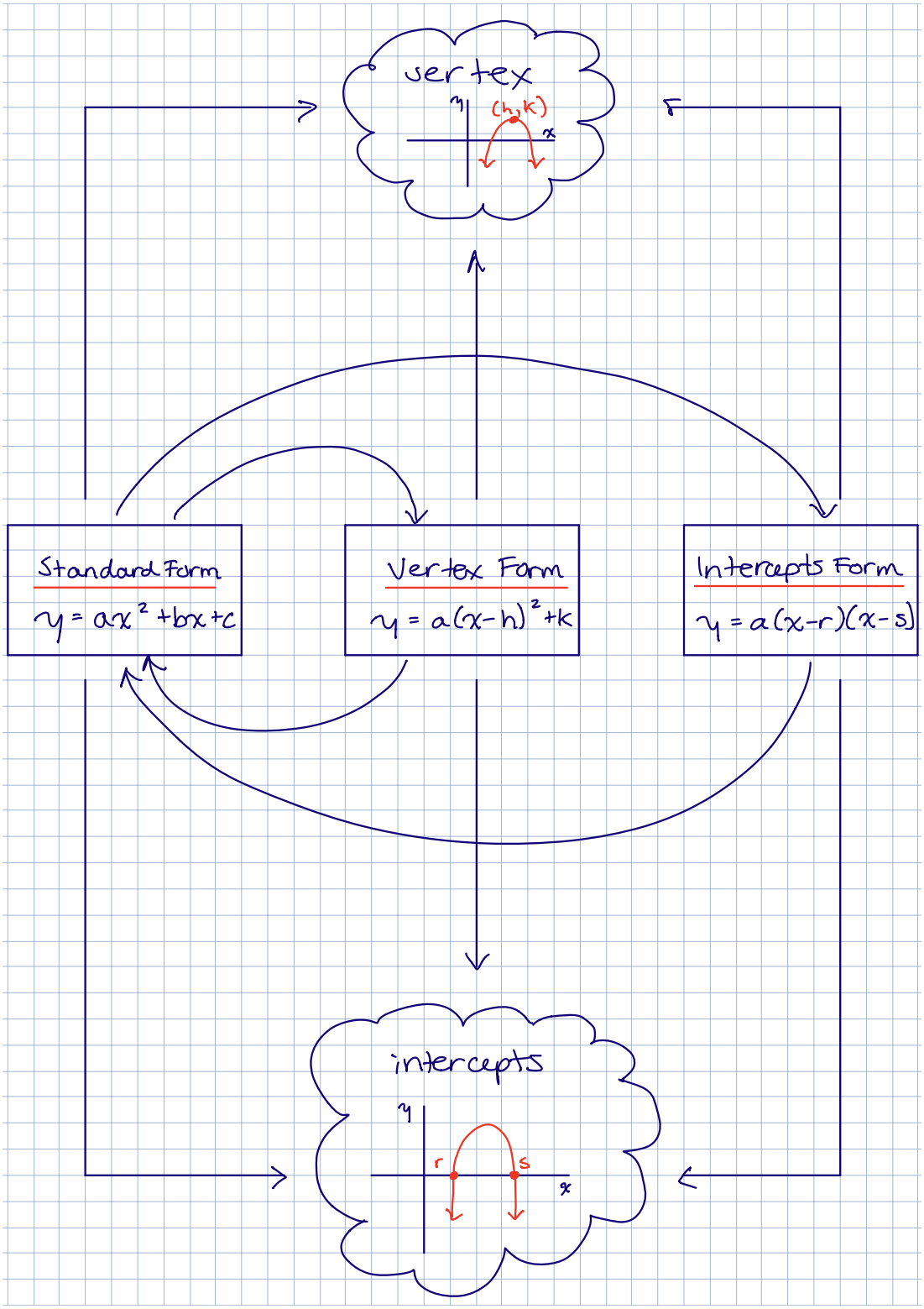
Getting Ready for Quadratic Expressions

Quadratic Relations Concept Map



Classifying Polynomials

You can classify a polynomial by the number of terms.

Terms in a polynomial are separated by signs .

A polynomial with a single term is a monomial .

A polynomial with two terms is a binomial .

A polynomial with three terms is a trinomial .

Example 1

Classify each polynomial by its number of terms.

Polynomial	# of Terms	Classification
$2x^2 + 6$	2	binomial
$5x$	1	monomial
$5x^2 + 6x - 7$	3	trinomial
$3xy + 5$	2	binomial
19	1	monomial

You can also classify a polynomial by its degree.

The degree of a single term is the sum of the exponents on it's variables.

Example 2

Determine the degree of each term.

Monomial	Degree of term
$5x^2$	2
$3x^2y^3$	5
$8y^1$	1
$7x^1y^3$	4
19	0

The degree of an entire polynomial is the greatest degree of any of it's terms.

Example 3

State the degree of each polynomial.

Polynomial	Degree of polynomial
$2a^1b^1c^1$ 3	third degree
$7x^3 + x$ 3 1	third degree
$3x^2 + 5x - 7$ 2 1 0	second degree
$7k^2m + 15k^3m^2 - 6km^2$ 3 5 3	fifth degree

Operations with Polynomials

To add or subtract polynomials, distribute the value outside the brackets. Then collect like terms.

Example 3

Simplify.

a) $(2x^2 + 3x - 5) + (7x^2 - 6x - 2)$

$= 1(2x^2 + 3x - 5) + 1(7x^2 - 6x - 2)$

$= 2x^2 + 3x - 5 + 7x^2 - 6x - 2$

$= 2x^2 + 7x^2 + 3x - 6x - 5 - 2$

$= 9x^2 - 3x - 7$

like terms are terms that have precisely the same variables raised to precisely the same exponents

b) $(4a^2 + 5ab - 9b^2) - (7a^2 - 6ab + 2b^2)$

$= 1(4a^2 + 5ab - 9b^2) - 1(7a^2 - 6ab + 2b^2)$

$= 4a^2 + 5ab - 9b^2 - 7a^2 + 6ab - 2b^2$

$= -3a^2 + 11ab - 11b^2$

The Product of a Monomial and a Polynomial

The distributive property allows us to expand an algebraic expression.

When distributing, multiply the term outside the brackets by each term inside the brackets.

Example 4

Expand using the distributive property.

a) $2(x+3)$

$= 2x + 6$

b) $2x^1(x^1+1)$

$= 2x^2 + 2x$

c) $-a^1(3a^1+5)$

$= -3a^2 - 5a$

Factors

Factors of a number are numbers that divide evenly into something.

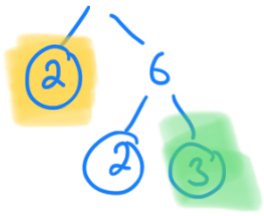
For example, the factors of 6 are 1, 2, 3, and 6.

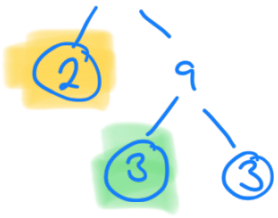
To find the greatest common factors of a pair of numbers, express each number as a product of it's prime factors.

Example 5 prime numbers begin with: 2, 3, 5, 7, 11...

Use prime factors to find the greatest common factor of each pair of numbers.

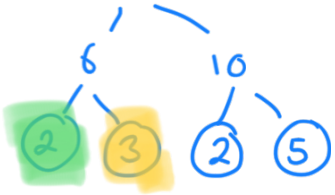
a) 12 and 18





The GCF is 6.

b) 36 and 60



The GCF is 6.

Opportunity to Learn

Use these IXL pages to master each of the concepts we discussed above. Earn a "Smart Score" of 80% or better. To follow links, go to our class website and view this page as PDF file.

O.1 Polynomial vocabulary O.4 Add and Subtract Polynomials

O.6 Multiply a Polynomial by a Monomial

A.2 Prime Factorization A.3 Greatest Common Factor