 \div 81 =$

f) $2432 \div 38 =$

g) $24282 \div 114 =$

h) $64152 \div 216 =$

Turn over to check your answers!

$\begin{array}{r} 0 \\ -155 \\ 155 \\ -93 \\ 31 \end{array} \begin{array}{r} 1085 \\ 35 \end{array}$ <p>a)</p>	$\begin{array}{r} 0 \\ -240 \\ 240 \\ -144 \\ 48 \end{array} \begin{array}{r} 1680 \\ 35 \end{array}$ <p>b)</p>	$\begin{array}{r} 0 \\ -48 \\ 48 \\ -64 \\ 16 \end{array} \begin{array}{r} 688 \\ 43 \end{array}$ <p>c)</p>	$\begin{array}{r} 0 \\ -396 \\ 396 \\ -44 \\ 44 \end{array} \begin{array}{r} 836 \\ 19 \end{array}$ <p>d)</p>	$\begin{array}{r} 0 \\ -81 \\ 81 \\ -648 \\ 81 \end{array} \begin{array}{r} 6561 \\ 81 \end{array}$ <p>e)</p>	$\begin{array}{r} 0 \\ -152 \\ 152 \\ -228 \\ 38 \end{array} \begin{array}{r} 2432 \\ 64 \end{array}$ <p>f)</p>
$\begin{array}{r} 0 \\ -342 \\ 342 \\ -114 \\ 148 \\ -228 \\ 114 \end{array} \begin{array}{r} 24282 \\ 213 \end{array}$ <p>g)</p>	$\begin{array}{r} 0 \\ -1512 \\ 1512 \\ -1944 \\ 2095 \\ -432 \\ 216 \end{array} \begin{array}{r} 64152 \\ 297 \end{array}$ <p>h)</p>				

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