NAME _____ DATE _____ PERIOD _____

1-2 Study Guide and Intervention

Look

ALL WORK ON LOOSELEAF Mr.C.

Order of Operations

Evaluate Rational Expressions Numerical expressions often contain more than one operation. To evaluate them, use the rules for order of operations shown below.

Order of Operations	
	Step 1 Evaluate expressions inside grouping symbols.
	Step 2 Evaluate all powers.
	Step 3 Do all multiplication and/or division from left to right.
	Step 4 Do all addition and/or subtraction from left to right.

PE(MD)(AS)
1 2 3 4

Example 1 **Evaluate each expression.**

a. $7 + 2 \cdot 4 - 4$

$7 + 2 \cdot 4 - 4 = 7 + 8 - 4$ Multiply 2 and 4.

$= 15 - 4$ Add 7 and 8.

$= \boxed{11}$ Subtract 4 from 15.

b. $3(2) + 4(2 + 6)$

$3(2) + 4(2 + 6) = 3(2) + 4(8)$ Add 2 and 6.

$= 6 + 32$ Multiply left to right.

$= \boxed{38}$ Add 6 and 32.

Example 2 **Evaluate each expression.**

a. $3[2 + (12 \div 3)^2]$

$3[2 + (12 \div 3)^2] = 3(2 + 4^2)$ Divide 12 by 3.

$= 3(2 + 16)$ Find 4 squared.

$= 3(18)$ Add 2 and 16.

$= \boxed{54}$ Multiply 3 and 18.

b. $\dfrac{3 + 2^3}{4^2 \cdot 3}$

$\dfrac{3 + 2^3}{4^2 \cdot 3} = \dfrac{3 + 8}{4^2 \cdot 3}$ Evaluate power in numerator.

$= \dfrac{11}{4^2 \cdot 3}$ Add 3 and 8 in the numerator.

$= \dfrac{11}{16 \cdot 3}$ Evaluate power in denominator.

$= \boxed{\dfrac{11}{48}}$ Multiply.

Lesson 1-2

Exercises Bonus: Convert $\frac{1}{31}$ to a decimal by long division.

Evaluate each expression.

1. $(8 - 4) \cdot 2$
2. $(12 + 4) \cdot 6$
3. $10 + 2 \cdot 3$
4. $10 + 8 \cdot 1$
5. $15 - 12 \div 4$
6. $\dfrac{15 + 60}{30 - 5}$
7. $12(20 - 17) - 3 \cdot 6$
8. $24 \div 3 \cdot 2 - 3^2$
9. $8^2 \div (2 \cdot 8) + 2$
10. $3^2 \div 3 + 2^2 \cdot 7 - 20 \div 5$
11. $\dfrac{4 + 3^2}{12 + 1}$
12. $\dfrac{8(2) - 4}{8 \div 4}$
13. $250 \div [5(3 \cdot 7 + 4)]$
14. $\dfrac{2 \cdot 4^2 - 8 \div 2}{(5 + 2) \cdot 2}$
15. $\dfrac{4 \cdot 3^2 - 3 \cdot 2}{3 \cdot 5}$
16. $\dfrac{4(5^2) - 4 \cdot 3}{4(4 \cdot 5 + 2)}$
17. $\dfrac{5^2 - 3}{20(3) + 2(3)}$
18. $\dfrac{8^2 - 2^2}{(2 \cdot 8) + 4}$