

Algebra 1

Lesson 1 Order of Operations

What is an operation?

→ An operation is something like addition, subtraction, multiplication, or division.

Here is an easy way to remember order of operations: PEMDAS.

Parentheses

Exponents

Multiplication

Division

Addition

Subtraction

But, there's a catch. In the case, you have multiplication and division together, or addition and subtraction together, do the operations from left to right.

Ex: $(3 + 6) \times 2$

→ According to PEMDAS, we do parentheses first. Thus, do $3 + 6 = 9$. Now, we can multiply $9 \times 2 = 18$. Thus your final answer is 18.

Ex: $12 \div 6 \times 3 \div 2$

→ Remember that when you have multiplication and division together you do the operations from right to left. First, do $12 \div 6 = 2$, next do $2 \times 3 = 6$ followed by $6 \div 2 = 3$. Thus your final answer is 3.

Ex: Adam has \$450. He spends \$210 on food. Later he divides all the money into four parts out of which three parts were distributed and one part he keeps for himself. Then he found \$50 on the road. Write the final expression and find the money he has left?

→ Adam starts with \$450, but then he spends \$210, so he must subtract this money. So far his money can be represented by $450 - 210$. Then, he divides his money into four parts, and only keeps one. Thus, we must do $(450 - 210) \div 4$. Lastly, he finds \$50, adding 50 to his total money. We come up with the equation $(450 - 210) \div 4 + 50$. Using order of operations, we do parentheses first, so $(450 - 210) = 240$. Next, we divide, $240 \div 4 = 60$. Lastly, $60 + 50 = 110$. Adam has \$110 left.

Guided Practice:

1. (MOEMS Volume 3 Set 11 1a) What is the value of the following?
 $40 \times 30 \times 20 \times 10 \div 20 \div 40 \div 6$

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2. (2017 AMC 10 A #1) What is the value of $(2(2(2(2(2+1)+1)+1)+1)+1)+1$?
3. Sylvia bought 4 bananas for 50 cents each and 1 apple for 80 cents. Write a numerical expression to represent this situation and then find the total cost in cents.
4. The price of a shirt is 100 dollars. The store manager gives a discount of 50 dollars. A man and his brother bought 4 shirts and then share the cost with his brother. Write a numerical expression to represent this situation and then find the price paid by each brother.
5. Peter withdrew 1000 dollars from his bank account today. He uses 500 to fix his car. Then, he divides the money into 5 equal parts and gave away 4 parts and kept 1 part for himself. Finally, he took to wife to the restaurant and spent 60 dollars on meals. Write a numerical expression to represent this situation and then find how much money Peter has now?

Homework:

1. (MOEMS Volume 3 Set 10 1a) What is the value of the following?
 $40 - 36 + 32 - 28 + 24 - 20 + 16 - 12 + 8 - 4$
2. (MOEMS Volume 3 Set 8 2A) What is the value of $(47 \times 8) + (8 \times 27) + (26 \times 8)$
3. Robert bought 2 burgers for \$3.50 each and 3 medium French fries for \$1.20 each. Write a numerical expression to represent this situation and then
4. Linda bought 3 notebooks for \$1.20 each, a box of pencils for \$1.50, and a box of pens for \$1.70. Find her total cost.
5. Billy received 2 packs of 4 crayons. He then received a box of 24 crayons. How many crayons does he have?