Dynamics of Trigonometry Block 3B - Seating Chart

		Merrick Hunter	Nelson Alycia		Corcoran Matt	Andreadis Jason		Patel Kishan	
Bass Monica	Angley David	Heindel Vanessa	Nasser Alanah		Pengue Nicholas	Goncalves Tiffany		Bailey Joseph	Karabas Matthew
Babar Joseph	Haugland Brina	Tsal Will	Caffrey Alexa		Ochoa Omar	Bezerra Emily		Garibaldi Andrew	Grasso Cierra
Teacher's Desk		Pickett Julia	Salzer Tyler		Douglas Acacia	Degraw Devin		Fisher Deanna	O'Hare Emily

ESSENTIAL QUESTIONS

- What are the key characteristics of quadratic functions and their graphs?
- How are they key characteristics of quadratic functions similar and different to the key characteristics of linear functions?
- How do changes in the parameters of a quadratic function effect the shape and position of its graph?
- How can the graph of a function be used to determine the domain and range of the function?
- How do you identify a situation where a quadratic model would be most appropriate?
- What makes a complex number complex?
- How do you represent the square root of a negative number?
- How do you perform operations with complex numbers?

LEARNING GOAL

- SWBAT:
    - Describe the changes to the graph of a quadratic equation based on the parameters of the function.
    - Determine the vertex of a quadratic equation in any form.

CLASS AGENDA

- Simplifying radicals with imaginary numbers
- Partner Practice
- Break
- Converting between forms
- Partner Practice

IMAGINARY NUMBERS

- *Any negative value under the radica*
  - $i = \sqrt{-1}$

Example:
- Simplify $\sqrt{-72}$
  - $\sqrt{-1}\sqrt{36}\sqrt{2}$
  - $6i\sqrt{2}$

SIMPLIFY

1. $\sqrt{-48}$
2. $\sqrt{-50}$
3. $3\sqrt{-63}$
4. $2\sqrt{-98}$
5. $(3 + 2i) - 3i + 2$
6. $2i - 3 - (2 + 3i)$

PARTNER PRACTICE

- With the person you are sitting next to, complete the worksheet

CONVERTING BETWEEN FORMS

- Standard Form:
  - $f(x) = ax^2 + bx + c$
  - Vertex:
    - $\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$
- Vertex Form:
  - $f(x) = a(x - h)^2 + k$
  - Vertex:
    - $(-h, k)$
- Intercept Form:
  - $f(x) = (x + a)(x + b)$
  - X-intercepts:
    - $(-a, 0)\ and\ (-b, 0)$

HOW TO CONVERT

From Standard to Vertex Form:

- Step 1: Calculate the AOS
- Step 2: Calculate the vertex
- Step 3: Write in Vertex Form (use the value of "a" in both)

Example:
$$f(x) = 2x^2 - 4x + 5$$

HOW TO CONVERT

From Standard to Intercept Form:

- Step 1: Factor
  - if you can't, use the quadratic formula to find the zeroes

Example:
$$f(x) = 2x^2 - 4x + 2$$

HOW TO CONVERT

From Vertex to Standard Form:

- Step 1: Expand
- Step 2: Simplify

Example:

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

HOW TO CONVERT

From Intercept to Standard Form:

- Step 1: Expand
- Step 2: Simplify

Example:

$$f(x) = 3(x - 3)(x + 2)$$

PARTNER PRACTICE

- With the person you are sitting next to, complete the worksheet

CLOSURE