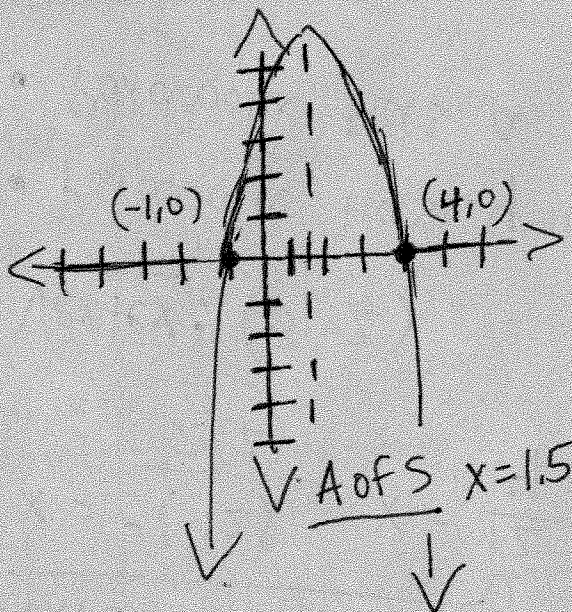
Example: $f(x) = -3(x-4)(x+1)$

$a = -3 \Rightarrow$ opens down, stretch

$p = 4$, $q = -1$ } x-intercepts of $(4,0)$ and $(-1,0)$

- Your x-intercepts are also solutions (or zeros) to your equation. $x-4=0$ $\quad x+1=0$
  $x=4$ $\quad x=-1$
- The parabola has x-intercepts (crosses the x-axis) at $x=p$ and $x=q$.

Sketch Graph



Table

x	f(x)	
-2	-18	
-1	0	→ x-int
0	12	→ y-int
1	18	→ vertex (max)
2	18	
3	12	
4	0	→ x-int

Solutions / Zeros / Roots / X-intercepts: Two

The graph crosses the x-axis twice and $f(x)=0$ when $x=-1$ and $x=4$.

Intercept / Factored Form: $f(x) = a(x-p)(x-q)$, $a \neq 0$