

Lesson Summary

- Rewrite subtraction as adding the opposite before using any order, any grouping.
- Rewrite division as multiplying by the reciprocal before using any order, any grouping.
- The opposite of a sum is the sum of its opposites.
- Division is equivalent to multiplying by the reciprocal.

Problem Set

1. Write each expression in standard form. Verify that your expression is equivalent to the one given by evaluating each expression using $x = 5$.

a. $3x + (2 - 4x)$	b. $3x + (-2 + 4x)$	c. $-3x + (2 + 4x)$
d. $3x + (-2 - 4x)$	e. $3x - (2 + 4x)$	f. $3x - (-2 + 4x)$
g. $3x - (-2 - 4x)$	h. $3x - (2 - 4x)$	i. $-3x - (-2 - 4x)$

- j. In problems (a)–(d) above, what effect does addition have on the terms in parentheses when you removed the parentheses?
 - k. In problems (e)–(i), what effect does subtraction have on the terms in parentheses when you removed the parentheses?
2. Write each expression in standard form. Verify that your expression is equivalent to the one given by evaluating each expression for the given value of the variable.

a. $4y - (3 + y); y = 2$	b. $(2b + 1) - b; b = -4$	c. $(6c - 4) - (c - 3); c = -7$
d. $(d + 3d) - (-d + 2); d = 3$	e. $(-5x - 4) - (-2 - 5x); x = 3$	f. $11f - (-2f + 2); f = \frac{1}{2}$
g. $-5g + (6g - 4); g = -2$	h. $(8h - 1) - (h + 3); h = -3$	i. $(7 + w) - (w + 7); w = -4$
j. $(2g + 9h - 5) - (6g - 4h + 2); g = -2 \text{ and } h = 5$		

3. Write each expression in standard form. Verify that your expression is equivalent to the one given by evaluating both expressions for the given value of the variable.

a. $-3(8x); x = \frac{1}{4}$	b. $5 \cdot k \cdot (-7); k = \frac{3}{5}$	c. $2(-6x) \cdot 2; x = \frac{3}{4}$
d. $-3(8x) + 6(4x); x = 2$	e. $8(5m) + 2(3m); m = -2$	f. $-6(2v) + 3a(3); v = \frac{1}{3}; a = \frac{2}{3}$

4. Write each expression in standard form. Verify that your expression is equivalent to the one given by evaluating both expressions for the given value of the variable.

a. $8x \div 2; x = -\frac{1}{4}$	b. $18w \div 6; w = 6$	c. $25r \div 5r; r = -2$
d. $33y \div 11y; y = -2$	e. $56k \div 2k; k = 3$	f. $24xy \div 6y; x = -2; y = 3$

5. For each problem (a)–(g), write an expression in standard form.

- Find the sum of $-3x$ and $8x$.
- Find the sum of $-7g$ and $4g + 2$.
- Find the difference when $6h$ is subtracted from $2h - 4$.
- Find the difference when $-3n - 7$ is subtracted from $n + 4$.
- Find the result when $13v + 2$ is subtracted from $11 + 5v$.
- Find the result when $-18m - 4$ is added to $4m - 14$.
- What is the result when $-2x + 9$ is taken away from $-7x + 2$?

6. Marty and Stewart are stuffing envelopes with index cards. They are putting x index cards in each envelope. When they are finished, Marty has 15 stuffed envelopes and 4 extra index cards, and Stewart has 12 stuffed envelopes and 6 extra index cards. Write an expression in standard form that represents the number of index cards the boys started with. Explain what your expression means.

7. The area of the pictured rectangle below is $24b \text{ ft}^2$. Its width is $2b \text{ ft}$. Find the height of the rectangle and name any properties used with the appropriate step.

