

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**5.2 Parabolas as Conic Sections 2018-19****Identify each equation as a parabola, hyperbola, ellipse or circle.**

1.  $(y-9) = 8(x-7)^2$

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

3.  $9(y-7)^2 - 4(x-9)^2 = 36$

4.  $\frac{x^2}{25} + \frac{(y-8)^2}{3} = 1$

5.  $x = 3y^2 + 15$

6.  $x^2 + y^2 = 4$

**Determine the direction of opening, vertex, the focal width, focus, directrix, value of a and the axis of symmetry.**

7.  $(x-7)^2 = 12(y+1)$

Direction of opening \_\_\_\_\_

Vertex \_\_\_\_\_

Focal Width \_\_\_\_\_

a= \_\_\_\_\_

focus \_\_\_\_\_

axis of symmetry \_\_\_\_\_

directrix \_\_\_\_\_

8.  $(y+4)^2 = 8(x-9)$

Direction of opening \_\_\_\_\_

Vertex \_\_\_\_\_

Focal Width \_\_\_\_\_

a= \_\_\_\_\_

focus \_\_\_\_\_

axis of symmetry \_\_\_\_\_

directrix \_\_\_\_\_

**Complete the square and write in factored form.**

9.  $y^2 - 2y + \underline{\hspace{2cm}}$

10.  $y^2 + 10y + \underline{\hspace{2cm}}$

11.  $y^2 - 3y + \underline{\hspace{2cm}}$

12.  $y^2 - \frac{5}{2}y + \underline{\hspace{2cm}}$

**Write the equations of the parabola, in standard form, by completing the square.**

13.  $y = x^2 + 6x$

14.  $y = x^2 - 10x - 3$

15.  $x = y^2 - 7y + \frac{3}{4}$

Determine the direction of opening, vertex, focus, focal width, the value of  $a$ , and directrix, then graph the parabola.

16.  $(x - 2)^2 = 12(y + 5)$

Direction of opening \_\_\_\_\_

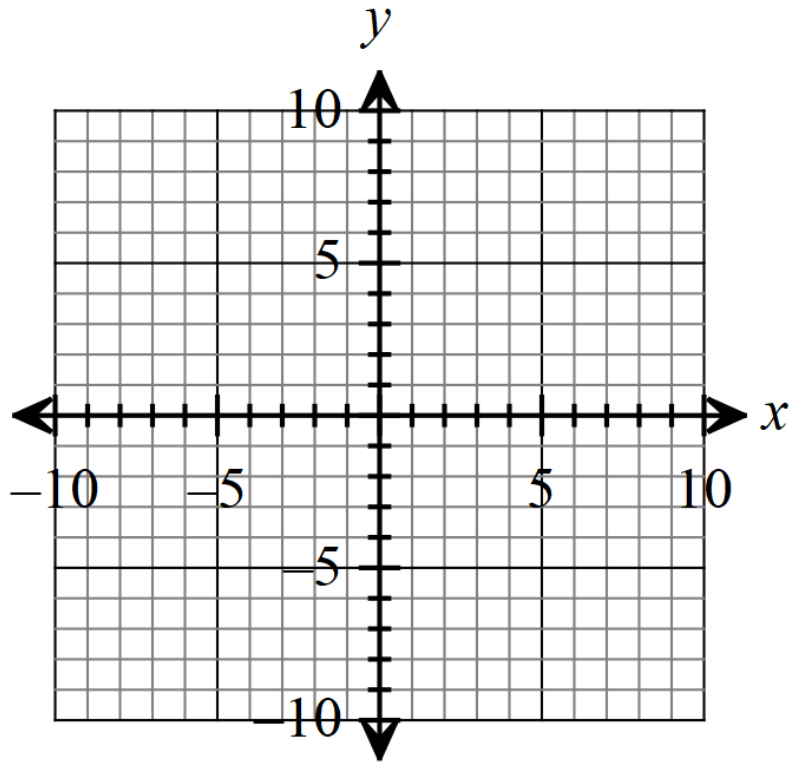
Vertex \_\_\_\_\_

Focal Width \_\_\_\_\_

$a =$  \_\_\_\_\_

Focus \_\_\_\_\_

Directrix \_\_\_\_\_



17.  $(y - 6)^2 = 16(x - 4)$

Direction of opening \_\_\_\_\_

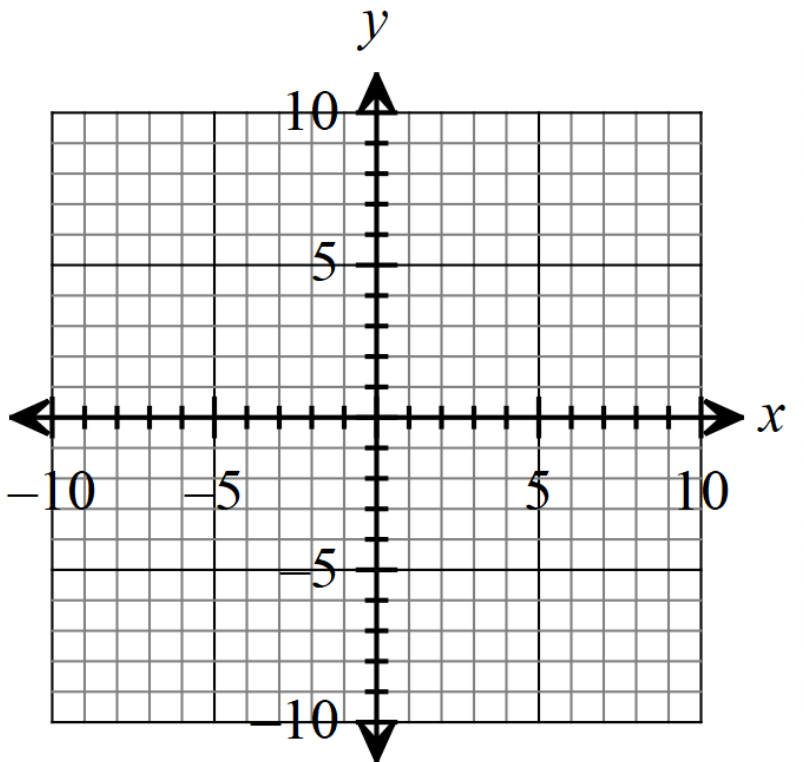
Vertex \_\_\_\_\_

Focal Width \_\_\_\_\_

$a =$  \_\_\_\_\_

Focus \_\_\_\_\_

Directrix \_\_\_\_\_



Complete the square and write the equation in standard form. Graph.

18.  $x^2 + 8x = -6y - 10$

Direction of opening \_\_\_\_\_

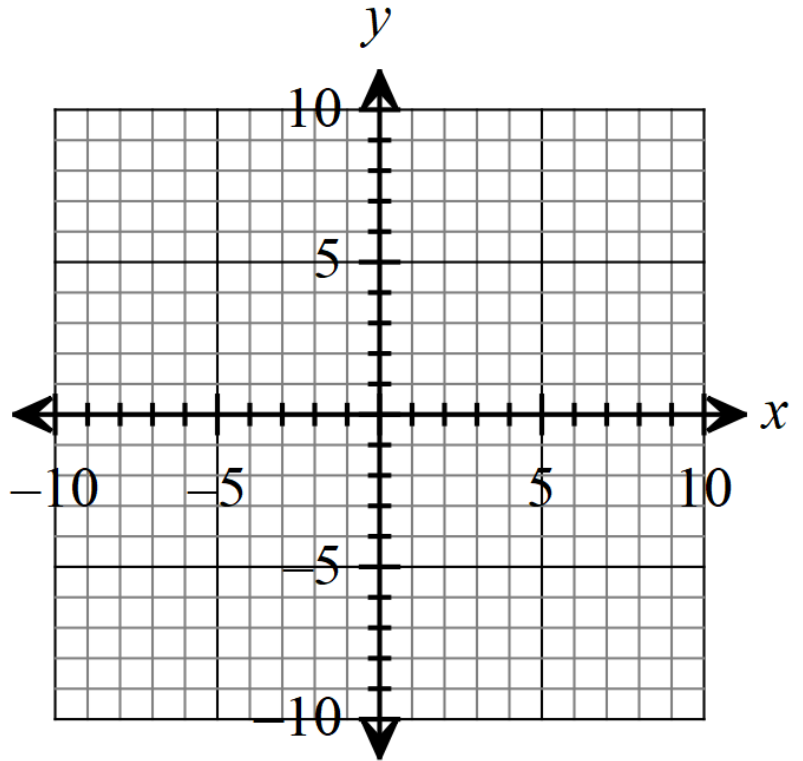
Vertex \_\_\_\_\_

Focal Width \_\_\_\_\_

$a =$  \_\_\_\_\_

Focus \_\_\_\_\_

Directrix \_\_\_\_\_



19.  $y^2 - 2y = -4x - 21$

Direction of opening \_\_\_\_\_

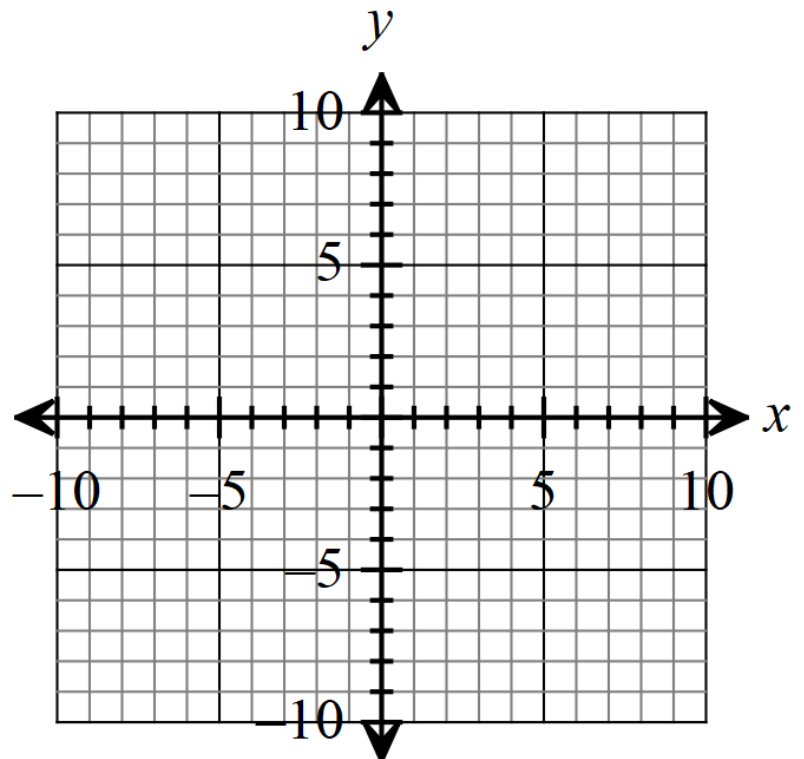
Vertex \_\_\_\_\_

Focal Width \_\_\_\_\_

$a =$  \_\_\_\_\_

Focus \_\_\_\_\_

Directrix \_\_\_\_\_



Use the formulas from your notes to write an equation for each of the following parabolas (DRAW A GRAPH FOR HELP).

20. vertex at the origin, focus at (0, 2)

Direction of opening \_\_\_\_\_

Which equation should you use  
\_\_\_\_\_

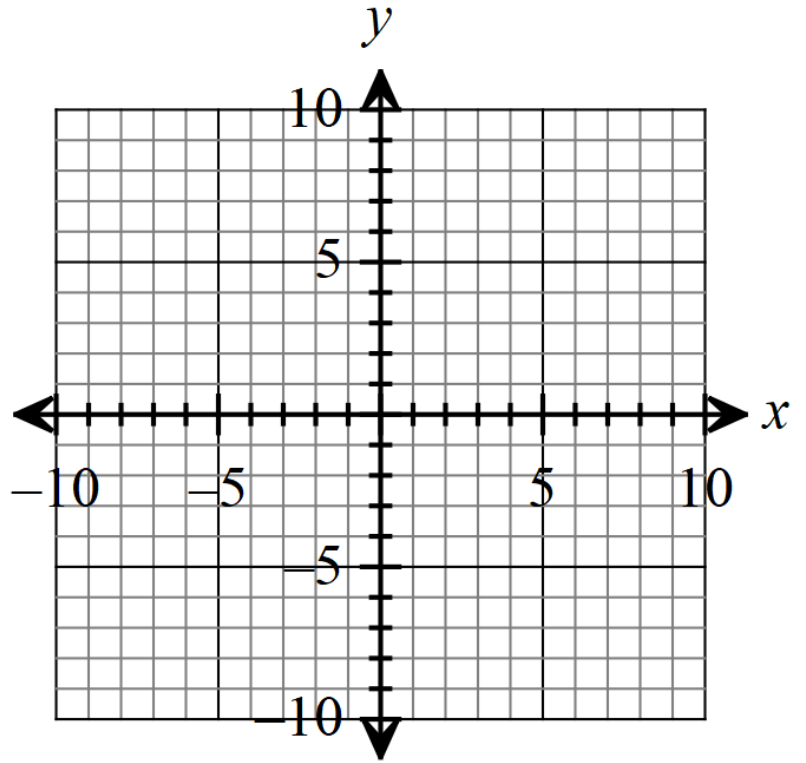
Vertex (h,k) \_\_\_\_\_

Focus \_\_\_\_\_

a= \_\_\_\_\_

Focal Width \_\_\_\_\_

Answer \_\_\_\_\_



21. focus at (0, -5), directrix y=5

Direction of opening \_\_\_\_\_

Which equation should you use  
\_\_\_\_\_

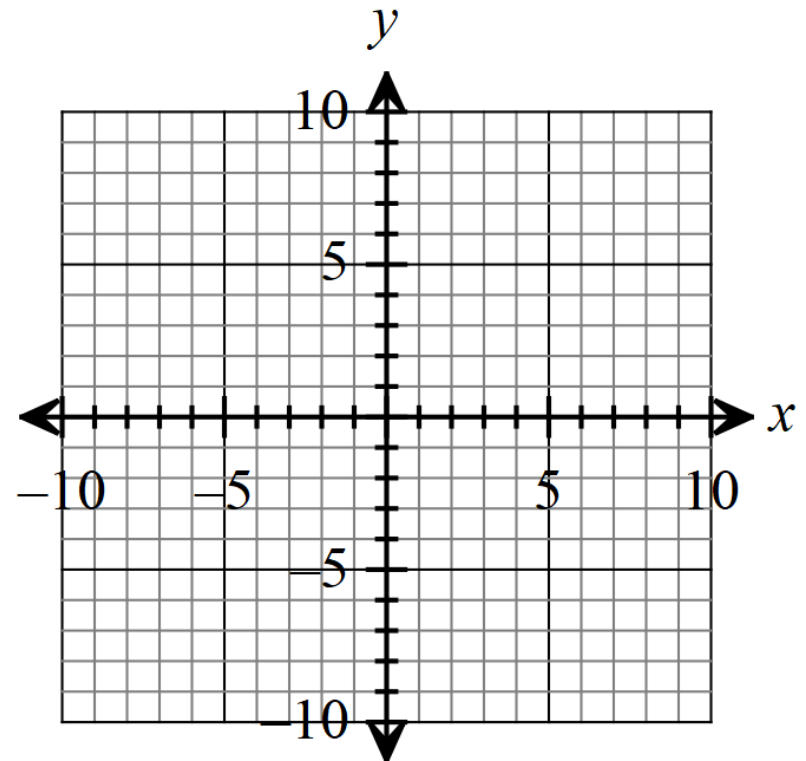
Vertex (h,k) \_\_\_\_\_

Focus \_\_\_\_\_

a= \_\_\_\_\_

Focal Width \_\_\_\_\_

Answer \_\_\_\_\_



22. focus= $(-4, 0)$ , directrix  $x=2$

Direction of opening \_\_\_\_\_

Which equation should you use  
\_\_\_\_\_

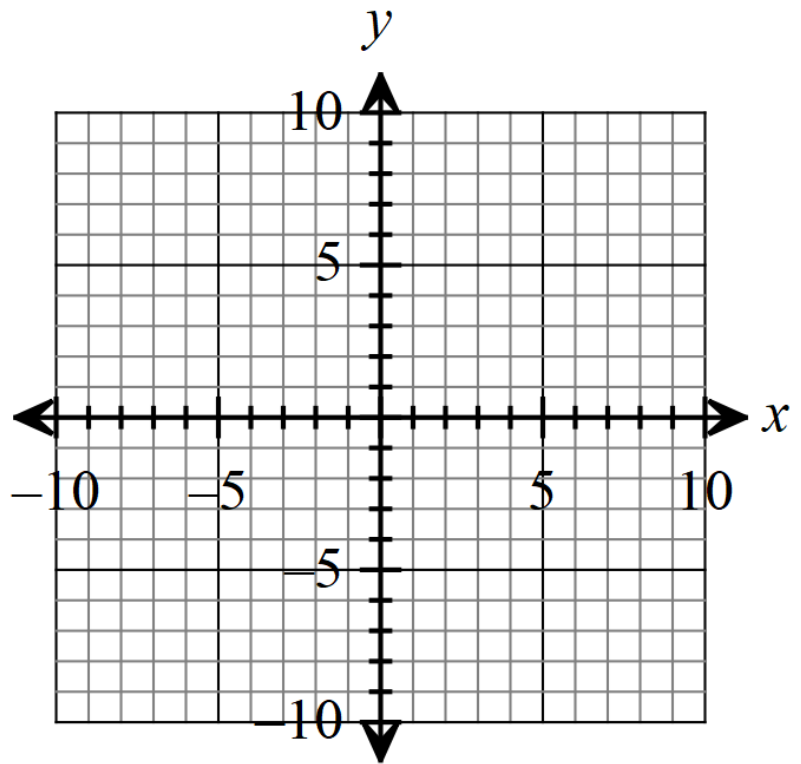
Vertex  $(h,k)$  \_\_\_\_\_

Focus \_\_\_\_\_

$a=$  \_\_\_\_\_

Focal Width \_\_\_\_\_

Answer \_\_\_\_\_



23. focus= $(2, -3)$ , directrix  $x=6$

Direction of opening \_\_\_\_\_

Which equation should you use  
\_\_\_\_\_

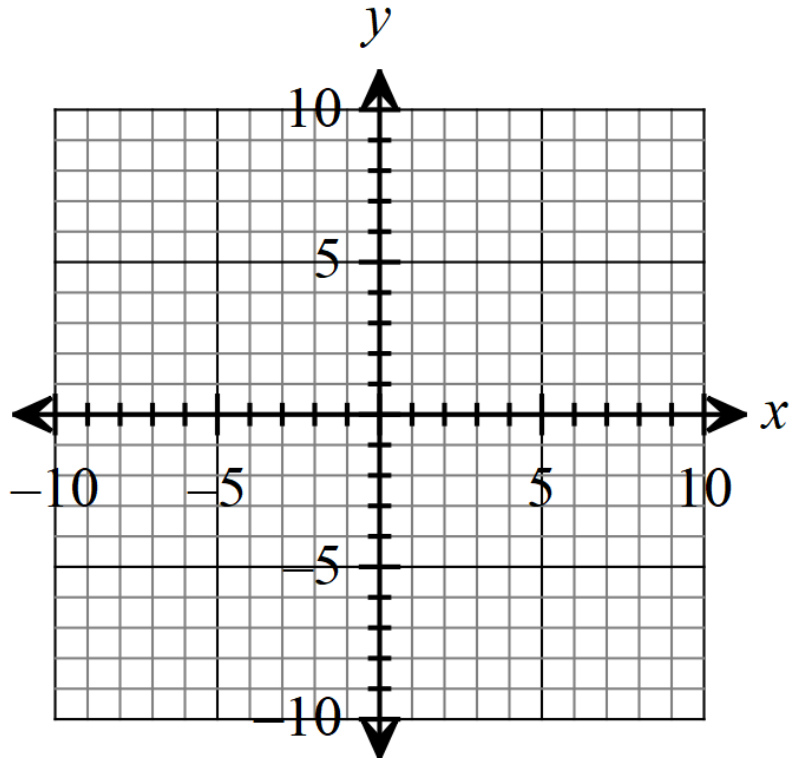
Vertex  $(h,k)$  \_\_\_\_\_

Focus \_\_\_\_\_

$a=$  \_\_\_\_\_

Focal Width \_\_\_\_\_

Answer \_\_\_\_\_



24. focus=(3, 4), directrix  $y=1$

Direction of opening \_\_\_\_\_

Which equation should you use  
\_\_\_\_\_

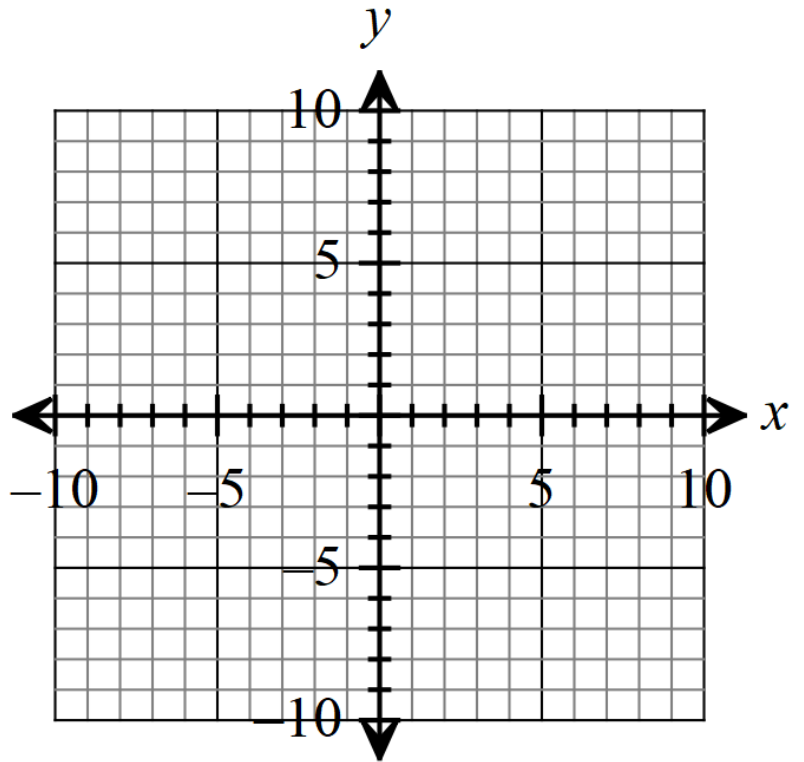
Vertex (h,k) \_\_\_\_\_

Focus \_\_\_\_\_

$a=$  \_\_\_\_\_

Focal Width \_\_\_\_\_

Answer \_\_\_\_\_



25. vertex at the origin, opens to the left, focal width = 12

Direction of opening \_\_\_\_\_

Which equation should you use  
\_\_\_\_\_

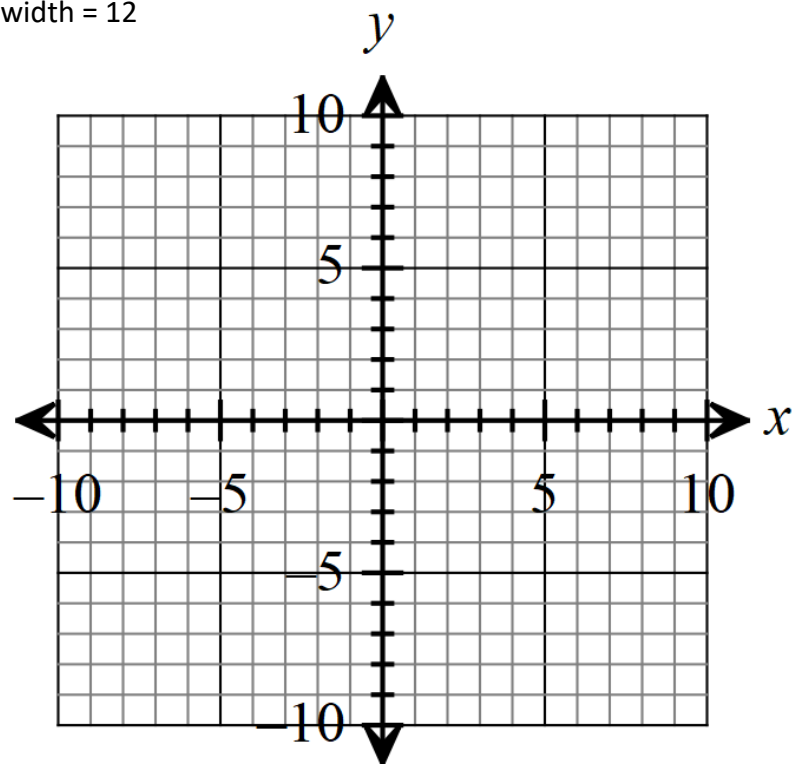
Vertex (h,k) \_\_\_\_\_

Focus \_\_\_\_\_

$a=$  \_\_\_\_\_

Focal Width \_\_\_\_\_

Answer \_\_\_\_\_



26. Focus at  $(-2, 4)$ , vertex at  $(-4, 4)$

Direction of opening \_\_\_\_\_

Which equation should you use  
\_\_\_\_\_

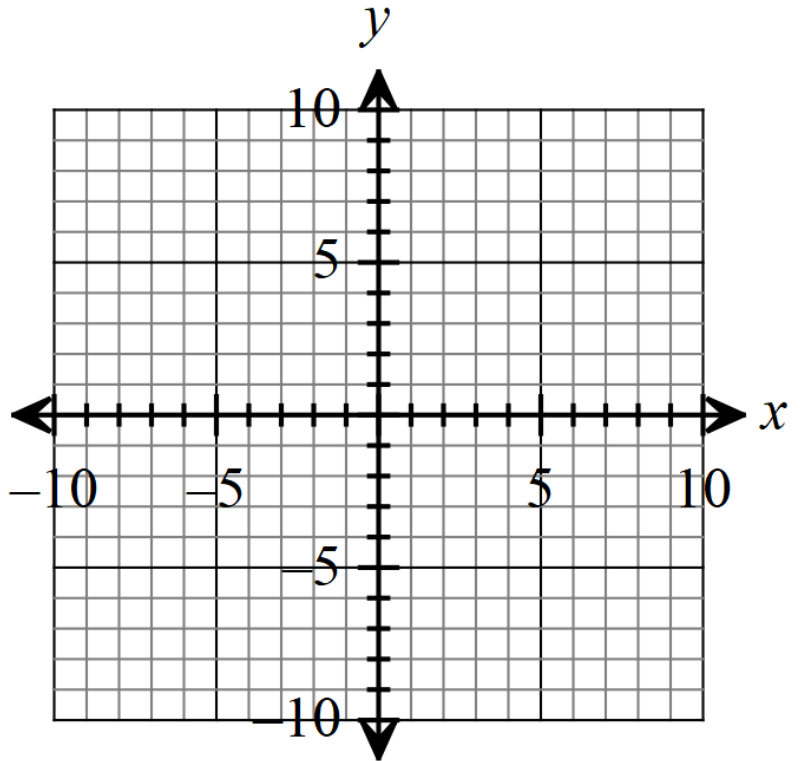
Vertex  $(h,k)$  \_\_\_\_\_

Focus \_\_\_\_\_

$a=$  \_\_\_\_\_

Focal Width \_\_\_\_\_

Answer \_\_\_\_\_



27. focus at  $(2, -3)$ , directrix  $y = 5$

Direction of opening \_\_\_\_\_

Which equation should you use  
\_\_\_\_\_

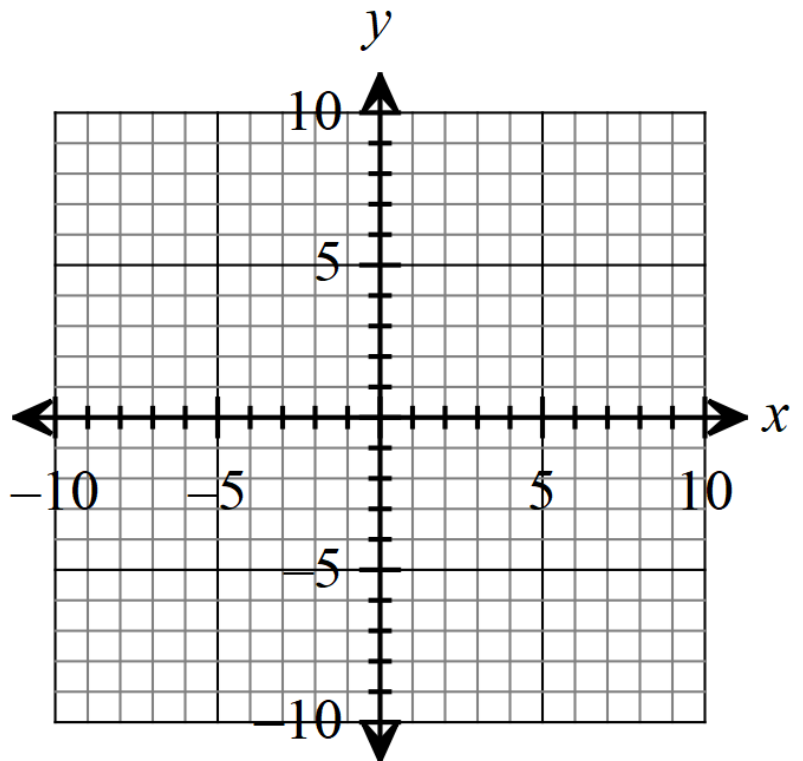
Vertex  $(h,k)$  \_\_\_\_\_

Focus \_\_\_\_\_

$a=$  \_\_\_\_\_

Focal Width \_\_\_\_\_

Answer \_\_\_\_\_



28. vertex at (2, -1), opens upward, focal width = 16

Direction of opening \_\_\_\_\_

Which equation should you use  
\_\_\_\_\_

Vertex (h,k) \_\_\_\_\_

Focus \_\_\_\_\_

a= \_\_\_\_\_

Focal Width \_\_\_\_\_

Answer \_\_\_\_\_

