3.6 Factored Form

Graph the equation and note the location of the x-intercepts, axis of symmetry and vertex.

Equation	x-int	x-int	vertex	sketch
$y = (x - 4)(x + 2)$				
$y = 0.5(x - 5)(x - 1)$				
$y = 2x(x + 4)$				
$y = (x - 2)(x - 7)$				
$y = (x + 4)(x + 4)$				
$y = -3(x + 2)(x + 5)$				

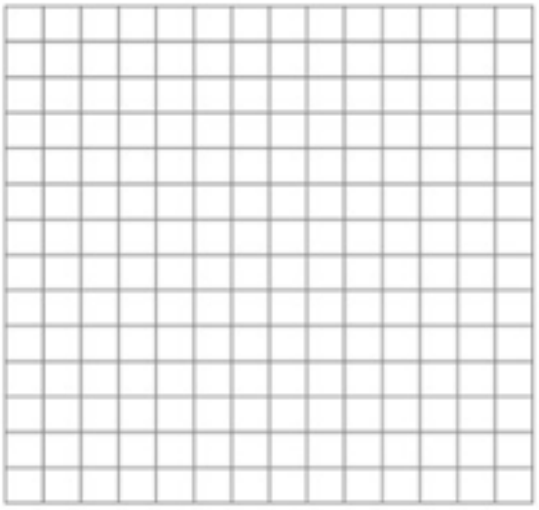
Summary

- represents an equation in **FACTORED** form $y = a(x - r)(x - s)$
  same "a" as in vertex form
- the x-intercepts, or zeros, are r and s
- the axis of symmetry is between the x-intercepts $x = \frac{r + s}{2}$
- The x-coordinate of the vertex by substituting the x-coordinate of the vertex in the equation
- find the y-coordinate of the vertex by substituting the x-coordinate of vertex in the equation

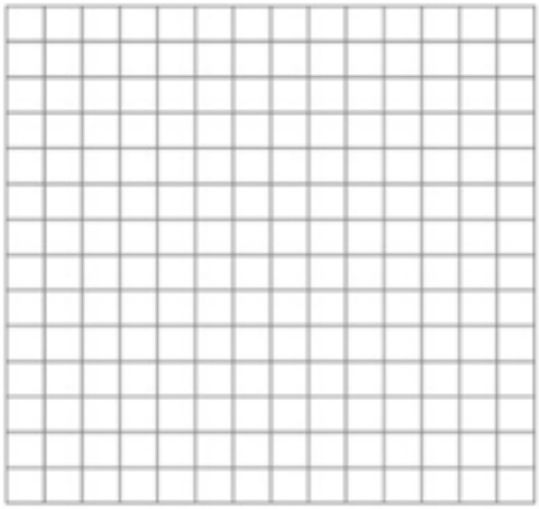
Ex. 1

Determine the equation of the parabola in factored form. Algebraically determine the value of "a"

a)



b)

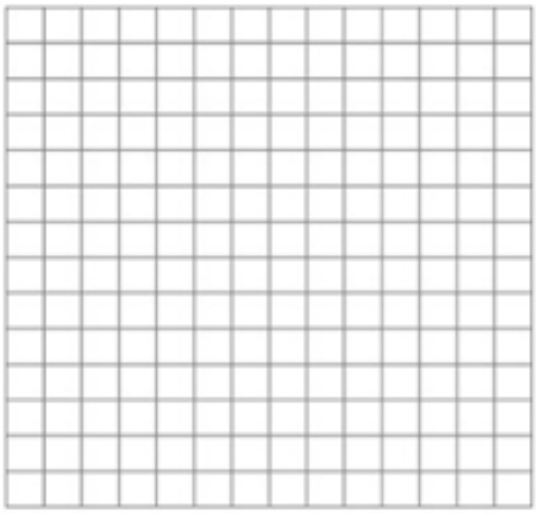


Ex. 2 Sketch each parabola. Label the x-intercepts and the vertex.

y= (x-3) (x+5)

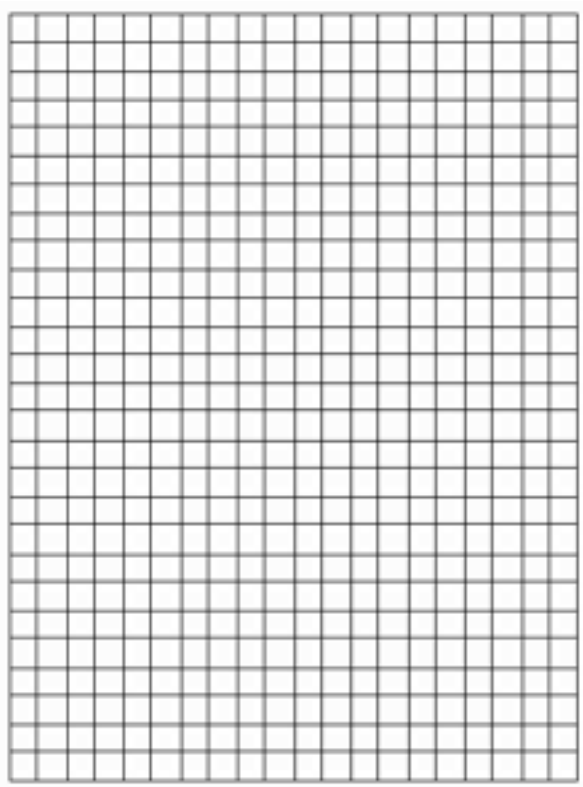
y= -0.3(x+2)(x+5)

y= -1/2 (x-1)(x+6)



Ex. 3 Chris kicked a ball from the ground. It travelled a horizontal distance of 52m and reached a maximum height of 17 m

a) Draw a sketch of a relation between horizontal distance and height



b) Determine the equation of the relation in factored form