Maintaining Mathematical Proficiency

Simplifying Algebraic Expressions

Example 1 **Simplify $6x + 5 - 3x - 4$.**

$$6x + 5 - 3x - 4 = 6x - 3x + 5 - 4 \quad \text{Commutative Property of Addition}$$
$$= (6 - 3)x + 5 - 4 \quad \text{Distributive Property}$$
$$= 3x + 1 \quad \text{Simplify.}$$

Example 2 **Simplify $-8(y - 3) + 2y$.**

$$-8(y - 3) + 2y = -8(y) - (-8)(3) + 2y \quad \text{Distributive Property}$$
$$= -8y + 24 + 2y \quad \text{Multiply.}$$
$$= -8y + 2y + 24 \quad \text{Commutative Property of Addition}$$
$$= (-8 + 2)y + 24 \quad \text{Distributive Property}$$
$$= -6y + 24 \quad \text{Simplify.}$$

Simplify the expression.

1. $3x - 7 + 2x$ **2.** $4r + 6 - 9r - 1$ **3.** $-5t + 3 - t - 4 + 8t$

4. $3(s - 1) + 5$ **5.** $2m - 7(3 - m)$ **6.** $4(h + 6) - (h - 2)$

Finding the Greatest Common Factor

Example 3 **Find the greatest common factor (GCF) of 42 and 70.**

To find the GCF of two numbers, first write the prime factorization of each number. Then find the product of the common prime factors.

$$42 = 2 \cdot 3 \cdot 7$$
$$70 = 2 \cdot 5 \cdot 7$$

▶ The GCF of 42 and 70 is $2 \cdot 7 = 14$.

Find the greatest common factor.

7. 20, 36 **8.** 42, 63 **9.** 54, 81

10. 72, 84 **11.** 28, 64 **12.** 30, 77

13. **ABSTRACT REASONING** Is it possible for two integers to have no common factors? Explain your reasoning.