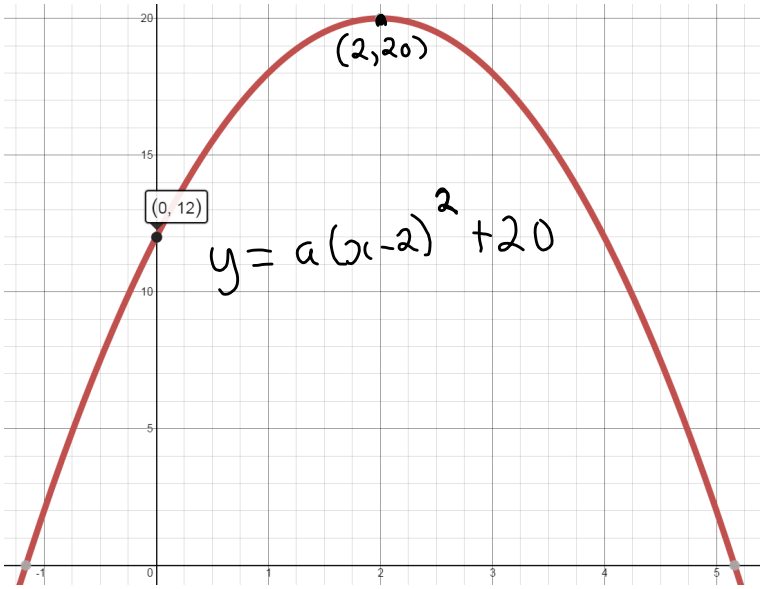
Writing a Quadratic Function Given its Graph

- Find the values of ***p*** & ***q*** from the vertex of the parabola.
- Use a known point on the graph (x,y) to solve for the stretch factor, ***a***.



$(x,y) = (0,12)$

When $x=0$, $y=12$ sub that into:

$y = a(x-p)^2 + q$

(p,q) = vertex $= (2,20)$

$p=2$, $q=20$

we have $y = a(x-2)^2 + 20$

$12 = a(0-2)^2 + 20$

$12 = a(-2)^2 + 20$

$12 = 4a + 20$

$12 - 20 = 4a + 20 - 20$

$-8 = 4a$

$\frac{-8}{4} = a$

$-2 = a$

Therefore $y = -2(x-2)^2 + 20$

Page 158 #8 & 9