Supplemental Calculus

This is a collection of activities for Supplemental Calculus.

Functions and Graphs

1.1 Functions

Supplemental Calculus

The purpose of these activities is to better understand functions and their graphs. But really to practice with Ximera.

Notes: There are actually three main goals of this first set of activities.

(a) Remind students about the relationship between functions and graphs (and what each of those are)

(b) Imporve students' ability to read and use function notation.

(c) Remind students about trigonometric functions, mainly sine and cosine.

Before beginning the activity, have a brief class discussion about what a function is. Stress that a function is simply a relationship between two quantities with the property that each value of the first quantity is related to exactly one value of the second quantity.

Every square has both a perimeter p and an area A. In other words, there is a relationship between the set of perimeters of squares and the set of areas of squares. Is this relationship a function?

Exercise 1 *If* $p = 20$, *then* $A = \boxed{25}$.

Hint: *What is the side length of a square with this perimeter?*

Learning outcomes:
Learning outcomes:

Exercise 2 *If $A = 36$ then $p =$* $\boxed{24}$.

Hint: *What is the side length?*

Solution If the area is 36, then the side length must be 6, since $6 \times 6 = 36$. The perimeter is 4 times the side length, so the perimeter is 24.

Question 3 *Every square is also a* $\underset{\textit{choice}}{\boxed{\textit{rectangle}}}$

This is the end of the activity. Really.

Manipulating Expressions

2.1 Factoring

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Our next goal is to recall how to factor. What does this even mean?

When we factor, we break up an expression into its parts, such that when you *multiply* all the parts together, you get the expression. That is, we are decomposing the expression into its "factors" – parts with respect to multiplication.

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Before we can factor polynomials, let's review how we factor numbers.

What does it mean to *factor*? To get a feel for this, we will try some simple number factoring problems.

Problem 1 *What is the smallest factor of 45?* $\boxed{3}$

Learning outcomes:
Learning outcomes:

Which is not a factor of 54?

Multiple Choice:

(a) 3

(b) 5 ✓

(c) 9