

WORKSHEET 1.2: SIMPLIFYING EXPRESSIONS THAT HAVE GROUPING SYMBOLS

Common grouping symbols include parentheses (), brackets [], and the fraction bar $\frac{\quad}{\quad}$. Follow the steps below to simplify expressions with grouping symbols:

1. Simplify expressions within grouping symbols first by following the order of operations. Multiply and divide in order from left to right. Then add and subtract in order from left to right.
2. After you have simplified all expressions within grouping symbols, multiply and divide in order from left to right.
3. Add and subtract in order from left to right.

EXAMPLES

$14 - (8 - 6) \times 5 =$	$2[3 + 5 \times 4 - 1] =$	$1 + \frac{3 + 12}{3} =$
$14 - 2 \times 5 =$	$2[3 + 20 - 1] =$	$1 + \frac{15}{3} =$
$14 - 10 =$	$2[23 - 1] =$	$1 + 5 =$
4	$2[22] = 44$	6

DIRECTIONS: Simplify the following expressions.

1. $(8 + 4) \times 3$
2. $28 \div (7 \times 2)$
3. $80 - 2[6 + 4 \times 2]$
4. $(3 + 6) - (2 + 4)$
5. $12 + 4(8 + 3 \times 5)$
6. $\frac{15 - 1}{7} \times 2$
7. $3(4 + 6) - 5(10 - 4)$
8. $15 + \frac{2 + 6 \times 2}{2}$



CHALLENGE: Is $3 \times 2 - 12 \div 4$ the same as $(3 \times 2) - (12 \div 4)$? Explain your reasoning.

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EXAMPLES

$14 - (8 - 6) \times 5 =$	$2[3 + 5 \times 4 - 1] =$	$1 + \frac{3 + 12}{3} =$
$14 - 2 \times 5 =$	$2[3 + 20 - 1] =$	$1 + \frac{15}{3} =$
$14 - 10 =$	$2[23 - 1] =$	$1 + 5 =$
4	$2[22] = 44$	6

DIRECTIONS: Simplify the following expressions.

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

36

2. $28 \div (7 \times 2)$

2

3. $80 - 2[6 + 4 \times 2]$

52

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

3

5. $12 + 4(8 + 3 \times 5)$

104

6. $\frac{15 - 1}{7} \times 2$

4

7. $3(4 + 6) - 5(10 - 4)$

0

8. $15 + \frac{2 + 6 \times 2}{2}$

22



CHALLENGE: Is $3 \times 2 - 12 \div 4$ the same as $(3 \times 2) - (12 \div 4)$? Explain your reasoning.

Yes. The parentheses are not necessary because of the order of operations.