Name _____ Date _____

Order of Operations

To evaluate numerical expressions, use a set of rules called the **order of operations**.

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.

Example 1 **Evaluate each expression.**

a. $20 - 5 \cdot 6$

$20 - 5 \cdot 6 = 20 - 30$ Multiply 5 and 6.

$= -10$ Subtract 30 from 20.

b. $12 \cdot 3 + 4^2 \div 8$

$12 \cdot 3 + 4^2 \div 8 = 12 \cdot 3 + 16 \div 8$ Evaluate 4^2.

$= 36 + 16 \div 8$ Multiply 12 and 3.

$= 36 + 2$ Divide 16 by 8.

$= 38$ Add 36 and 2.

c. $7(5 - 3) + 6^2 \div (-3)$

$7(5 - 3) + 6^2 \div (-3) = 7(2) + 6^2 \div (-3)$ Perform operation in parentheses.

$= 7(2) + 36 \div (-3)$ Evaluate 6^2.

$= 14 + 36 \div (-3)$ Multiply 7 and 2.

$= 14 + (-12)$ Divide 36 by -3.

$= 2$ Add 14 and -12.

Practice

Check your answers at BigIdeasMath.com.

Evaluate the expression.

1. $8 + 2 \cdot 5$ 18

2. $40 \div 8 - 7$ -2

3. $5 \cdot 4^2 \div 8$ 10

4. $1 - 7 + 5^2$ 19

5. $\dfrac{3 - (-9)}{-10 + 6}$ -3

6. $\dfrac{2 + 4}{1 - 5} - 1$ $-2\frac{1}{2}$

7. $(12 - 8)^2 \div 2^5$ $\frac{1}{2}$

8. $18 + 9^2 - 7 \cdot (-3)$ 120

9. $32 \div 8 + 2 \cdot 8^2$ 132

10. $6 \div (7 \div 28)$ 24

11. $36 \div \left(1 - |2 - 7|\right)$ -9

12. $(-2)^2 \cdot 5 - 7(9 - 5)$ -8

13. $4(3 + 8) - 8^2 \div 32$ 42

14. $10(3 - 6)^3 + 41$ -229

15. $(2 - 5)^2 - (4 \cdot 5^2)$ -91

16. **RESTAURANT** There are 82 people in a restaurant. Four groups of 3 leave and then five groups of 2 enter. Evaluate the expression $82 - 4(3) + 5(2)$ to find how many people are in the restaurant. 80 people