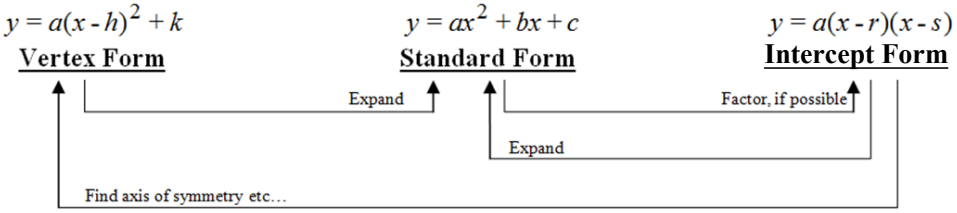
Before we begin, are there any questions from last day's work?

Do not "expand to check" – just use the back of the book to check.
p. 254 #7
pp. 259-263 #1ace, 2ace, 3a, 4ace, 5ace, 6

Today's Learning Target(s):

"I can:

a) Convert a quadratic relation to intercept form, $y = a(x-r)(x-s)$, to find the zeros (x-intercepts) and graph."



MBF 3CI

Graphing Quadratic Relations from Standard Form

Date: Nov. 21/17

Ex. 1 Given the parabola with equation $y = 2x^2 + 12x + 10$.

a) convert the equation to intercept form: $y = a(x-r)(x-s)$ [Hint: factor the equation]

$y = 2x^2 + 12x + 10$
$= 2(x^2 + 6x + 5)$
$= 2(x+1)(x+5)$

b) state the zeros (x-intercepts)

$0 = 2(x+1)(x+5)$
$x+1=0$ or $x+5=0$
$x=-1$ $x=-5$

c) determine the equation of the axis of symmetry

$x = \frac{-1+(-5)}{2}$
$= \frac{-6}{2}$
$= -3$

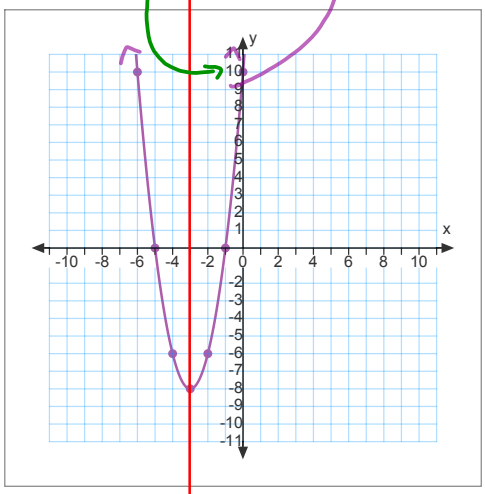
d) determine the vertex

Sub $x=-3$ in
$y = 2(x+1)(x+5)$
$= 2((-3)+1)((-3)+5)$
$= 2(-2)(2)$
$= -8$
$\therefore V(-3, -8)$
$h=-3$ $k=-8$

INC	a=2
1	2 → 2
2	4 → 8
3	6 → 18

e) sketch the parabola below

y-intercept $y = 2x^2 + 12x + 10$



$x = -3$ (AOS)

f) write the equation of the parabola in vertex form

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

$y = 2(x-(-3))^2 - 8$
$= 2(x+3)^2 - 8$

$y = 2(x+3)^2 - 8$

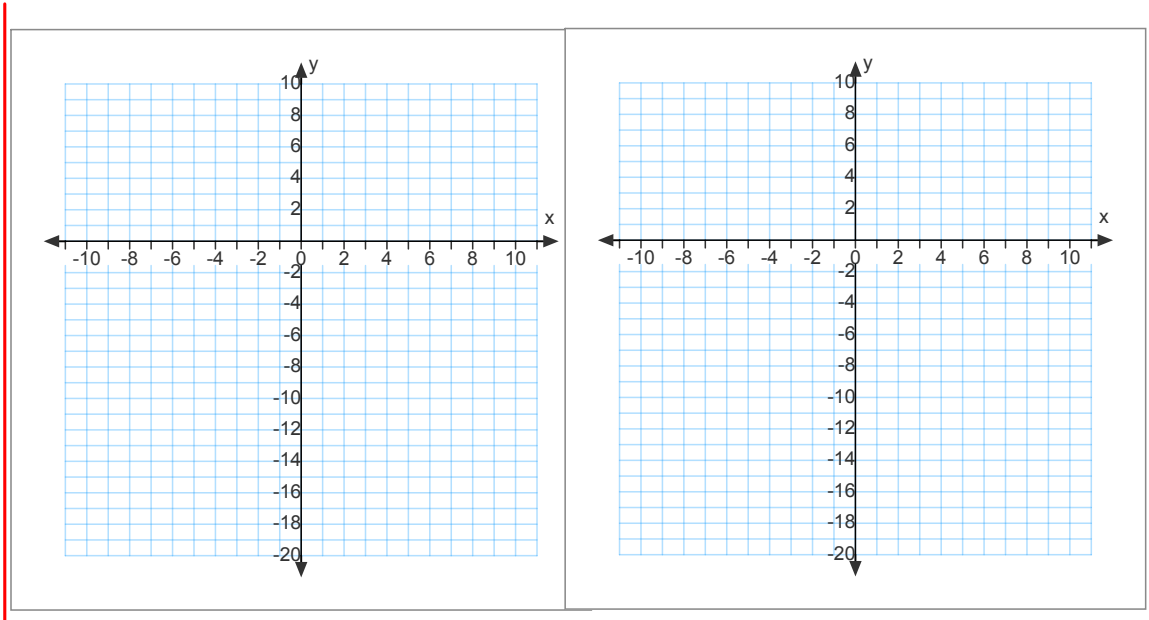
Summary

Given a quadratic relation in vertex form, $y = a(x-h)^2 + k$, the coordinates of the vertex are (h,k).
Given a quadratic relation in standard form, $y = ax^2 + bx + c$, the y-intercept is 'c'.
Given a quadratic relation in intercept form, $y = a(x-r)(x-s)$, the 'r' and 's' represent the x-intercepts.
The x-intercepts are also called the **zeros** of the quadratic relation. [$\therefore y = 0$ at these points]
Note that the value of 'a' is the same in all 3 forms.

Today's Entertainment: PRACTICE

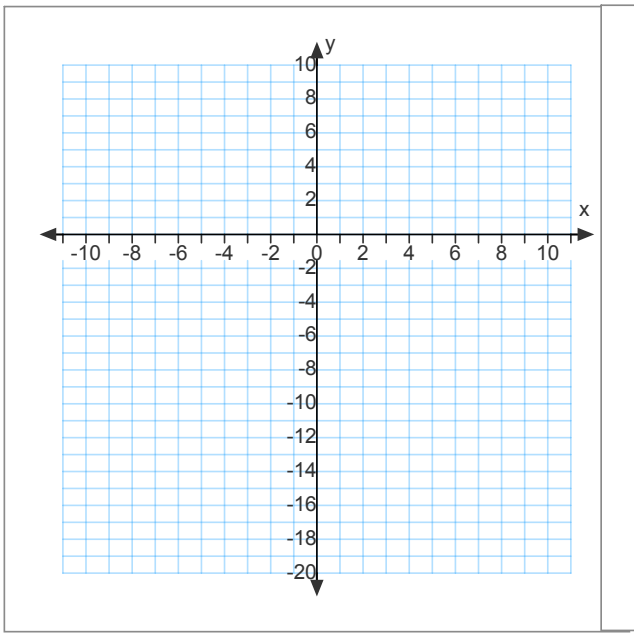
1. For each relation, find the zeros (x-intercepts) by factoring, then graph using intercept form:

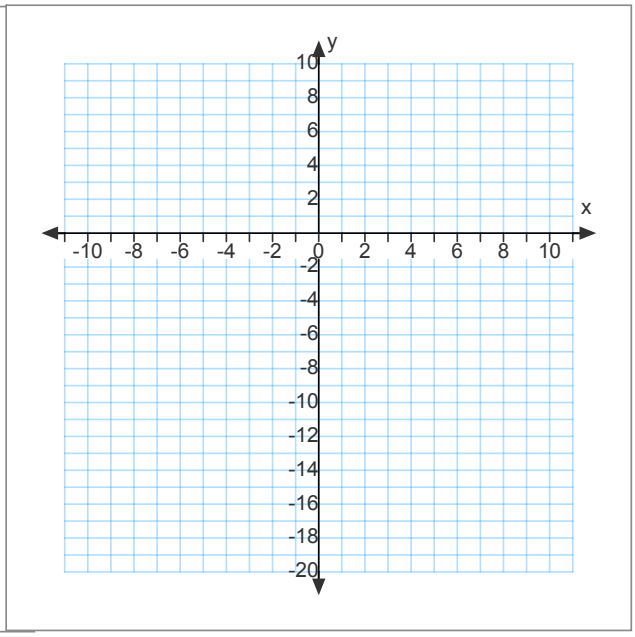
   a) $y = x^2 + 10x + 16$ b) $y = x^2 - 2x - 15$



c) $y = x^2 - 6x - 7$

d) $y = 2x^2 - 18$





e) $y = 2x^2 - 28x + 98$

f) $y = 3x^2 + 39x + 108$