
- Switching the orders in product formation.

We know

\[3 \cdot 4 \cdot 5, \quad 3 \cdot 5 \cdot 4, \quad 4 \cdot 3 \cdot 5,\]
\[4 \cdot 5 \cdot 3, \quad 5 \cdot 3 \cdot 4 \quad \text{and} \quad 5 \cdot 4 \cdot 3\]

are all the same. They all equal 60. So, in a product formation, you are allowed to permute the numbers. When a letter is involved, the same principle remains true. For example,

\[
\begin{align*}
3 \cdot x \cdot 5, & \quad 3 \cdot 5 \cdot x, \quad x \cdot 3 \cdot 5, \\
x \cdot 5 \cdot 3, & \quad 5 \cdot 3 \cdot x \quad \text{and} \quad 5 \cdot x \cdot 3
\end{align*}
\]

are all equal. Now, when you are asked to simplify any of these, you would use either one of the two boxed ones, because \(3 \cdot 5\) and \(5 \cdot 3\) are readily calculated as 15. So, \(15x\) is the result of simplification.

**Exercise 1.** Simplify each of

\[2 \cdot x \cdot 4, \quad 3 \cdot x^2 \cdot 6, \quad 20 \cdot x^3 \cdot 2^3.\]
\[ \text{Answers:} \quad 2 \cdot x \cdot 4 = 2 \cdot 4 \cdot x = 8x, \]
\[ 3 \cdot x^2 \cdot 6 = 3 \cdot 6 \cdot x^2 = 18x^2, \]
\[ 20 \cdot x^3 \cdot 2^3 = 20 \cdot 2^3 \cdot x^3 = 160x^3. \]

* Don’t get distracted that a letter is squeezed in between two numbers.

- **Substituting a quantity with negative sign.**

We know
\[ 7 + (-2) = 7 - 2 = 5. \]
\[ 7 - (-2) = 7 + 2 = 9. \]

More generally,
\[ x + (-a) = x - a. \]
\[ x - (-a) = x + a. \]

**Exercise 2.** Substitute \( a = -4 \) in \((x+a)^2\).

\[ \text{Answer:} \quad (x-4)^2. \]

**Exercise 3.** Substitute \( a = -6 \) in \((x-a)^4\).

\[ \text{Answer:} \quad (x+6)^4. \]