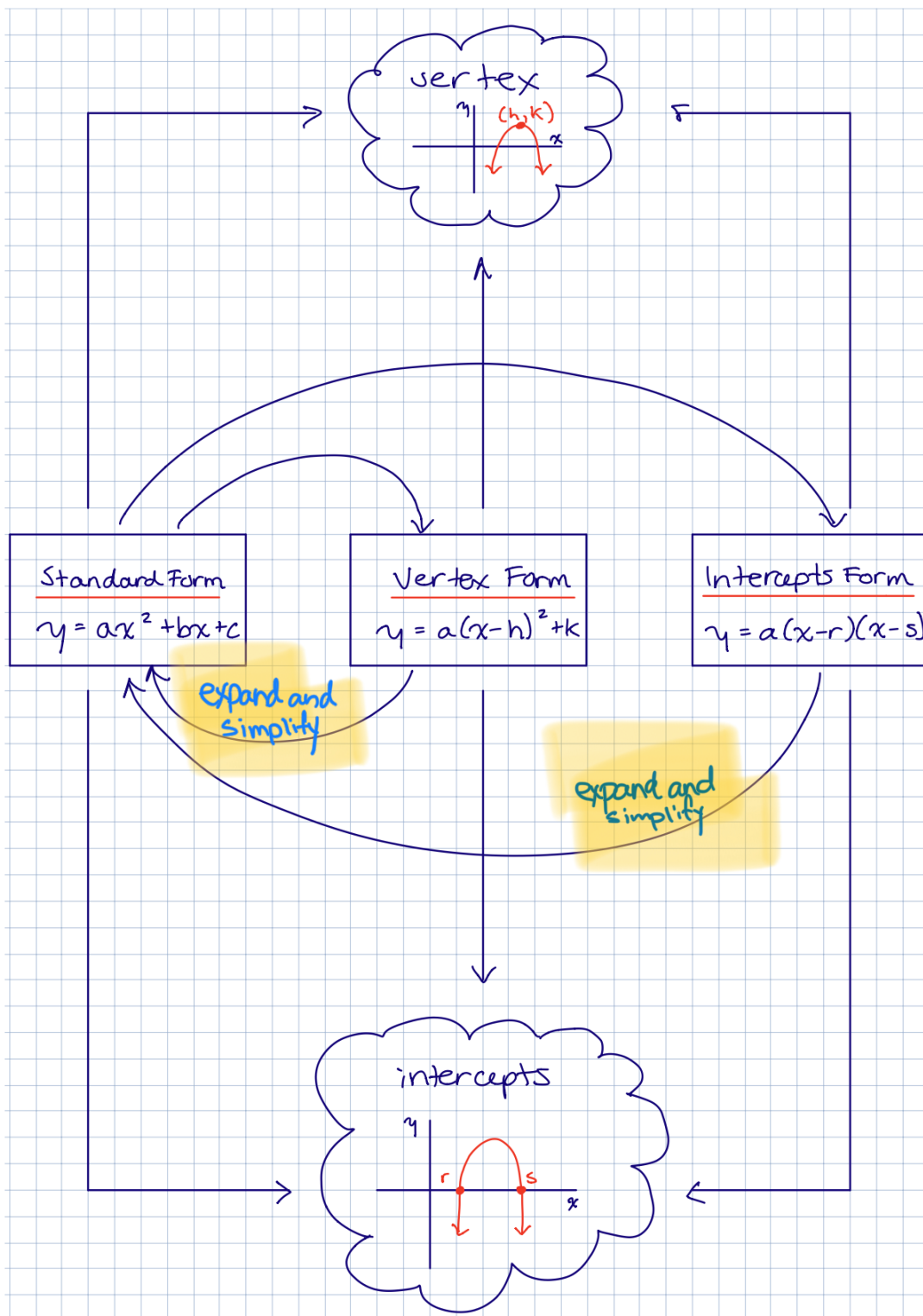


Distributive Property with Binomials

Quadratic Relations Concept Map

New from
today's
skills



The Product of a Two Binomials and a Polynomial

In our last class, we reviewed how to simplify an expression like this:

$$2x(x + 3y)$$

$$= 2x^2 + 6xy$$

- distribute term outside brackets to all terms inside
- multiply coefficients
- add exponents on like variables

Extension for today:

$$(2x + 4y)(x + 3y)$$

$$= 2x^2 + \underline{6xy} + 4xy + 12y^2$$

$$= 2x^2 + 10xy + 12y^2$$

- distribute all terms in first set of brackets to all terms in second set
- collect like terms if possible.

Example 1

Expand, then simplify if possible.

a) $(y + 3)(y - 4)$

$$= y^2 - \underline{4y} + 3y - 12$$

$$= y^2 - y - 12$$

- simplified by combining like terms

b) $(7w - 4)(3w - 1)$

$$= 21w^2 - \underline{7w} - 12w + 4$$

$$= 21w^2 - 19w + 4$$

- simplified by combining like terms

Example 2

Expand, then simplify if possible.

$$\begin{aligned}
 & x(x-4)(x+7) \\
 &= (x^2 - 4x)(x+7) \\
 &= x^3 + 7x^2 - 4x^2 - 28x \\
 &= x^3 + 3x^2 - 28x
 \end{aligned}$$

• expand first product
 ↳ keep brackets around result

• now expand second product
 • simplify when possible

OR

$$\begin{aligned}
 & x(x-4)(x+7) \\
 &= x(x^2 + 7x - 4x - 28) \\
 &= x(x^2 + 3x - 28) \\
 &= x^3 + 3x^2 - 28x
 \end{aligned}$$

Aside:

$$\begin{aligned}
 & 3(4)(2) \\
 &= 12(2) \\
 &= 24 \\
 & \dots \text{Same as } \dots \\
 & 3(4)(2) \\
 &= 3(8) \\
 &= 24
 \end{aligned}$$

Conclusion...

you can multiply in any order but remember to keep brackets and simplify when possible.

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 Edsby and view this page as PDF file.

O.8 Multiply two binomials

O.10 Multiply polynomials