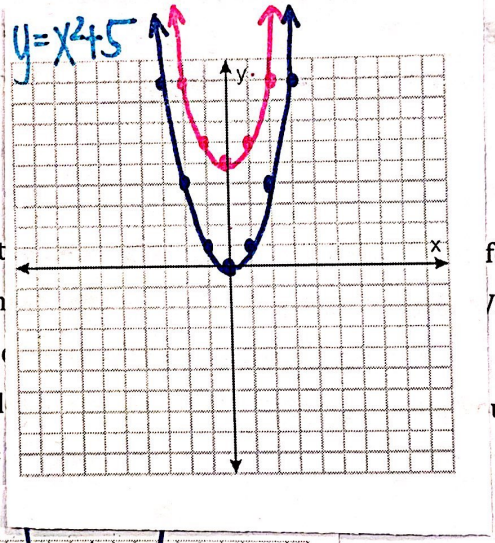
3. Predict how the graphs of each of the following equations will be the same or different from the graph of $y = x^2$.

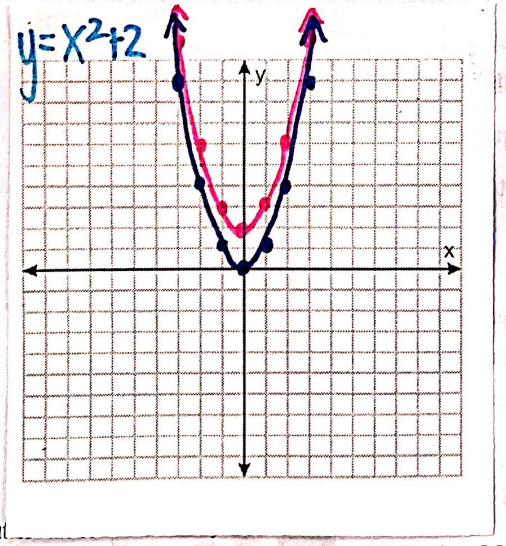
	Similarities to the graph of $y = x^2$	Differences from the graph of $y = x^2$
$y = 5x^2$		
$y = (x + 5)^2$		
$y = (5x)^2$		
$y = x^2 + 5$		

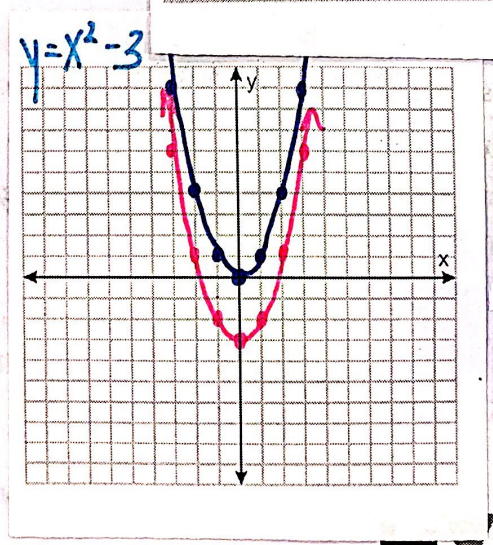
4. Optima decided to test her ideas using technology. She thinks that it is always a good idea to start simple, so she decides to go with $y = x^2 + 5$. She graphs it along with $y = x^2$ in the same window. Test it yourself and describe what you find.

The vertex moved up 5 units, all the points moved up 5 units.



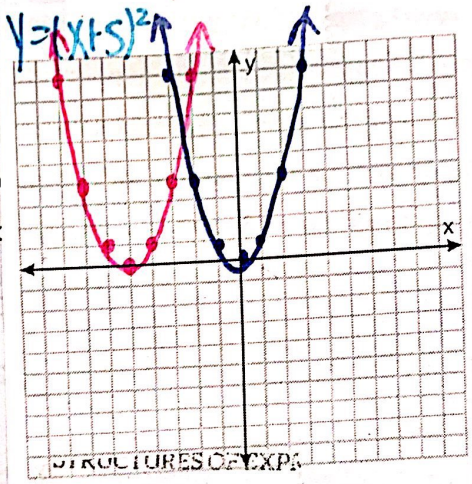
5. Knowing that things make a lot more sense wit few more examples like $y = x^2 + 2$ and $y = x^2 - 3$, lookin hat conclusion would you draw about the effect of adding Carefully record the tables and graphs of these exampl ur conclusion would be true for any value of k, given, $y =$

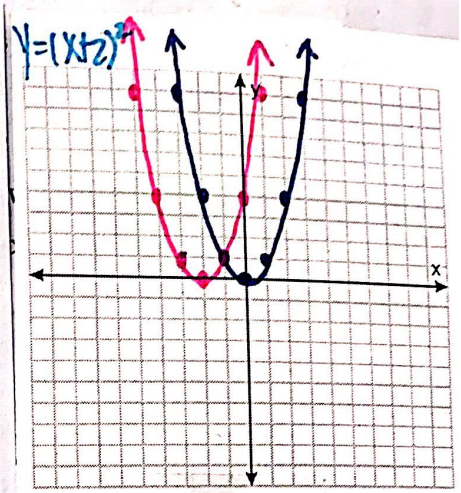




*If you add or subtract a # to x^2 every point on the graph moves up or down.

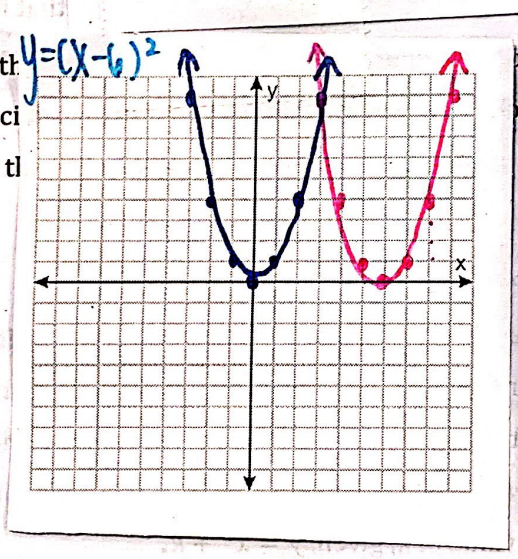
6. After her amazing su
happens with addition and su
before it gets squared". Usin
and $y = (x - h)^2$. (Choose so
graphs) in your notebook and

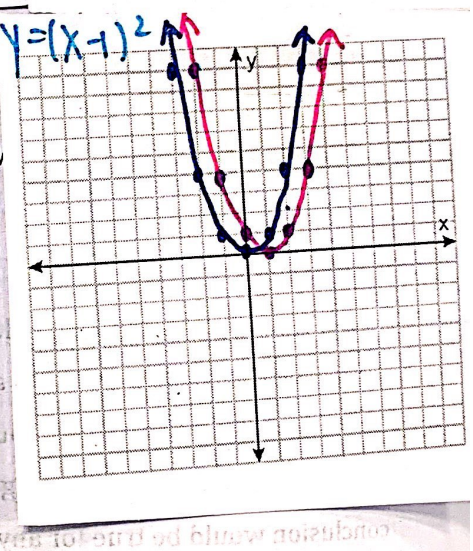




* Every point on the graph of $y = x^2$ moved left or right.

7. Optima thought th
straightforward. She deci
$y = -x^2$. Predict what th





8. Optima is encouraged because that one was easy. She decides to end her investigation for the day by determining the effect of a multiplier, a, in the equation: $y = ax^2$. Using both positive and negative numbers, fractions and integers, create at least 4 tables and matching graphs to determine the effect of a multiplier.

Big Ideas (Unit 4 day 1)

1) Vertex Form

$$y = a(x-h)^2 + k$$

2) Vertex is located at (h, k)

3) Translations

$$y = a(x-h)^2 + k$$

- $(x-h)$ → moves all points left or right
  - $(x-h)$ → Right
  - $(x+h)$ → left
- $+k$ → moves all points up or down
  - $+k$ → up
  - $-k$ → down