Intermediate Algebra
Skill-Builder # AE - 1
Removing Nested Symbols of Grouping

Strategy: Repeatedly apply the **distributive property of multiplication over addition** and
combine like terms, starting from the innermost quantity, and work your way out.

Examples

1. $2 - 5\{4x - 7[x - 6(x - 3) - (x + 11)]\}$

      Solution:

$$2 - 5\{4x - 7[x - 6(x - 3) - (x + 11)]\}$$
$$= 2 - 5\{4x - 7[x - 6x + 18 - x - 11]\}$$
$$= 2 - 5\{4x - 7[-6x + 7]\}$$
$$= 2 - 5\{4x + 42x - 49\}$$
$$= 2 - 5\{46x - 49\}$$
$$= 2 - 230x + 245$$
$$= 247 - 230x$$

2. $-\{2 - [-2 - (2 - x)]\} - \{3x - 3[(x - 3) - (3 - x)]\}$

      Solution:

$$-\{2 - [-2 - (2 - x)]\} - \{3x - 3[(x - 3) - (3 - x)]\}$$
$$= -\{2 - [-2 - 2 + x]\} - \{3x - 3[x - 3 - 3 + x]\}$$
$$= -\{2 - [-4 + x]\} - \{3x - 3[2x - 6]\}$$
$$= -\{2 + 4 - x\} - \{3x - 6x + 18\}$$
$$= -\{6 - x\} - \{-3x + 18\}$$
$$= -6 + x + 3x - 18$$
$$= 4x - 24$$

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Simplify.

1. $1 - 2\{3 - 4[5 - 6(7 - 8)] - 9(10 - 11) - (-12)\}$

2. $-(x - 2x) - \{2x - [x - 2(x - 2)] + x[-2x - (-2 - 2x)]\}$

3. $3 - 4\{x - 2[x - y - (2x - 2y)]\} - \{y - x - [-x + y - (-y - x)]\}$

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Answers
1. 41
2. $-4x + 4$
3. $3 - 11x + 9y$