Name: _____ Date: _____
Ms. Napolitano CCSS:_____

Topic: Order of Operations Day 5

Try Now

1. Which operation should you perform first when you evaluate the following expression?

$$15 - 8 \div (4 - 2) \times 3$$

F. Subtract 8 from 15.

G. Divide 8 by 4.

H. Subtract 2 from 4.

I. Multiply 2 by 3.

2. Evaluate the following powers.

a) $\frac{1}{3}^3$

Answer:_____

b) $3^4 + (9.5 - 1)^0$

Answer:_____

3. Why does $12 - 8 \div 2 = 8$, but $(12 - 8) \div 2 = 2$? ***Justify your answer***.
Show your work.

Explanation:

_____
_____
_____
_____

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Classwork Day 5: Order of Operations

Rules for Order of Operations.

P **Parentheses**	
E **Exponents**	
Left ——— **to** ———→ **Right** **M** **Multiplication**	 **D** **Division**
Left ——— **to** ———→ **Right** **A** **Addition**	 **S** **Subtraction**

Engage: Think-Pair-Share

1) **Ms. Frost said that the expressions $3(9 \times 3)(3)^2$ is equivalent to 3^6. Explain the steps that you would take to show that the expression $3(9 \times 3)(3^2)$ is equivalent to 3^6?**

_____
_____
_____
_____
_____
_____

Think-Pair-Share (7 minutes)

2) Consider a family of 4 that goes a soccer game. Tickets are $5.00 each. The mom also buys a soda for $2.00. How would your write this expression?

a) Write the expression below.

Expression: _____

b) How much will this outing cost?

Solution: _____

c) Take two minutes to turn and talk to the person next to you. (T-P-S) Be prepared to share out your response.

STOP

---

3) The same family from example 3 goes to the game as before, but each of the family members want a soda. How would you write this expression?

a) **Expression: _____**

b) Why would you add the 5 and 2 first?

_____

_____

_____

c) How much will this outing cost?

Solution: _____

Group Work

Example #1

$$4 + 9^2 \div 3 \times 2 - 2$$

What operation is evaluated first?

What operations are evaluated next?

What operations are always evaluated last?

What is the final answer?

Example #2_ Evaluate the following expressions:

A	B
$90 - 5^2 \times 3$ **Solution:_____**	$2 \cdot (13 + 5 - 14 \div (3 + 4))$ **Solution:_____**

Example #3

$$2 \times (3 + 4^2)$$

Which value will we evaluate first within the parentheses? Evaluate.

Evaluate the rest of the expression.

Solution:_____

Example 4

What do you think will happen when the exponent in this expression is outside of the parentheses?

$$2 \times (3 + 4)^2$$

Will the answer be the same?

Which should we evaluate first? Evaluate.

What happens differently here than in our last example?

What should our next step be?

Evaluate to find the final answer.

What do you notice about the two answers?

What was different between the two expressions?

What conclusions can you draw about evaluating expressions with parentheses and exponents?

Example #5_ Evaluate the following expressions:

A	**B**
$7 + (12 - 3^2)$ **Solution:_____**	$7 + (12 - 3)^2$ **Solution:_____**

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Independent Practice Day 5: Order of Operations

Level C

Directions: For questions 1-5, please show all of your work in your classwork section of your binders.

Evaluate each expression.

1. $3 \times 5 + 2 \times 8 + 2$

2. $(\$1.75 + 2 \times \$0.25 + 5 \times \$0.05) \times 24$

3. $(2 \times 6) + (8 \times 4) + 1$

4. $\big((8 \times 1.95) + (3 \times 2.95) + 10.95\big) \times 1.06$

5. $\big((12 \div 3)^2 - (18 \div 3^2)\big) \times (4 \div 2)$

6. $\frac{(6-2)^3-22}{2}$.

7. $\frac{54 \div 6 + 31}{4^2 + 4}$

8. $\frac{4^3 \div 2(4)}{3^2-(8-7)}$

9. Johan evaluated the numerical expression $8 \div (6 - 4)^3 + 3^2$. He got an answer of $9\frac{2}{3}$. Explain to Johan where he went wrong and how to get the correct answer.

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Independent Practice Day 5: Order of Operations

Level B

1. Evaluate $\frac{(6-2)^3-22}{2}$. Circle the appropriate answer, and answer the attached question.

   a) $\frac{5}{2}$
   b) 21
   c) 0
   d) 52

Maya chose A as the correct answer. Was she correct? Justify your answer.

_____
_____
_____

2. Evaluate the numerical expression, (8 + 6) ÷ 2 + 6 x 5

Answer:_____

3. Evaluate the numerical expression, $\frac{(8 \div 2)^2+6}{7+4}$

Answer:_____

4. There are 34 people in a restaurant. Four groups of 3 people leave, and then 5 groups of 2 people arrive. Evaluate the expression $34 - 4 \bullet 3 + 5 \bullet 2$ to determine how many people are in the restaurant.

There are _____ people in the restaurant.

5. From the choices on the left, write inside the box each expression equivalent to $3^4 \times 3^2$?

$3^2 \times 3^4$	3^6	$3^3 \times 3^3$	12 x 6	81 x 9	3^8	Expressions Equivalent to $3^4 \times 3^2$.

6. Evaluate the expression: $(5 - 3)^4 - 2(7) + 8^2$

Answer:_____

7. Evaluate: $\dfrac{54 \div 6 + 31}{4^2 + 4}$

Answer:_____

Name: _____ Date:_____
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Independent Practice Day 5: Order of Operations

Level A

1. Evaluate $\frac{(6-2)^3-22}{2}$. Circle the appropriate answer, and answer the attached question.

e) $\frac{5}{2}$
f) 21
g) 0
h) 52

Maya chose A as the correct answer. Was she correct? Justify your answer.

_____
_____
_____

2. Evaluate the numerical expression, (8 + 6) ÷ 2 + 6 x 5

Answer:_____

3. Evaluate the numerical expression, $\frac{45 \div 5+7}{8}$

Answer:_____

4. There are 34 people in a restaurant. Four groups of 3 people leave, and then 5 groups of 2 people arrive. Evaluate the expression $34 - 4 \bullet 3 + 5 \bullet 2$ to determine how many people are in the restaurant.

There are _____ people in the restaurant.

5. From the choices on the left, write inside the box each expression equivalent to $3^4 \times 3^2$?

$3^2 \times 3^4$	3^6	$3^3 \times 3^3$	12×6	81×9	3^8	Expressions Equivalent to $3^4 \times 3^2$.

6. Evaluate the following numerical expression, $(5-3)^4 - 2(7) + 8^2$

Answer:_____

Name: _____ Date: _____

Ms. Napolitano Oder of Operations

Day 5 Homework

I can write and evaluate numerical expressions involving whole-number exponents.

Directions: Evaluate the following expressions below.

$10 \times 8^3 + 14$

_____

_____

_____

$10^2 \div 5 \times 2$

_____

_____

_____

$80 - 16 + 6^2$

_____

_____

_____

$4^3 + 72 \div 12$

_____

_____

_____

$28 + 9^2 \times 5$

_____

_____

_____

$108 \div 27 + 7^3$

_____

_____

_____

$6^3 + 56 - 49$

_____

_____

_____

$45 \times 2 \div 3^2$

_____

_____

_____

$\{56 - 7 + 8\} + 5^3$

$839 - (48 \div 12 + 5)^3$

$9 \times 6^3 - [215 \div 5]$

$7^2 - \{72 \div 4\} + 32$

$171 + 125 - (102 \div 6)^2$

$[82 + 17] + 9^2 \times 8$