Algebra 2 Worksheet **Name:** Key

Section 10.5 – Parabolas DAY ONE **Period:** __

I. Find the requested information for each parabola. Then graph.

1. $(x+2)^2 = 8y$

$(x-h)^2 = 4p(y-k)$

Direction it opens: up

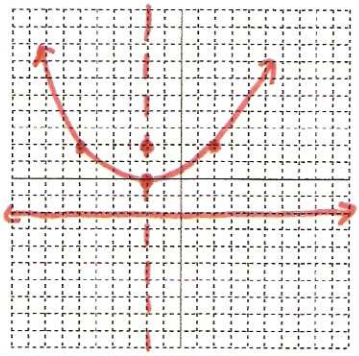
Vertex: (−2 , 0)

Value of p: +2

Axis of Symmetry: x = −2

Focus: (−2 , 2)

Directrix: y = −2



2. $(y-4)^2 = 12x$

$(y-k)^2 = 4p(x-h)$

Direction it opens: right

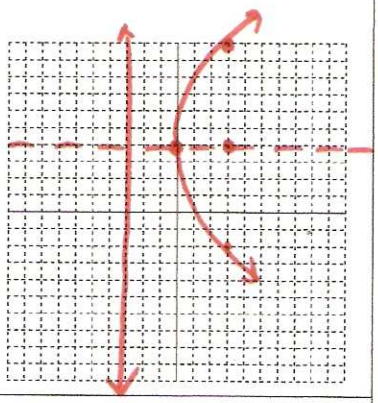
Vertex: (0 , 4)

Value of p: +3

Axis of Symmetry: y = 4

Focus: (3 , 4)

Directrix: x = −3



3. $(x-2)^2 = -16(y+1)$

$(x-h)^2 = 4p(y-k)$

Direction it opens: down

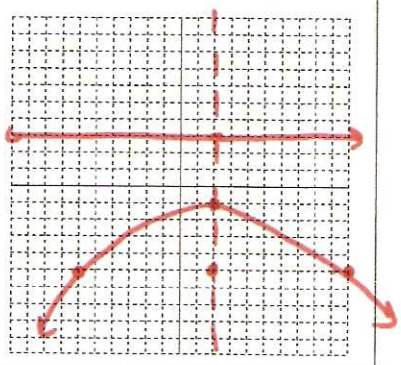
Vertex: (2 , −1)

Value of p: −4

Axis of Symmetry: x = 2

Focus: (2 , −5)

Directrix: y = 3



4. $(y+2)^2 = -4(x+3)$

$(y-k)^2 = 4p(x-h)$

Direction it opens: left

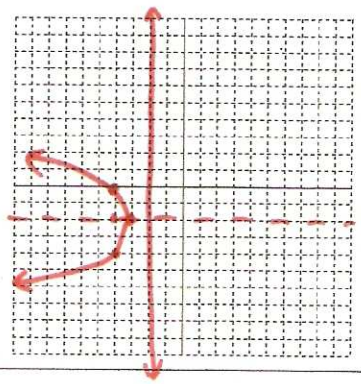
Vertex: (−3 , −2)

Value of p: −1

Axis of Symmetry: y = −2

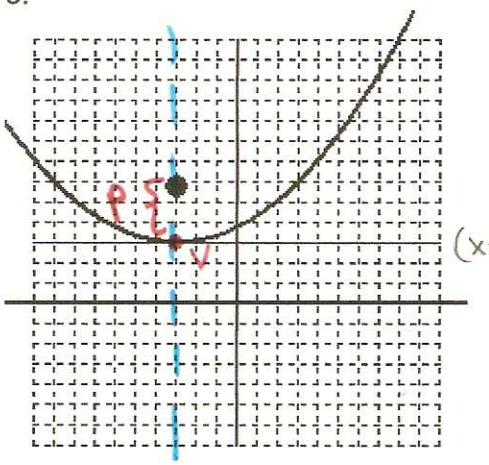
Focus: (−4 , −2)

Directrix: x = −2



II. Find the requested information. Then use it to write the parabola's equation in standard form.

5.



x^2

$(x-h)^2 = 4p(y-k)$

Direction it opens: up

Vertex: (−3 , 0)

Value of p: + 3

Axis of Symmetry: x = −3

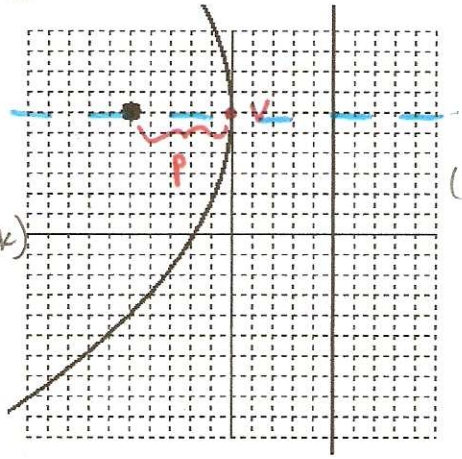
Focus: (−3 , 3)

Directrix: y = −3

Equation in Standard Form:

$(x+3)^2 = 12y$

6.



y^2

$(y-k)^2 = 4p(x-h)$

Direction it opens: left

Vertex: (0 , 6)

Value of p: − 5

Axis of Symmetry: y = 6

Focus: (−5 , 6)

Directrix: x = 5

Equation in Standard Form:

$(y-6)^2 = -20x$

III. Find the standard form of each parabola by completing the square.

7. $y^2 - 8y - 2x + 16 = 0$

$y^2 - 8y = 2x - 16$

$y^2 - 8y + \underline{16} = 2x - 16 + \underline{16}$

$(y-4)^2 = 2x$

Equation in Standard Form:

$(y-4)^2 = 2x$

8. $x^2 + 14x - 12y + 97 = 0$

$x^2 + 14x + \underline{49} = 12y + \underline{49} - 97$

$(x+7)^2 = 12y - 48$

$(x+7)^2 = 12(y-4)$

Equation in Standard Form:

$(x+7)^2 = 12(y-4)$