

CCSS.Math.Content.5.OA.A.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

### **Parentheses: ( )**

"round brackets"  
#1 first level

*Also called* bracket. either of a pair of characters, ( ), used to enclose a mathematical expression.

#### **Example:**

$$5 \times (6 + 2) = 40$$

remember to solve the expression inside the parentheses first.

### **Brackets: [ ]**

"box or square brackets"  
#2 second level

Parentheses of various forms indicating that the enclosed quantity is to be treated as a unit.

#### **Example:**

$$6 \times [5 \times (6 + 2)] = 240$$

parentheses first, then brackets, then the rest following the order of operations.

### **Braces: { }**

"curly brackets"  
#3 third level

one of two marks { } used to connect words or items to be considered together

#### **Example:**

$$2 \times \{6 \times [5 \times (6+2)]\} = 480$$

{ [ ( ) ] }

Discuss Brackets, Parentheses, and Braces

Put the equation below on the board and ask students how they might use brackets, braces, and parentheses to help them solve the problem.

## More PEMDAS Practice

The following photo is going viral in Facebook with 848, 039 likes as of this writing. I checked out the latest 200 comments/[answers](#) and I got the following: 20, 320, 306, 128, 116, 34, 128, 160, including "depends on the value of  $x$ ". But there should only be one answer otherwise, what's the use of learning arithmetic if number expressions are subject to different interpretations. That's why, mathematicians has to formulate the rules of the order of [operation](#) in around 1500s – the MDAS. This rule simply means you first do multiplication (M) and division (D) which ever one of them comes first from left to right, then do addition (A) and subtraction (S) which ever comes first from left to write. If the expression comes with exponents and parenthesis, you do the one with parenthesis first then exponentiation, P then E, followed by M or D, followed by A or S. Remember PEMDAS. But don't forget that in the order of operation, multiplication and division have the same rank and so do addition and subtraction.

Answer this if you are a Mathaholic!





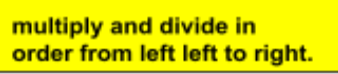
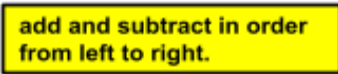
$$4 \times 4 + 4 \times 4 + 4 - 4 \times 4 = ?$$

73% people failed to answer this!

1. Look at the **expression**, **inequality**, and **equation** below. Which is an expression? Which is an inequality? Which is an equation? How do you know?

	<b>Evaluate</b> (Find the Value) Is each statement <b>TRUE</b> ?	Write the name of each mathematical statement below. Is it an equation, expression, or inequality?
$7 + 2 + 3 > 4 + 5$		
$3^2 + \{ 7 \times [ 4 + (3 \times 2) ] \} = 79$		
$4 \times 4 + 8 \div 2^3$		

2. Remember the acronym, **PEMDAS**, to help you apply the **Order of Operations**. When a surgeon operates on the body, he or she follows a specific order, an order that has been created for the patient's care, safety, and healthy recovery. Similarly, mathematicians came up with an order to use when "operating" on numbers or **evaluating** and/or **interpreting** expressions, equations, and inequalities. The "sight-bite" or image below will help you to remember the order of operations.

<p>1. Parentheses ( ) → </p> <p>2. Exponents * → </p> <p>3. Multiply and Divide x ÷ → </p> <p>4. Add and Subtract + - → </p>	<p><b>P</b>arentheses ( )</p> <p><b>E</b>xponents <math>2^2 = 2 \times 2 = 4</math></p> <p><b>M</b>ultiplication</p> <p><b>D</b>ivision</p> <p><b>A</b>ddition</p> <p><b>S</b>ubtraction</p> <p></p> <p></p>
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3. Read the Standard:

**CCSS.Math.Content.5.OA.A.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

**Review parentheses, brackets, and braces, and evaluate the expressions on the right.**

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**A.  $7 + 4 \times 3 \div 2$       Value:**

**B.  $8 + (3 \times 8) \div 2^3$       Value:**

**C.  $4^2 - [2 \times (3 + 1)]$       Value:**

**D.  $\{10 \times [7 + (4 \div 2) - 1]\}$       Value**

4. Review the Standard

**CCSS.Math.Content.5.OA.A.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as  $2 \times (8 + 7)$ . Recognize that  $3 \times (18932 + 921)$  is three times as large as  $18932 + 921$ , without having to calculate the indicated sum or product.

Write the Expressions Described Below

A. Five years of school is equal to 5 times as many days as one year of school. One year of school is equal to 180 days.

B. Each day in school we have a 40 minute lunch break. There are 180 days of school. How many hours of lunch do we have each school year? (remember 60 minutes = 1 hour)

C. There are 365 days in the year (except Leap Years that have 366). In a typical year (not a leap year), how many days are not school days?

D. Each week you have a number of specials including gym for 45 minutes, music for 45 minutes, art for 45 minutes, library for 30 minutes, tech for 30 minutes, and music workshop or instrumental for 30 minutes. How many minutes a week do you spend at a special?

E. Each day we have about 15 minutes in the morning for a morning recess? How many hours do you spend each school year at morning recess?

5. Make a chart of your numerical expressions below. List the expressions from the lowest value to the highest. Show what each expression describes, write the expression, and then evaluate.

The expressions are listed from lowest value to highest value.

#	Value	Expression	Topic
1.			
2.			
3.			
4.			
5.			

**6.** Think of other parts of your life. How can you describe those parts of your life using numerical expressions. Make a chart like the one above and write expressions, values, and topics to describe your life's events, events such as sports practice, homework, video game time, travel, and more.