MATHEMATICS 5 SN Name_____

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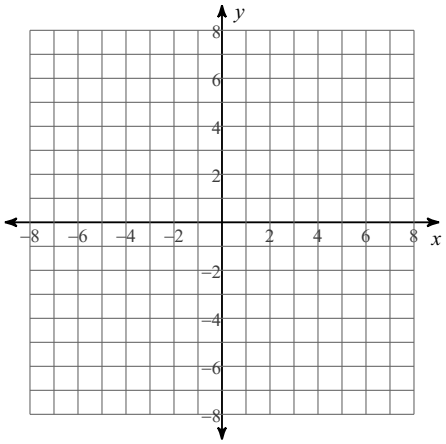
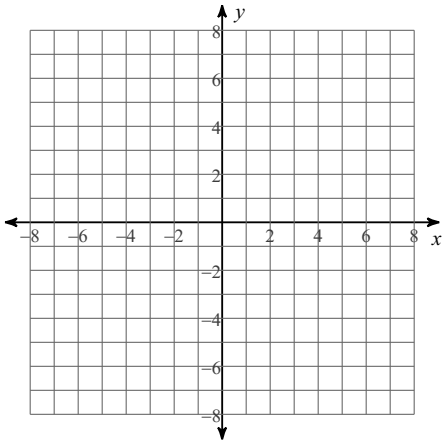
PARABOLA

Identify the vertex, focus, axis of symmetry, and directrix of each. Then sketch the graph.

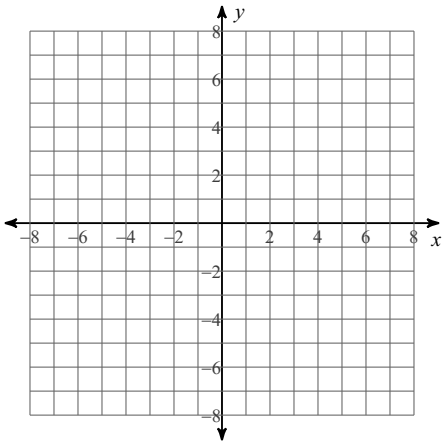
1) $x + 5 = (y - 6)^2$



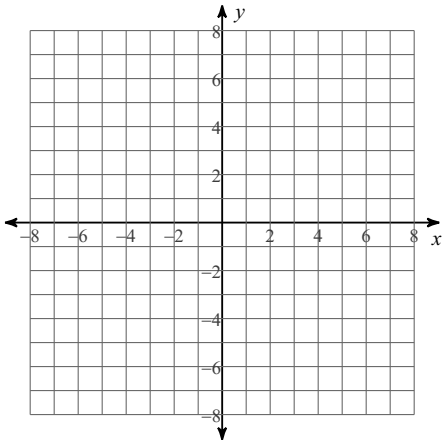
2) $4(x + 4) = (y - 4)^2$



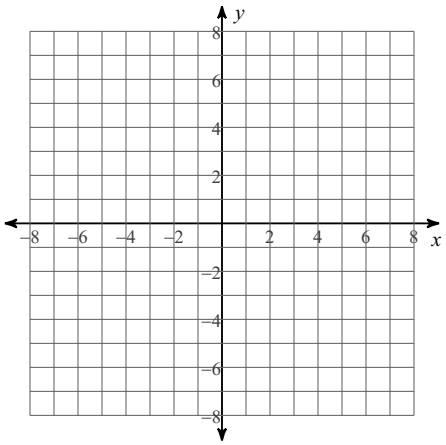
3) $-(x + 6) = (y - 6)^2$



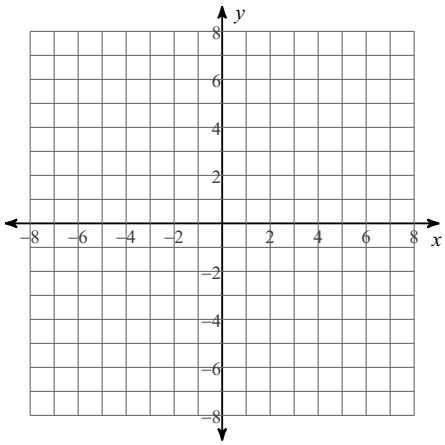
4) $\frac{1}{2}x = (y + 3)^2$



5) $-(y - 2) = (x - 1)^2$



6) $y + 3 = (x - 5)^2$



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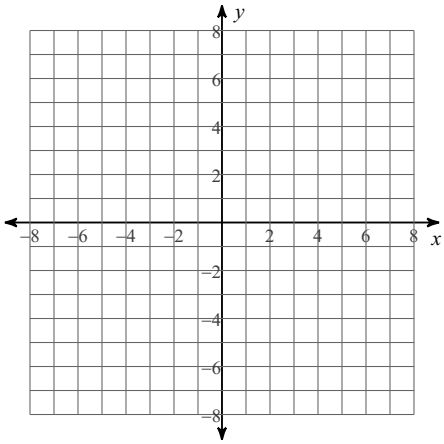
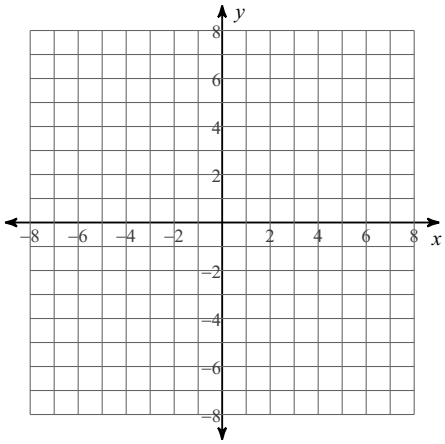
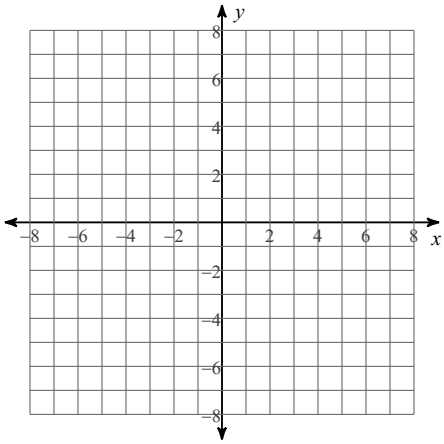
7) $y + 4 = (x + 1)^2$



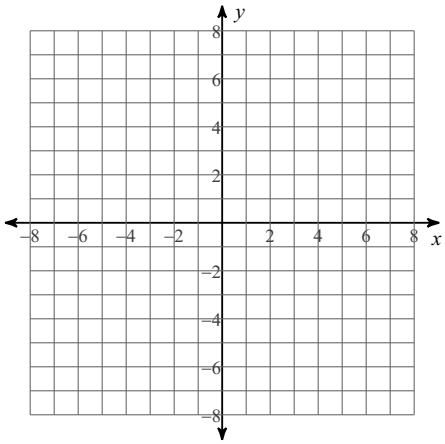
8) $y - 3 = (x - 2)^2$



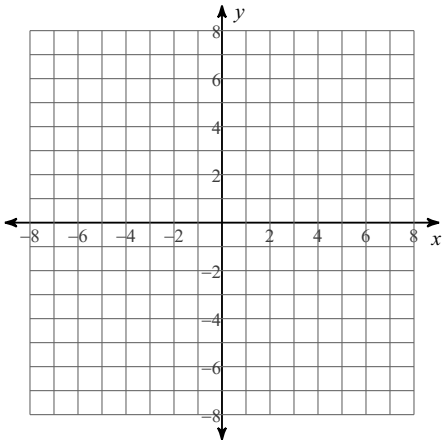
9) $\frac{5}{2}(x + 3) = (y - 1)^2$



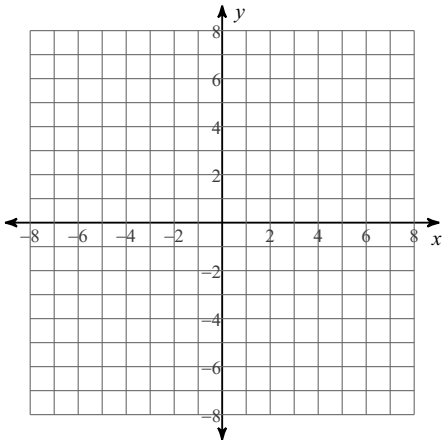
10) $-x^2 + 6x + y - 11 = 0$



11) $-x^2 + 6x + y - 12 = 0$



12) $-y^2 + x + 12y - 36 = 0$



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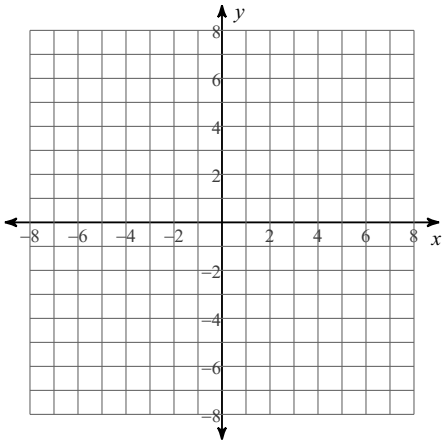
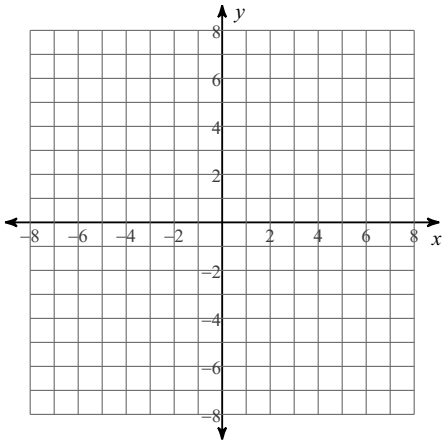
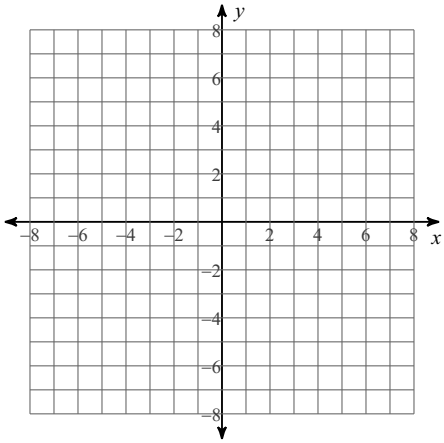
13) $x^2 - 12x + 4y + 20 = 0$



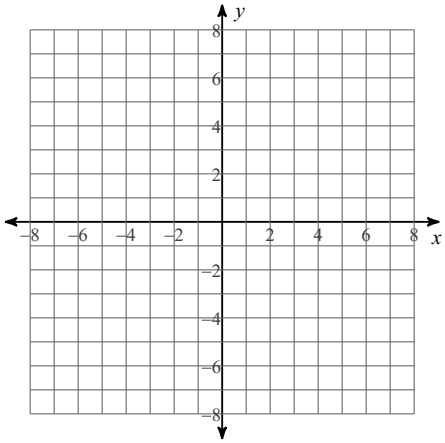
14) $2y^2 + x + 12y + 21 = 0$



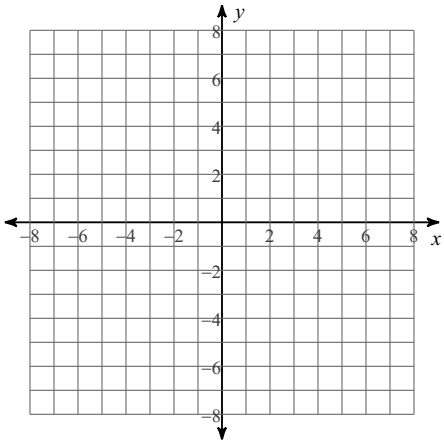
15) $x^2 + 10x + y + 23 = 0$



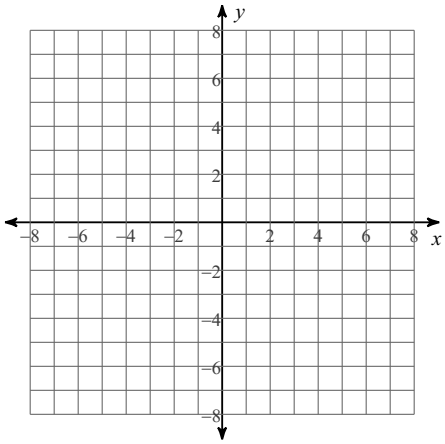
16) $-2x^2 + 8x + y - 2 = 0$



17) $2y^2 + x - 16y + 33 = 0$



18) $-2y^2 + x - 8y - 5 = 0$



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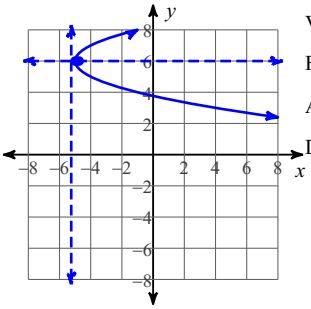
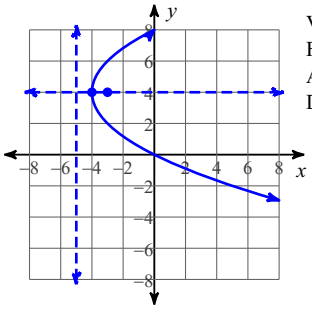
Answers to PARABOLA

1)



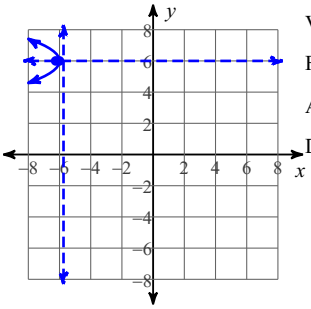
Vertex: $(-5, 6)$
Focus: $\left(-\frac{19}{4}, 6\right)$
Axis of Sym.: $y = 6$
Directrix: $x = -\frac{21}{4}$

2)



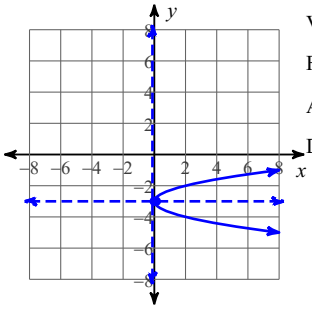
Vertex: $(-4, 4)$
Focus: $(-3, 4)$
Axis of Sym.: $y = 4$
Directrix: $x = -5$

3)



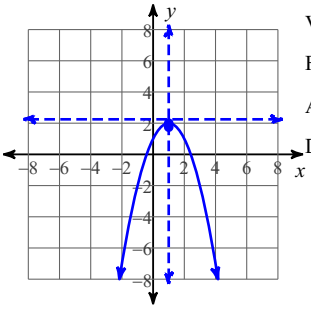
Vertex: $(-6, 6)$
Focus: $\left(-\frac{25}{4}, 6\right)$
Axis of Sym.: $y = 6$
Directrix: $x = -\frac{23}{4}$

4)



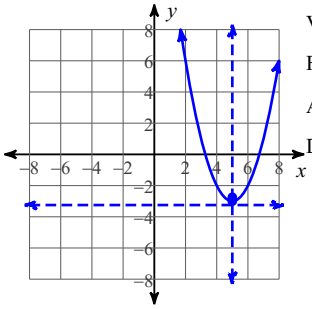
Vertex: $(0, -3)$
Focus: $\left(\frac{1}{8}, -3\right)$
Axis of Sym.: $y = -3$
Directrix: $x = -\frac{1}{8}$

5)



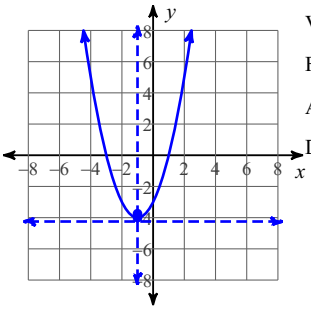
Vertex: $(1, 2)$
Focus: $\left(1, \frac{7}{4}\right)$
Axis of Sym.: $x = 1$
Directrix: $y = \frac{9}{4}$

6)



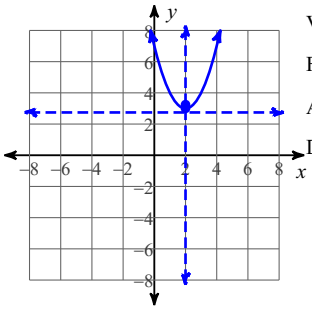
Vertex: $(5, -3)$
Focus: $\left(5, -\frac{11}{4}\right)$
Axis of Sym.: $x = 5$
Directrix: $y = -\frac{13}{4}$

7)



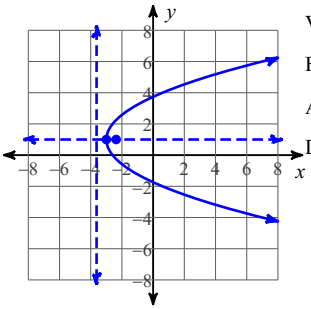
Vertex: $(-1, -4)$
Focus: $\left(-1, -\frac{15}{4}\right)$
Axis of Sym.: $x = -1$
Directrix: $y = -\frac{17}{4}$

8)



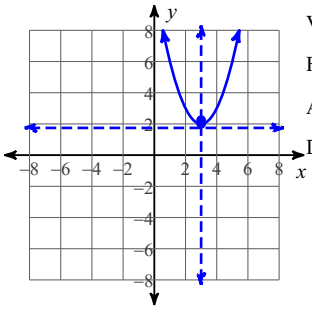
Vertex: $(2, 3)$
Focus: $\left(2, \frac{13}{4}\right)$
Axis of Sym.: $x = 2$
Directrix: $y = \frac{11}{4}$

9)



Vertex: $(-3, 1)$
Focus: $\left(-\frac{19}{8}, 1\right)$
Axis of Sym.: $y = 1$
Directrix: $x = -\frac{29}{8}$

10)



Vertex: $(3, 2)$
Focus: $\left(3, \frac{9}{4}\right)$
Axis of Sym.: $x = 3$
Directrix: $y = \frac{7}{4}$

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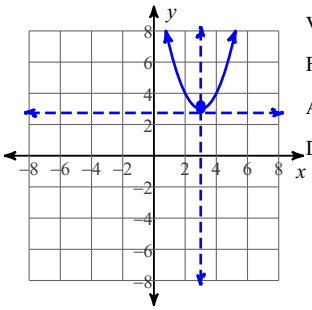
11)



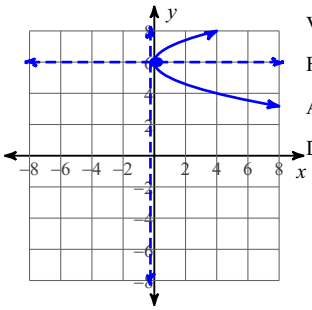
Vertex: $(3, 3)$

Focus: $\left(3, \frac{13}{4}\right)$

Axis of Sym.: $x = 3$

Directrix: $y = \frac{11}{4}$

12)



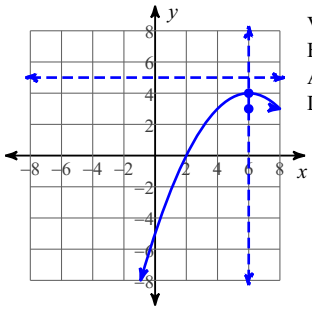
Vertex: $(0, 6)$

Focus: $\left(\frac{1}{4}, 6\right)$

Axis of Sym.: $y = 6$

Directrix: $x = -\frac{1}{4}$

13)



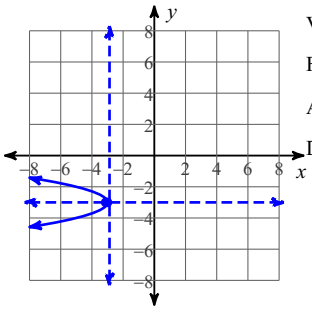
Vertex: $(6, 4)$

Focus: $(6, 3)$

Axis of Sym.: $x = 6$

Directrix: $y = 5$

14)



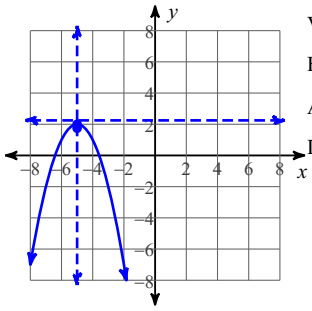
Vertex: $(-3, -3)$

Focus: $\left(-\frac{25}{8}, -3\right)$

Axis of Sym.: $y = -3$

Directrix: $x = -\frac{23}{8}$

15)



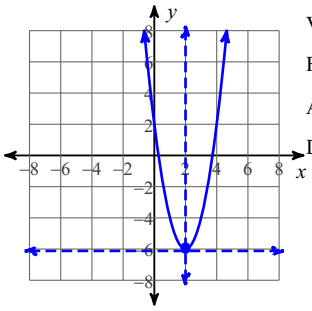
Vertex: $(-5, 2)$

Focus: $\left(-5, \frac{7}{4}\right)$

Axis of Sym.: $x = -5$

Directrix: $y = \frac{9}{4}$

16)



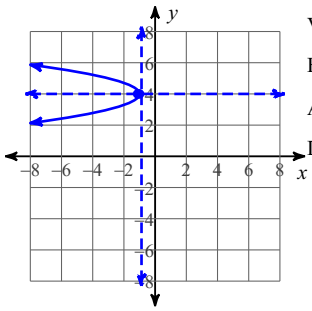
Vertex: $(2, -6)$

Focus: $\left(2, -\frac{47}{8}\right)$

Axis of Sym.: $x = 2$

Directrix: $y = -\frac{49}{8}$

17)



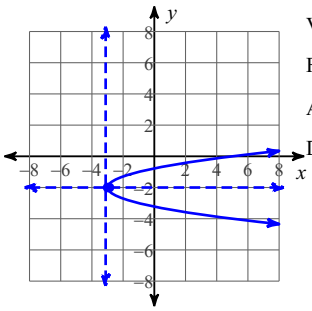
Vertex: $(-1, 4)$

Focus: $\left(-\frac{9}{8}, 4\right)$

Axis of Sym.: $y = 4$

Directrix: $x = -\frac{7}{8}$

18)



Vertex: $(-3, -2)$

Focus: $\left(-\frac{23}{8}, -2\right)$

Axis of Sym.: $y = -2$

Directrix: $x = -\frac{25}{8}$

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