

Order of operations

If multiplication, division, powers, addition, parentheses, and so forth, are all contained in one problem, the *order of operations* is as follows.

1. parentheses
 2. power and square roots
 3. multiplication
 4. division
 5. addition
 6. subtraction
- } whichever comes first left to right
- } whichever comes first left to right

Name : _____

Score : _____

Teacher : _____

Date : _____

Order of Operations

1) $2 \times (5 \times 5 - 9^2) - 2$

6) $(14 + 32 - 6) \div 10 - 3^2$

2) $4 \times (8 \times 2 + 4^2) + 9$

7) $(8 + 56 - 2^2) \div (28 + 2)$

3) $(12 + 6) \times (8 + 2) + 3^2$

8) $(18 + 2) \times (12 - 5) + 8^2$

4) $(11 + 51 - 2) \div 2 - 6^2$

9) $(7 + 4)^2 + (6 - 8 \div 2)$

5) $(15 + 51 - 6^2) \div (18 - 3)$

10) $(5 + 2)^2 + (14 - 8 \div 4)$

Study Guide and Intervention

Order of Operations

Evaluate Rational Expressions Numerical expressions often contain more than one operation. To evaluate them, use the rules for order of operations shown below.

Order of Operations	<p>Step 1 Evaluate expressions inside grouping symbols.</p> <p>Step 2 Evaluate all powers.</p> <p>Step 3 Do all multiplication and/or division from left to right.</p> <p>Step 4 Do all addition and/or subtraction from left to right.</p>
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Example 1

Evaluate each expression.

a. $7 + 2 \cdot 4 - 4$

$$\begin{aligned} 7 + 2 \cdot 4 - 4 &= 7 + 8 - 4 && \text{Multiply 2 and 4.} \\ &= 15 - 4 && \text{Add 7 and 8.} \\ &= 11 && \text{Subtract 4 from 15.} \end{aligned}$$

b. $3(2) + 4(2 + 6)$

$$\begin{aligned} 3(2) + 4(2 + 6) &= 3(2) + 4(8) && \text{Add 2 and 6.} \\ &= 6 + 32 && \text{Multiply left to right.} \\ &= 38 && \text{Add 6 and 32.} \end{aligned}$$

Example 2

Evaluate each expression.

a. $3[2 + (12 \div 3)^2]$

$$\begin{aligned} 3[2 + (12 \div 3)^2] &= 3(2 + 4^2) && \text{Divide 12 by 3.} \\ &= 3(2 + 16) && \text{Find 4 squared.} \\ &= 3(18) && \text{Add 2 and 16.} \\ &= 54 && \text{Multiply 3 and 18.} \end{aligned}$$

b. $\frac{3 + 2^3}{4^2 \cdot 3}$

$$\begin{aligned} \frac{3 + 2^3}{4^2 \cdot 3} &= \frac{3 + 8}{4^2 \cdot 3} && \text{Evaluate power in numerator.} \\ &= \frac{11}{16 \cdot 3} && \text{Add 3 and 8 in the numerator.} \\ &= \frac{11}{48} && \text{Evaluate power in denominator.} \\ &= \frac{11}{48} && \text{Multiply.} \end{aligned}$$

Exercises

Evaluate each expression.

1. $(8 - 4) \cdot 2$

2. $(12 + 4) \cdot 6$

3. $10 + 2 \cdot 3$

4. $10 + 8 \cdot 1$

5. $15 - 12 \div 4$

6. $\frac{15 + 60}{30 - 5}$

7. $12(20 - 17) - 3 \cdot 6$

8. $24 \div 3 \cdot 2 - 3^2$

9. $8^2 \div (2 \cdot 8) + 2$

10. $3^2 \div 3 + 2^2 \cdot 7 - 20 \div 5$

11. $\frac{4 + 3^2}{12 + 1}$

12. $\frac{8(2) - 4}{8 \div 4}$

13. $250 \div [5(3 \cdot 7 + 4)]$

14. $\frac{2 \cdot 4^2 - 8 \div 2}{(5 + 2) \cdot 2}$

15. $\frac{4 \cdot 3^2 - 3 \cdot 2}{3 \cdot 5}$

16. $\frac{4(5^2) - 4 \cdot 3}{4(4 \cdot 5 + 2)}$

17. $\frac{5^2 - 3}{20(3) + 2(3)}$

18. $\frac{8^2 - 2^2}{(2 \cdot 8) + 4}$

NAME: _____

PEMDAS HOMEWORK

9/20/18

DATE: _____

MRS. GALLUZZO

USE THE WORD BANK TO FILL IN THE WORDS USED FOR THE "ORDER OF OPERATIONS". (HINT: ALL THE WORDS WILL NOT BE USED).

Please Excuse My Dear Aunt Sally

P _____
E _____
M _____
D _____
A _____
S _____

Word Bank	
multiplication	addition
event	slope
diameter	division
subtraction	exponents
parentheses	permutations
angle	mode

1. Which of these operations should be performed first in order to solve the following equation?

$$4 + 27 \div 3 (10 - 2)$$

- a) addition
b) subtraction
c) multiplication
d) division

2. Which of these operations should be performed first in order to solve the following equation?


$$5 (10 + 2) - 7 \div 3$$

- a) addition
b) subtraction
c) multiplication
d) division

3. Which of these operations should be performed first in order to solve the following equation?

$$7 - 16 (4 \times 3) \div 8$$

- a) addition
b) subtraction
c) multiplication
d) division

Practice Page**Math A**
*Order of Operations &
Evaluating Expressions***Order of Operations**

Get your pencil and calculator ready
and try these problems.

1. $20 + 3(5 - 1) = \underline{\text{(answer)}}$

2. $3 + 2^2(1+8) = \underline{\text{(answer)}}$

3. $(5 \cdot 4)^2 = \underline{\text{(answer)}}$

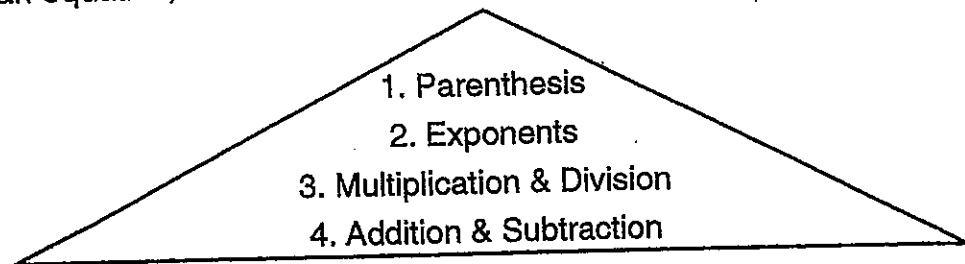
4. $2(3 + 5) - 9 = \underline{\text{(answer)}}$

5. $2[13 - (1+6)] = \underline{\text{(answer)}}$

6. $48 / 3 + 5 = \underline{\text{(answer)}}$

Order of Operations

When solving an equation, be sure to follow the **priority pyramid**.



Solve the following.

1. $3 + 2 \times 4 =$

2. $8 + 6 \times 2 =$

3. $7 + 5 - 8 =$

4. $4 + 10 \div 2 =$

5. $4^2 + 3^2 =$

6. $9 \div 3 \times 8 =$

7. $5(6 + 2) =$

8. $72 \div 8 \times 7 =$

9. $2 \times 15 \div 3 =$

10. $14 - 56 \div 7 =$

11. $9 - 3 + 6 =$

12. $6 + 3 - 2 =$

13. $32 \div 4 \times 3 =$

14. $2 \times 8 \div 4 =$

15. $12 - 30 \div 6 =$

16. $35 \div 5 - 6 =$

17. $5 \times 2 \times 8 =$

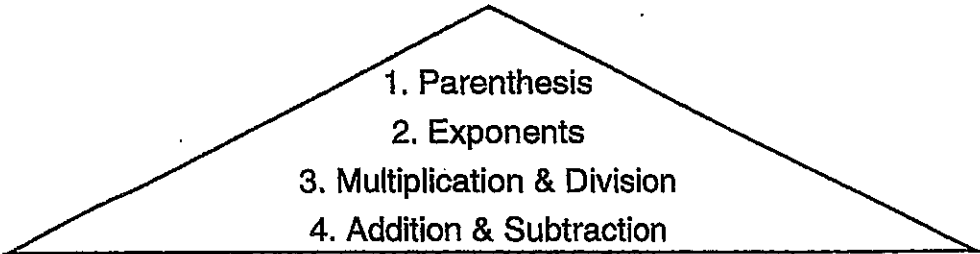
18. $15 - 60 \div 5 =$

19. $9 + 20 \div 5 =$

20. $6 - 40 \div 8 =$

Order of Operations

When solving an equation, be sure to follow the priority pyramid.

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1. Parenthesis
 2. Exponents
 3. Multiplication & Division
 4. Addition & Subtraction

Solve the following.

1. $3 + (6 \times 2) =$

2. $4 + 3(12 - 9) =$

3. $(7 + 2)^2 =$

4. $(9 - 7)^3 - (4 + 3) =$

5. $4(9 - 6)^2 =$

6. $(14 - 6)^2 =$

7. $2(5 + 4) =$

8. $(2 \times 3) + (14 \div 7) =$

9. $7 + 2^2(5 + 2) =$

10. $4 + 7 \times 3 - 8 \times 2 =$

11. $3 + 7^2 =$

12. $(5^2 - 3 \times 5) \div 2 =$

13. $(12 - 8)^3 =$

14. $3 \times 8 - (7 \times 2 + 4) =$

15. $(2^2 + 3)^2 - 4 =$

16. $4^2 - 2^3 =$

17. $5^2 - 4^2 + 2 =$

18. $5 + 3 \times 2 - 4 \div 2 =$

19. $(3^2 + 2 \times 3) \div 5 =$

20. $7^2 - 2(4 \times 3 + 7) =$