

Name: _____

Date: _____

In $y = a(x - h)^2 + k$, the 'a' stretches ($|a| > 1$ narrower) or compresses ($|a| < 1$ wider); negative flips it. Last two are challenge problems.

1. Does $y = 3x^2$ open narrower or wider than $y = x^2$?

show your work

2. Does $y = (1/2)x^2$ open narrower or wider?

show your work

3. Does $y = -x^2$ open up or down?

show your work

4. Compare the openings of $y = 2x^2$ and $y = 5x^2$.

show your work

5. $y = -3(x - 1)^2 + 4$: vertex, direction, and narrow/wide?

show your work

6. A parabola opens down and is wider than $y = x^2$. Give a possible 'a'.

show your work

7. Which has the highest maximum: $y = -(x)^2 + 2$ or $y = -3(x)^2 + 2$?

show your work

8. Write a parabola with vertex $(0, 0)$ that opens down and is narrower than $y = x^2$.

show your work

9. $y = a(x - 2)^2$ passes through (2,0) and (4, 8). Find a. ★ CHALLENGE

show your work

10. Two parabolas share vertex (0,0). $y = x^2$ and $y = ax^2$. The second passes through (3, 27). Find a, and is it narrower or wider? ★ CHALLENGE

show your work