

# Least Common Multiple

The **Least Common Multiple** (LCM) is the smallest number such that it is a multiple of two other numbers.

To find the least common multiple (LCM) for the numbers:

- 1.) Factor both numbers.
- 2.) Take at least one of each factor (prime) and multiply all such factors together.
  - if a number has repeated factors (ex.  $2^2$ ,  $3^3$ , etc.) use the highest number of repeated factors for the LCM.

Ex. Find the LCM for 18 and 90. Find the LCM for 18 and 180.

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| $  \begin{array}{c}  18 \\  \swarrow \quad \searrow \\  2 \quad 9 \\  \quad \swarrow \quad \searrow \\  \quad 3 \quad 3  \end{array}  $ <p><math>18 = 2 \times 3^2</math></p> | $  \begin{array}{c}  90 \\  \swarrow \quad \searrow \\  2 \quad 45 \\  \quad \swarrow \quad \searrow \\  \quad 5 \quad 9 \\  \quad \quad \swarrow \quad \searrow \\  \quad \quad 3 \quad 3  \end{array}  $ <p><math>90 = 2 \times 3^2 \times 5</math></p> | $  \begin{array}{c}  180 \\  \swarrow \quad \searrow \\  2 \quad 90  \end{array}  $ <p><math>180 = 2^2 \times 3^2 \times 5 \quad (2 \times (2 \times 3^2 \times 5))</math></p> <p> <math>LCM(18,90) = 2 \times 3^2 \times 5</math><br/> <math>LCM(18,180) = 2^2 \times 3^2 \times 5</math> </p> |
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Ex. Find the LCM for 12 and 15.

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| $  \begin{array}{c}  12 \\  \swarrow \quad \searrow \\  2 \quad 6 \\  \quad \swarrow \quad \searrow \\  \quad 2 \quad 3  \end{array}  $ | $  \begin{array}{c}  15 \\  \swarrow \quad \searrow \\  3 \quad 5  \end{array}  $ | <p><math>LCM(12,15) = 2^2 \times 3 \times 5 = 60</math></p> |
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Exercises: Find the LCM for the 2 numbers given:

- 1.) 24,36
- 2.) 12,9
- 3.) 4,5
- 4.) 5,8
- 5.) 10,25
- 6.) 75,15
- 7.) 12,18
- 8.) 32,64
- 9.) 8,20
- 10.) 27,36