

Activity
3.1**Start Thinking!**

For use before Activity 3.1

Explain to a partner how an expression and an equation are different.

Give an algebraic and numerical example for each.

Activity
3.1**Warm Up**

For use before Activity 3.1

Write the phrase as an expression.

1. 7 increased by a number x
2. negative 14 minus y
3. negative 19 increased by n
4. the product of 14 and y
5. 10 divided by the sum of a number n and 6
6. 6 times the quotient of a number x and 3

Given the problem $6x + 4 - 2x$, your brother says the answer is $8x + 4$. Explain to your brother why his answer is incorrect. Give the correct answer.

Simplify the expression.

1. $10x + 4x$

2. $7y + 12 - 15$

3. $6x - 4x + 16$

4. $3.8y - 4 + 7.2y$

5. $7 + 11x + 8.4 - x$

6. $\frac{4}{7}y + 8 - 2\frac{1}{2} + \frac{3}{7}y$

3.1 Practice A

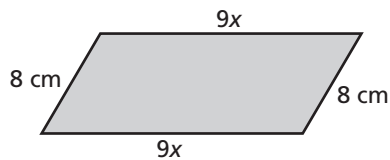
Identify the terms and like terms in the expression.

- $-4y + 7 + 9y - 3$
- $3n^2 - 1.4n + 5n^2 - 6.4$
- $\frac{1}{2}b^3 - b^3 + 2b$

Simplify the expression.

- $-15m + 9m$
- $3.2 - 9x + 7.1 - 3x$
- $19a - 7 - 3a + 12a$
- $\frac{1}{8}h + 7 - \frac{3}{4}h$
- $8k - 2(4 - 3k)$
- $25 - 6x - 12 - 2x$
- $\frac{5}{2}(6x - 7) + \frac{4}{3}(2 + 9x)$
- $\frac{2}{3}y + 5 - 3 - \frac{11}{12}y$

- Write an expression in simplest form that represents the perimeter of the polygon.



- Each runner is carrying an 8 ounce bottle of water, a 2.1 ounce energy bar, and a 3 ounce energy drink. Write an expression in simplest form that represents the weight carried by y runners. Interpret the expression.
- John weighs 65 kilograms, Sam weighs $22x$ kilograms, and Mark weighs $13x$ kilograms. Write an expression in simplest form for their combined weight.
- Are the expressions $8a^2 - 4b + 7a^2$ and $5(3a^2 - 2b) + 6b$ equivalent? Explain your reasoning.

3.1 Practice B

Identify the terms and like terms in the expression.

1. $1.3x - 2.7x^2 - 5.4x + 3$

2. $10 - \frac{3}{10}m + 6m^2 + \frac{2}{5}m$

Simplify the expression.

3. $-\frac{15}{4}b + \frac{5}{6}b$

4. $60m - 15(4 - 8m) + 20$

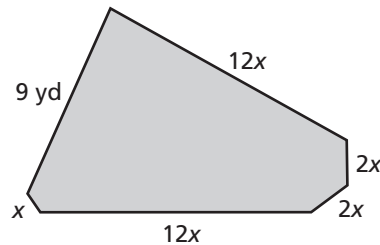
5. $4(5.8 - 9x) + 8.2 + 22x$

6. $9y - 15y + 12 - 6y$

7. $v + 13 - 8(v + 2)$

8. $\frac{5}{3}(5x + 9) + \frac{4}{5}(1 - 9x)$

9. Write an expression in simplest form that represents the perimeter of the polygon.



Draw a diagram that shows how the expression can represent the area of a figure. Then simplify the expression.

10. $8(3x - 1)$

11. $(5 + 2)(x + 3x)$

12. Danielle is x years old. Her sister is 5 years older and her brother is half Danielle's age. Write an expression in simplest form for the sum of their ages.
13. The length of a rectangular field is 30 more than twice its width. Write an expression in simplest form for the perimeter of the field in terms of its width w .
14. You buy x packs of pencils, twice as many packs of erasers, and three times as many rolls of tape. Write an expression in simplest form for the total amount of money you spent.



3.1 Enrichment and Extension

Matching

Simplify the expressions on the left by using the Distributive Property and combining like terms. Then, match it to an equal expression on the right by connecting the two with a line.

- | | |
|--|-----------------------|
| 1. $6x + 2x$ | a. $8x$ |
| 2. $14x - 12 - x - 3$ | b. $\frac{1}{2}x + 1$ |
| 3. $-5x + 14 - x - 2$ | c. $13x - 15$ |
| 4. $-3 - 5x - 3x + 11x + 3$ | d. $2x + 11$ |
| 5. $-2(-5 - x) + x - x + 1$ | e. $2x$ |
| 6. $\frac{1}{2}(12) + 4x - (x - 1)$ | f. $6x^2 + x - 27$ |
| 7. $6(x^2 - 2) + 1 - 16 + x$ | g. $3x$ |
| 8. $4\left(\frac{1}{2}x + 4\right) + 1 - 16 + x$ | h. $3x + 1$ |
| 9. $5(x^2 + x)$ | i. $3x + 7$ |
| 10. $x + \left(1 - \frac{1}{2}x\right)$ | j. $-6x + 12$ |
| 11. $x^3 + x^2 + x + x - x^2 - x^3$ | k. $5x^2 + 5x$ |
| 12. Write an expression containing x -terms and constants. The x -terms should combine to $7x$ and the constants should sum to 13. | |
| 13. Write an expression containing x^2 -terms, x -terms, and constants. The x^2 -terms should combine to $-2x^2$, the x -terms should subtract to $3x$, and the constants should sum to 3. | |



Puzzle Time

How Can You Turn A Pumpkin Into A Squash?

A	B	C	D	E	F
G	H	I	J	K	L

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

$2x + 4$ SMASH
$13x - 2$ THE
$-2x + 6.2$ COME
$2.4x + 2.9$ AND
$21x$ THROW
$-1.5x - 7$ WILL
$7x + 14$ SQUASH

Simplify the expression.

- A. $8x + 13x$
- B. $15x + 10 - 6$
- C. $7x - 4x + 3$
- D. $5.3x - 9 + 7.6x$
- E. $6x - 4x - 2 + 11x$
- F. $\frac{3}{4}x + 11 - 5\frac{1}{2} + \frac{1}{4}x$
- G. $5(x + 8) + 3$
- H. $3.6x - 7 - 5.1x$
- I. $4 + 8x + 2.2 - 10x$
- J. $\frac{5}{6}x - 9 + 3 - \frac{2}{3}x$
- K. $2.4(x + 3) - 4.3$
- L. The length of a rectangle is 7 inches and the width is $(x + 2)$ inches. Write an expression in simplest form that represents the area of a rectangle.

$x + 5\frac{1}{2}$ AIR
$3x + 3$ UP
$5x + 43$ IT
$x - 4\frac{1}{2}$ TOSS
$12.9x - 9$ IN
$\frac{1}{6}x - 6$ DOWN
$15x + 4$ IT