

Prime factors: division method

Grade 6 Factoring Worksheet

Use the division method to break down each number into prime factors.
Write the prime factorization.

The **division method** is used to find prime factors by dividing a number by prime numbers until the result is 1.

Example:

$$\begin{array}{r|l} 5 & 30 \\ 3 & 6 \\ 2 & 2 \\ & 1 \end{array}$$

Factors:

2, 3, 5

Prime factorization:

$2 \times 3 \times 5$

1) $\underline{8}$

2) $\underline{36}$

3) $\underline{56}$

$8 = \underline{\hspace{2cm}}$

$36 = \underline{\hspace{2cm}}$

$56 = \underline{\hspace{2cm}}$

4) $\underline{40}$

5) $\underline{55}$

6) $\underline{72}$

$40 = \underline{\hspace{2cm}}$

$55 = \underline{\hspace{2cm}}$

$72 = \underline{\hspace{2cm}}$

7) $\underline{100}$

8) $\underline{62}$

9) $\underline{120}$

$100 = \underline{\hspace{2cm}}$

$62 = \underline{\hspace{2cm}}$

$120 = \underline{\hspace{2cm}}$

Answers

Note: You may divide by different prime numbers first, but the final prime factorization will always be the same.

$$\begin{array}{r|l} 2 & 8 \\ 2 & 4 \\ 2 & 2 \\ \hline & 1 \end{array}$$

$$8 = 2 \times 2 \times 2$$

$$\begin{array}{r|l} 2 & 36 \\ 2 & 18 \\ 3 & 9 \\ 3 & 3 \\ \hline & 1 \end{array}$$

$$36 = 2 \times 2 \times 3 \times 3$$

$$\begin{array}{r|l} 7 & 56 \\ 2 & 8 \\ 2 & 4 \\ 2 & 2 \\ \hline & 1 \end{array}$$

$$56 = 2 \times 2 \times 2 \times 7$$

$$\begin{array}{r|l} 5 & 40 \\ 2 & 8 \\ 2 & 4 \\ 2 & 2 \\ \hline & 1 \end{array}$$

$$40 = 2 \times 2 \times 2 \times 5$$

$$\begin{array}{r|l} 5 & 55 \\ 11 & 11 \\ \hline & 1 \end{array}$$

$$55 = 5 \times 11$$

$$\begin{array}{r|l} 3 & 72 \\ 3 & 24 \\ 2 & 8 \\ 2 & 4 \\ 2 & 2 \\ \hline & 1 \end{array}$$

$$72 = 2 \times 2 \times 2 \times 3 \times 3$$

$$\begin{array}{r|l} 5 & 100 \\ 5 & 20 \\ 2 & 4 \\ 2 & 2 \\ \hline & 1 \end{array}$$

$$100 = 2 \times 2 \times 5 \times 5$$

$$\begin{array}{r|l} 2 & 62 \\ 31 & 31 \\ \hline & 1 \end{array}$$

$$62 = 2 \times 31$$

$$\begin{array}{r|l} 5 & 120 \\ 3 & 24 \\ 2 & 8 \\ 2 & 4 \\ 2 & 2 \\ \hline & 1 \end{array}$$

$$120 = 2 \times 2 \times 2 \times 3 \times 5$$