Entry Routine:
Seated in assigned seat at the bell.
Packet, pencil, and planner out.
All other materials stored under tables/desks.
Start the Warm Up...
I will check HW:
none

EQ of the day: What other kind of function besides linear and exponential can describe patterns?

Warm Up
p4 #4-5

4. $9x(6x - 2)$

$3 \cdot 54x^2 - 18x$

5.

$\frac{2x}{3} \cdot \frac{12x}{3} = \frac{24x^2}{9}$

$\frac{2x}{3} (12x + 18)$

$8x^2 + 12x$

$\frac{2x}{3} \cdot \frac{16}{1} = \frac{32x}{3} \rightarrow 12x$
Assignments are posted on IC and nraykovich.wordpress.com
Homework: due the next class day

Monday: No School

Tuesday: 1.1 p5 #8-10

Wednesday: 1.2 p12 #17-25

Thursday: 1.2 p11 #10-16

Friday: 1.3 p15 #10-16
Essential Question: How do I use algebraic expressions to analyze or solve problems?

EQ of the day: What other kind of function besides linear and exponential can describe patterns?

Social goal: SLANT during whole class directions or discussion

**F.BF.1** Write a function that describes a relationship between two quantities. *

a. Determine an explicit expression, a recursive process, or steps for calculation from a context.

**A.SSE.1** Interpret expressions that represent a quantity in terms of its context.*

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

*Focus on situations that exhibit a quadratic or exponential relationship.
1.1 Something to Talk About

A Develop Understanding Task

Cell phones often indicate the strength of the phone's signal with a series of bars. The logo below shows how this might look for various levels of service.

Figure 1  Figure 2  Figure 3  Figure 4
1. Assuming the pattern continues, draw the next figure in the sequence.

2. How many blocks will be in the size 10 figure? Explain.

55

\[10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 55\]
3. Examine the sequence of figures and find a rule or formula for the number of tiles in any figure number.

Recursive formula:

\[ f(x) = f(x-1) + x \]

Explicit Formula:

\[ f(1) = 1 \]
\[ f(2) = 3 \]
\[ f(3) = 6 \]

More info
<table>
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<tr>
<th>fig</th>
<th>total #</th>
<th>Diff</th>
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② Exponential: are the #s multiplied by same amount
Not exponential

Will be quadratic
Conclude by going back to the table and the first difference. Ask students what type of function appears to be formed by the first difference. This will bring up the second difference, the rate of change of the first difference. In this case the second difference is always 1, which means that the first difference is linear. Tell students that functions with a linear rate of change are called quadratic functions.

**Figure 4:** 10 tiles

<table>
<thead>
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<th>Length</th>
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<tbody>
<tr>
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</table>

\[ 4 \cdot 5 \cdot \frac{1}{2} = 20 \] tiles \[ \cdot \frac{1}{2} = 10 \] tiles

\[ \text{fig x} = x(x+1) \cdot \frac{1}{2} \]

\[ \text{fig 1} = 1(1+1) \cdot \frac{1}{2} \]

Steps:

- Table to identify type
- Think creatively to make shape into something we know.