

Learning Objective: Students will be able to use the order of operations to evaluate a numerical expression.

Warm Up

$$24 \overline{)1104}$$

$$91 \overline{)4823}$$

$$57 \overline{)912}$$

$$20 \overline{)680}$$

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DMSB

Warm Up Answers

$$\begin{array}{r} \overset{1}{2}4 \\ \times 4 \\ \hline 96 \\ 24 \\ \times 6 \\ \hline 144 \end{array}$$

$$\begin{array}{r} \overset{80}{24} \overset{46}{104} \\ 24 \overline{) 1104} \\ \underline{-960} \\ 144 \\ \underline{-144} \\ 0 \end{array}$$

$$\overset{16}{57} \overline{) 912}$$

$$\begin{array}{r} \overset{00}{91} \overset{53}{4823} \\ 91 \overline{) 4823} \\ \underline{-4550} \\ 273 \\ \underline{-273} \\ 0 \end{array}$$

$$\overset{34}{20} \overline{) 680}$$

$$\begin{array}{r} 91 \\ \times 5 \\ \hline 455 \end{array}$$

$$\begin{array}{r} 91 \\ \times 3 \\ \hline 273 \end{array}$$

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I 1.2 Record and Practice Journal

$$4 \cdot 4 \cdot 4 \cdot 4$$

$$\begin{array}{r} 16 \\ \times 4 \\ \hline 64 \\ 4 \\ \hline 256 \end{array}$$

$$8 \cdot 8 \cdot 8$$

$$\begin{array}{r} 9 \\ \times 3 \\ \hline 27 \end{array}$$

Write the product as a power.

1. $5 \times 5 \times 5$
 5^3

2. 13×13
 13^2

3. $8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8$
 8^6

4. $12 \cdot 12 \cdot 12 \cdot 12 \cdot 12$
 12^5

5. $10 \cdot 10 \cdot 10 \cdot 10$
 10^4

6. $17 \times 17 \times 17$
 17^3

Find the value of the power.

7. 4^4
 256

8. 9^3
 729

9. 24^2
 576

Determine whether the number is a perfect square.

10. 47
no

11. 16
yes

12. 121
yes

13. You complete 3 centimeters of a necklace in an hour. Each hour after the first, you triple the length of the necklace. Write an expression using exponents for the length of the necklace after 3 hours. Then find the length.

3^3 ; 27 cm

$$\begin{array}{r} 9 \cdot 9 \cdot 9 \\ 81 \\ \times 9 \\ \hline 729 \end{array}$$

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Lesson 1.3

September 11, 2014

Essential Question What is the effect of inserting parentheses into a numerical expression?

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Self-Evaluation Scale

Score	Description
4	I can teach other students how to use the order of operations to evaluate a numerical expression.
3	I can use the order of operations to evaluate a numerical expression.
2	I recognize, but still need help to use the order of operations to evaluate a numerical expression.
1	I do not know how to use the order of operations to evaluate a numerical expression.

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Activity 1 & 2

With a partner, work on Activity 1 & 2 on pages 11 & 12 of your Big Ideas Record and Practice Journal.

September 11, 2014 Period 3 Lesson 1.3

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1 ACTIVITY: Comparing Different Orders

Work with a partner. Find the value of the expression by using different orders of operations. Are your answers the same? (Circle *yes* or *no*.)

a. Add, then multiply. Multiply, then add. Same?
 $3 + 4 \times 2 = \underline{\quad}$ $3 + 4 \times 2 = \underline{\quad}$ Yes No

b. Add, then subtract. Subtract, then add. Same?
 $5 + 3 - 1 = \underline{\quad}$ $5 + 3 - 1 = \underline{\quad}$ Yes No

c. Divide, then multiply. Multiply, then divide. Same?
 $12 \div 3 \cdot 2 = \underline{\quad}$ $12 \div 3 \cdot 2 = \underline{\quad}$ Yes No

d. Divide, then add. Add, then divide. Same?
 $16 \div 4 + 4 = \underline{\quad}$ $16 \div 4 + 4 = \underline{\quad}$ Yes No

e. Multiply, then subtract. Subtract, then multiply. Same?
 $8 \times 4 - 2 = \underline{\quad}$ $8 \times 4 - 2 = \underline{\quad}$ Yes No

f. Multiply, then divide. Divide, then multiply. Same?
 $8 \cdot 4 \div 2 = \underline{\quad}$ $8 \cdot 4 \div 2 = \underline{\quad}$ Yes No

g. Subtract, then add. Add, then subtract. Same?
 $13 - 4 + 6 = \underline{\quad}$ $13 - 4 + 6 = \underline{\quad}$ Yes No

h. Multiply, then add. Add, then multiply. Same?
 $1 \times 2 + 3 = \underline{\quad}$ $1 \times 2 + 3 = \underline{\quad}$ Yes No

September 11, 2014 Period 3 Lesson 1.3

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2 ACTIVITY: Using Parentheses

Work with a partner. Use all the symbols and numbers to write an expression that has the given value.

<i>Symbols and Numbers</i>	<i>Value</i>	<i>Expression</i>
a. (), +, ÷, 3, 4, 5	3	_____
b. (), −, ×, 2, 5, 8	11	_____
c. (), ×, ÷, 4, 4, 16	16	_____
d. (), −, ÷, 3, 8, 11	1	_____
e. (), +, ×, 2, 5, 10	70	_____

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Numerical Expression

an expression that contains only numbers
and operations

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Evaluate

to find the value of

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Order of Operations

a set of rules to evaluate a mathematical expression

$$3 + 5 \times 6$$
$$3 + 30$$
$$(33)$$

September 11, 2014 Period 3 Lesson 1.3

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P.E.M.D.A.S.



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PEMDAS

 **Key Idea**

Order of Operations

1. Perform operations in **P**arentheses.
2. Evaluate numbers with **E**xponents.
3. **M**ultiply or **D**ivide from left to right.
4. **A**dd or **S**ubtract from left to right.

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1

Using Order of Operations

a. Evaluate $12 - 2 \times 4$.

$$\begin{aligned} 12 - 2 \times 4 &= 12 - 8 \\ &= 4 \end{aligned}$$

Multiply 2 and 4.

Subtract 8 from 12.

b. Evaluate $7 + 60 \div (3 \times 5)$.

$$\begin{aligned} 7 + 60 \div (3 \times 5) &= 7 + 60 \div 15 \\ &= 7 + 4 \\ &= 11 \end{aligned}$$

Perform operation in parentheses.

Divide 60 by 15.

Add 7 and 4.

$$7 + 60 \div (3 \times 5).$$

$$7 + 60 \div 15$$

$$7 + 4$$

$$\textcircled{11}$$

Evaluate $12 - 2 \times 4$.

$$12 - 8$$

$$\textcircled{4}$$

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Name: _____ Date: _____

Homework

$$56 \overline{)2968}$$

$$94 \overline{)3854}$$

$$84 \overline{)8232}$$

$$33 \overline{)792}$$

$$18 \overline{)702}$$

$$21 \overline{)1743}$$

$$28 \overline{)364}$$

$$22 \overline{)1672}$$

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Lesson 1.3

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Essential Question

into a numerical expression?

What is the effect of inserting parentheses

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Homework

Division Worksheet