COMMON CORE STANDARDS ADDRESSED IN THIS RESOURCE

6.EE.3 - Apply the properties of operations to generate equivalent expressions. Activity page: 4

7.RP.3 - Use proportional relationships to solve multistep ratio and percent problems. Activity page: 9

7.NS.3 - Solve real-world and mathematical problems involving the four operations with rational numbers. Activity page: 6

7.EE.1 - Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. Activity page: 5

7.EE.4 - Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. Activity pages: 7, 8

8.EE.1 - Know and apply the properties of integer exponents to generate equivalent numerical expressions. Activity page: 22

8.EE.5 - Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. Activity page: 10

8.EE.6 - Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. Activity page: 11

8.EE.8 - Analyze and solve pairs of simultaneous linear equations. Activity pages: 14, 15, 16, 17

8.F.3 - Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. Activity page: 12

N-RN.2 - Rewrite expressions involving radicals and rational exponents using the properties of exponents. Activity page: 37

A-SSE.2 - Use the structure of an expression to identify ways to rewrite it. Activity pages: 23, 26, 27

A-APR.1 - Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. Activity pages: 24, 25

A-APR.6 - Rewrite simple rational expressions in different forms; write a(x)/b(x) in the form q(x) + r(x)/b(x), where a(x), b(x), q(x), and r(x) are polynomials with the degree of r(x) less than the degree of b(x), using inspection, long division, or, for the more complicated examples, a computer algebra system. Activity page: 33

A-APR.7 - Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions. Activity pages: 34, 35

A-CED.1 - Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. Activity pages: 32, 36

A-CED.2 - Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. Activity page: 13

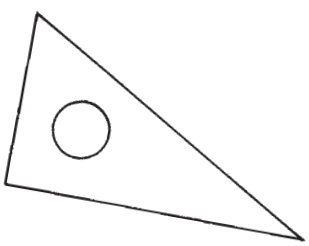
A-REI.3 - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. Activity pages: 18, 20, 21

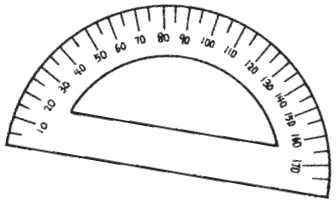
A-REI.4 - Solve quadratic equations in one variable. Activity pages: 28, 29, 30, 31, 38, 39

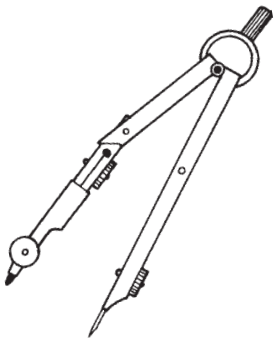
A-REI.10 - Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). Activity page: 40

A-REI.12 - Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. Activity page: 19

Table of Contents







Name _____

Algebra Vocabulary

Word Box
absolute
associative
coefficient
commutative
constant
equation
exponent
expression
inequality
integers
inverse
operations
power
real
reciprocal
variable

Across

1. An algebraic _____ is a variable or combination of variables, numbers, and symbols. Examples: a^2; $3t - 5$; $4x + yz$

6. An ____ is a math sentence that compares unequal expressions using one or more of these symbols: <, >, ≤ , ≥ , or ≠ .

7. The additive ____ of 4 is $^{-}4$ because $4 + {}^{-}4 = 0$.

9. 3^5 is read as *3 to the fifth* ____ and indicates $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$.

11. A ____ is a symbol representing a value that does not change, such as $^{-}8$, $\frac{1}{2}$, or π.

13. A ____ is a letter that is used to represent one or more numbers.

14. 3 + 5 = 5 + 3 is an example of the ____ property of addition.

15. To follow the order of ____, begin with grouping symbols, next evaluate powers, then multiply and divide, and finally add and subtract.

16. (2 x 4) x 6 = 2 x (4 x 6) is an example of the ____ property of multiplication.

Down

2. A ____ number is any number that can be shown on a number line, such as –2.5, 0, or $\frac{1}{3}$.

3. The multiplicative inverse, or ____, of 6 is $\frac{1}{6}$ because $6 \cdot \frac{1}{6} = 1$.

4. Zero and positive and negative whole numbers (. . . $^{-}3$, $^{-}2$, $^{-}1$, 0, 1, 2, 3 . . .) are known as _____.

5. A ____ is the numerical factor in a term containing a variable, such as the 7 in $7x^2$.

8. In the expression 2^4, 2 is the base and 4 is the ____.

10. An ____ is a math sentence with an equal (=) sign.

12. The ____ value of a number is its distance from zero on a number line.

Name _____

The Distributive Property

~~$-2(3x - 4) + 9x =$~~
~~$-2(3x) - 2(4) + 9x =$~~
~~$-6x - 8 + 9x =$~~
~~$(-6x + 9x) - 8 = -15x - 8$~~

Wrong!

Right!

$-2(3x - 4) + 9x =$
$-2(3x) - -2(4) + 9x =$
$-6x + 8 + 9x =$
$(-6x + 9x) + 8 = 3x + 8$

Quick Review

1. Use the distributive property to rewrite expressions without parentheses.

   $x(3x - 5) = x(3x) - x(5) = 3x^2 - 5x$

2. Like terms in an expression are terms that have the same variable to the same power. In these examples, each set of like terms is boxed. Add or subtract to combine like terms.

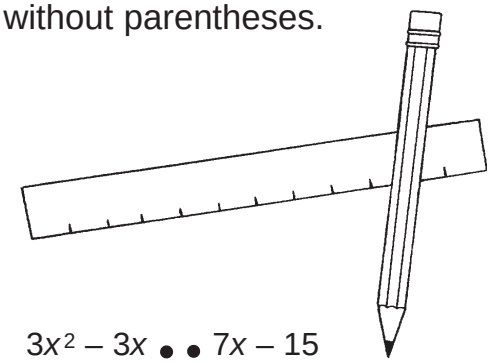
   $\boxed{2x} + 2 \boxed{- 9x} = -7x + 2$

   $\boxed{-5} + 6x \boxed{- 4} = -9 + 6x$

   $-8x \boxed{+ 4x^2} \boxed{+ x^2} + 1 = 5x^2 - 8x + 1$

Use the distributive property to rewrite each expression without parentheses. Then combine like terms.

1. $2(4x + 3) - 9 =$
2. $3(2x - 5) + x =$
3. $7x + 2(-2x + 1) =$
4. $5 - 5(2x - 2) =$
5. $-3x + 6(x - 4) =$
6. $x(x + 3) - x =$
7. $-10 - 6(x - 5) =$
8. $-4(x + 3) + 5 =$
9. $-3(3x - 6) - 2x =$
10. $8x - x(x + 4) =$
11. $7(2x + 1) - 4x =$
12. $-5 + 2(x - 2) =$
13. $x(x - 3) + 2x^2 =$
14. $10x + x(x - 5) =$



$3x^2 - 3x$ • • $7x - 15$

$2x - 9$ • • $3x + 2$

$-11x + 18$ • • $x^2 + 2x$

$-4x - 7$ • • $-6x + 20$

$3x - 24$ • • $-x^2 + 4x$

$-10x + 15$ • • $10x + 7$

$8x - 3$ ✦ • $x^2 + 5x$

Create a design by drawing straight lines to connect your answers in the order of the problems. Begin at the star.

Name _____

Adding and Subtracting Polynomials

Wrong!

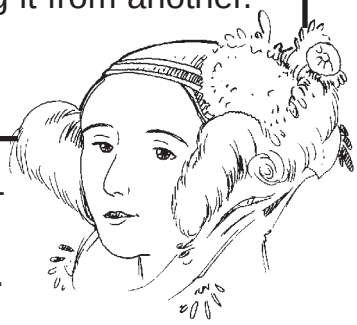
$$(2x^2 + 7x - 2) - (x^2 - 3x + 4) =$$
$$2x^2 + 7x - 2 - x^2 - 3x + 4 =$$
$$(2 + 7 - 2 - 1 - 3 + 4)x^{(2+1+2+1)} =$$
$$7x^6$$

Right!

$$(2x^2 + 7x - 2) - (x^2 - 3x + 4) =$$
$$2x^2 + 7x - 2 - x^2 + 3x - 4 =$$
$$2x^2 + 7x - 2 - x^2 + 3x - 4 =$$
$$(2x^2 - x^2) + (7x + 3x) + (-2 - 4) =$$
$$x^2 + 10x - 6$$

Quick Review

1. The variables and powers must be exactly alike to add or subtract like terms. You may want to outline the like terms with the same shape to keep them straight.
2. Remember to change all signs in an expression when subtracting it from another.
3. When adding or subtracting terms with exponents, combine only the coefficients. The exponents stay the same.



Add or subtract, then use the code to find the name of a British mathematician. Some consider her the first computer programmer because she described the possibilities of Charles Babbage's Analytical Engine.

1.	$4x + 5y - 2x + y =$	**L**	$2x^2y + 3x - 4$
2.	$3x + y - x + 2x - 4y =$	**A**	$2x + 6y$
3.	$xy + 2x - x - xy + 7y =$	**D**	$4x - 3y$
4.	$x^2y - 9 + 3x + x^2y + 5 =$	**E**	$4x + 3$
5.	$4x^2y^2 - x^2y + 2xy - x^2y^2 + x^2y =$	**A**	$x + 7y$
6.	$(9x^2 - 7) + (-3x^2 + 3) =$	**O**	$3x^2y^2 + 2xy$
7.	$(6x + 4) - (2x + 1) =$	**C**	$3x^2 + 5x - 10$
8.	$(2x^2 + 5x - 3) + (x^2 - x + 2) =$	**V**	$6x^2 - 4$
9.	$(5x^2 - 2x + 4) - (x^2 + 6x - 10) =$	**E**	$4x^2 + 12x - 8$
10.	$(4x^2 + 3x - 1) - (x^2 - 2x + 9) =$	**L**	$3x^2 + 4x - 1$
11.	$(x^2 + 8x - 7) + (3x^2 - x) + (5x - 1) =$	**A**	$4x^2 - 8x + 14$

1	2	3		4	5	6	7	8	9	10	11