

## DIVISION OF FOUR-DIGITS BY TWO-DIGITS

When the dividend and divisor are numbers with two or more digits, division becomes a step-by-step process.

**Example:**

$$\begin{array}{r} \text{divisor} \longrightarrow 75 \overline{)2083} \longleftarrow \text{dividend} \\ \phantom{75} \phantom{\overline{)2083}} \phantom{\longleftarrow} \text{??} \longleftarrow \text{quotient} \end{array}$$

1st  
Step

Round the divisor up (75 rounds up to 80) and estimate the number of 80's in 208.  
The answer is 2.

2nd  
Step

$$\begin{array}{r} 2 \\ 75 \overline{)2083} \\ \underline{-150} \phantom{0} \end{array}$$

Multiply the divisor by the quotient ( $2 \times 75$ ) if the product of those two numbers is larger than the dividend, try a smaller quotient.

3rd  
Step

$$\begin{array}{r} 2 \\ 75 \overline{)2083} \\ \underline{-150} \\ 58 \end{array}$$

Subtract and compare the remainder and the divisor. If the remainder is greater than the divisor, the quotient tried is too small; try a larger quotient.

4th  
Step

$$\begin{array}{r} 27 \\ 75 \overline{)2083} \\ \underline{-150} \\ 583 \end{array}$$

Pull down the next digit from the dividend (3) and repeat the estimation and subtraction process. (How many times can 80 go into 583?) The answer is 7 times.

5th  
Step

$$\begin{array}{r} 27 \\ 75 \overline{)2083} \\ \underline{-150} \\ 583 \\ \underline{525} \\ 58 \end{array}$$

Multiply the divisor (7 x 75), subtract the product from the dividend, and compare.

6th  
Step

75 is larger than 58, so the number left over is called the *remainder*. The *remainder* should be written as a fraction or decimal.

**Example: As a fraction**

$$\begin{array}{r} 27 \\ 75 \overline{)2083} \\ \underline{-150} \\ 583 \\ \underline{525} \\ 58 \end{array} \quad \begin{array}{c} \xrightarrow{\hspace{1cm}} \\ \uparrow \\ \xleftarrow{\hspace{1cm}} \end{array} \quad \frac{58}{75} \quad \xrightarrow{\hspace{1cm}} \quad 27 \frac{58}{75}$$

Use the divisor as the denominator. Always reduce to lowest terms.

**Example: As a decimal**

$$\begin{array}{r} 27.773 \\ 75 \overline{)2083.000} \\ \underline{-150} \\ 583 \\ \underline{525} \\ 580 \\ \underline{525} \\ 550 \\ \underline{525} \\ 250 \\ \underline{225} \end{array} \quad \xrightarrow{\hspace{1cm}} \quad 27.77$$

Divide to the thousandths place. Round that number to the hundredths place.

**The quotient is  $27 \frac{58}{75}$  or 27.77**