



Order of Operations



Why does order matter?

- Sometimes, math problems have more than one component in it
- The order of operations tells us how to do these operations in the correct order

What does the order of operations mean?

- The first rule of order of operations is P.E.M.D.A.S.
- Don't forget to solve the problem from left to right!

Order of Operations

- Begin with parentheses or brackets
 - Next, calculate exponents or square roots
 - Then multiply or divide
 - Finally, add or subtract
- To help you remember the order, use PEMDAS:

P	E	M	D	A	S
Parenthesis	Exponents	Multiplication or Division		Addition or Subtraction	
(), { }, []	a^n	x or ÷		+ or -	

A neat trick to help you remember

- To help you remember the order, you can use the acrostic:

P LEASE E XCUSE M Y D EAR A UNT S ALLY



Ready to try it out?

- Now that you've learned the order of operations (and a trick for remembering it), let's put it into practice!

Order of Operations – Examples

Solve the following problems using the order of operations:

P $()$ Parentheses

E X^2 Exponents

M \times Multiplication

D \div Division

A $+$ Addition

S $-$ Subtraction

Order of Operations – Example 1

Simplify:

$$\left(6 + \frac{12}{3}\right)^2$$



Order of Operations – Example 1 Answer

Answer:

$$\begin{aligned} (6 + \frac{12}{3})^2 &= (6 + 4)^2 && \text{(Parentheses first, } | 2/3) \\ \blacksquare &= 10^2 && \text{(Add inside parentheses)} \\ &= 100 && \text{(Square 10)} \end{aligned}$$

Order of Operations – Example 2

Simplify:

$$\frac{5 + 6 + 7}{3}$$



Order of Operations – Example 2 Answer

Answer:

$$\frac{5 + 6 + 7}{3} = \frac{18}{3} \quad \text{(Simplify the numerator)}$$

$$\blacksquare \quad = 6 \quad \text{(Divide)}$$

Order of Operations – Example 3

Simplify:

$$\frac{2^2 + 3^2 + 4^2}{3 - 1}$$



Order of Operations – Example 3 Answer

Answer:

$$\frac{2^2 + 3^2 + 4^2}{3 - 1} = \frac{4 + 9 + 16}{2}$$

(Exponents in the numerator)

■

$$= \frac{29}{2}$$

(Simplify the numerator)

$$= 14.5$$

(Divide)

Learning objectives

By the end of this review, you should be able to:

- Apply the order of operations

