1.3 Order of Operations

ESSENTIAL QUESTION

How can you use the Order of Operations to evaluate expressions?

COMMON CORE STATE STANDARDS

6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.

ORDER OF OPERATIONS

1. Parentheses
2. Exponents
3. Multiplication and Division from Left to Right
4. Addition and Subtraction from Left to Right

PEMDAS

Evaluate the Expression

$12 - 2 \times 4$

$12 - 8$

4

Evaluate the Expression

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

$7 + 60 \div 15$

$7 + 4$

11

Evaluate the Expression

$30 \div (7 + 2^3) \times 6$

$30 \div (7 + 8) \times 6$

$30 \div 15 \times 6$

2×6

12

ON YOUR OWN

Evaluate the Expression

$7 \cdot 5 + 3$

$35 + 3$

38

ON YOUR OWN

Evaluate the Expression

$(28 - 20) \div 4$

$8 \div 4$

2

ON YOUR OWN

Evaluate the Expression

$6 \times 15 - 10 \div 2$

$90 - 10 \div 2$

$90 - 5$

85

ON YOUR OWN

Evaluate the Expression

$6 + 2^4 - 1$

$6 + 16 - 1$

$22 - 1$

21

ON YOUR OWN

Evaluate the Expression

$4 \cdot 3^2 + 18 - 9$

$4 \cdot 9 + 18 - 9$

$36 + 18 - 9$

$54 - 9$

45

ON YOUR OWN

Evaluate the Expression

$16 + (5^2 - 7) \div 3$

$16 + (25 - 7) \div 3$

$16 + 18 \div 3$

$16 + 6$

22

Evaluate the Expression

$9 + 7(5 - 2)$

$9 + 7(3)$

$9 + 21$

30

Evaluate the Expression

$15 - 4(6 + 1) \div 2^2$

$15 - 4(6+1) \div 2^2$

$15 - 4(7) \div 2^2$

$15 - 4(7) \div 4$

$15 - 28 \div 4$

$15 - 7$

8

ON YOUR OWN

Evaluate the Expression

$50 + 6(12 \div 4) - 8^2$

$50 + 6(3) - 8^2$

$50 + 6(3) - 64$

$50 + 18 - 64$

$68 - 64$

4

ON YOUR OWN

Evaluate the Expression

$5^2 - 5(10 - 5)$

$5^2 - 5(5)$

$25 - 5(5)$

$25 - 25$

0

ON YOUR OWN

Evaluate the Expression

$\frac{8(3 + 4)}{7}$

$\frac{8(7)}{7}$

$\frac{56}{7}$

8

ON YOUR OWN

Evaluate the Expression

$$\frac{6 \cdot 4}{4 + 3^2 - 1}$$

$$\frac{24}{4+3^2-1}$$

$$\frac{24}{4+9-1}$$

$$\frac{24}{13-1}$$

$$\frac{24}{12}$$

2

ON YOUR OWN

Evaluate the Expression

$$\frac{5^2 \cdot 2}{1 + 6^2 - 12}$$

$$\frac{25 \cdot 2}{1+6^2-12}$$

$$\frac{50}{1+6^2-12}$$

$$\frac{50}{1+36-12}$$

$$\frac{50}{37-12}$$

$$\frac{50}{25}$$

2

ON YOUR OWN

Evaluate the Expression

$$\frac{13 - 4}{18 - 4^2 + 1}$$

$$\frac{9}{18-4^2+1}$$

$$\frac{9}{18-16+1}$$

$$\frac{9}{2+1}$$

$$\frac{9}{3}$$

3

EXAMPLE 4 Real-Life Application

You buy foam spheres, paint bottles, and wooden rods to construct a model of our solar system. What is your total cost?

Item	Quantity	Cost per Item
Spheres	9	$2
Paint	6	$3
Rods	8	$1

Cost of 9 spheres + Cost of 6 paint bottles + Cost of 8 rods

$9(2) + 6(3) \cdot 8 \cdot 1$

$9(2)+6(3)+8(1)$

$18+6(3)+8(1)$

$18+18+8(1)$

$18+18+8$

$36+8$

44

Your total cost is $44.