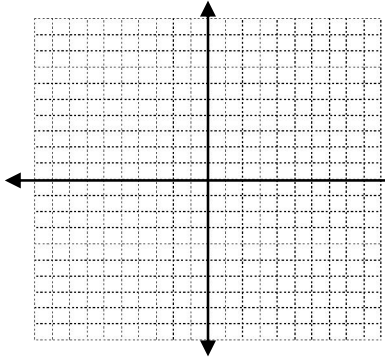


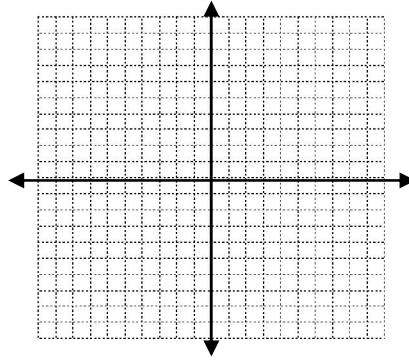
Graph the ellipse and identify the center, vertices, and foci.

1.  $\frac{x^2}{16} + \frac{y^2}{4} = 1$



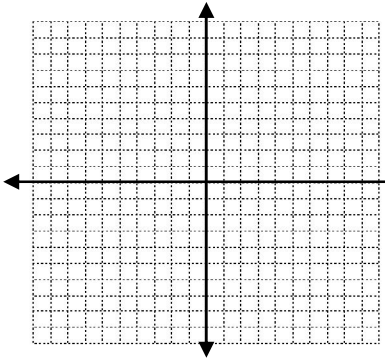
Center: \_\_\_\_\_  
Vert: \_\_\_\_\_  
CV: \_\_\_\_\_  
Foci: \_\_\_\_\_

2.  $\frac{x^2}{9} + \frac{y^2}{36} = 1$



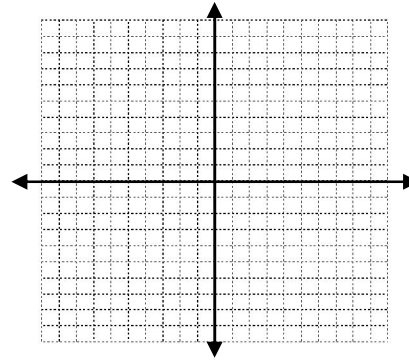
Center: \_\_\_\_\_  
Vert: \_\_\_\_\_  
CV: \_\_\_\_\_  
Foci: \_\_\_\_\_

3.  $25x^2 + 4y^2 = 100$



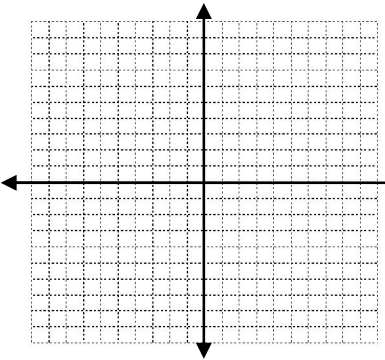
Center: \_\_\_\_\_  
Vert: \_\_\_\_\_  
CV: \_\_\_\_\_  
Foci: \_\_\_\_\_

4.  $7x^2 = 35 - 5y^2$



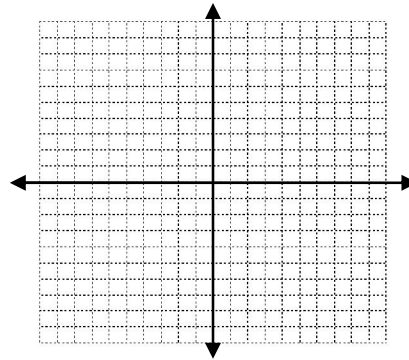
Center: \_\_\_\_\_  
Vert: \_\_\_\_\_  
CV: \_\_\_\_\_  
Foci: \_\_\_\_\_

5.  $\frac{(x-2)^2}{9} + \frac{(y-1)^2}{4} = 1$



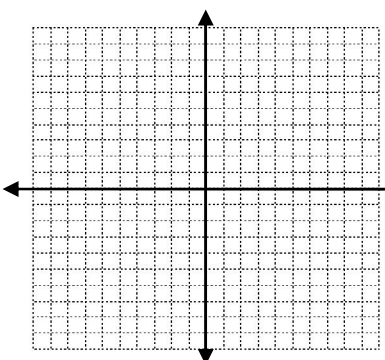
Center: \_\_\_\_\_  
Vert: \_\_\_\_\_  
CV: \_\_\_\_\_  
Foci: \_\_\_\_\_

6.  $\frac{(x-4)^2}{9} + \frac{(y+2)^2}{25} = 1$



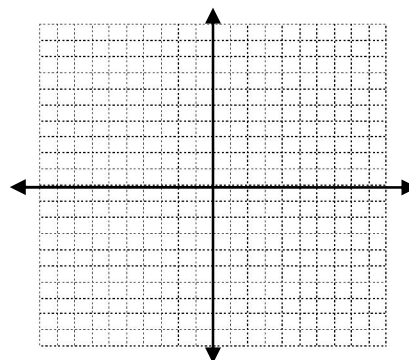
Center: \_\_\_\_\_  
Vert: \_\_\_\_\_  
CV: \_\_\_\_\_  
Foci: \_\_\_\_\_

7.  $(x + 3)^2 + 4(y - 2)^2 = 16$



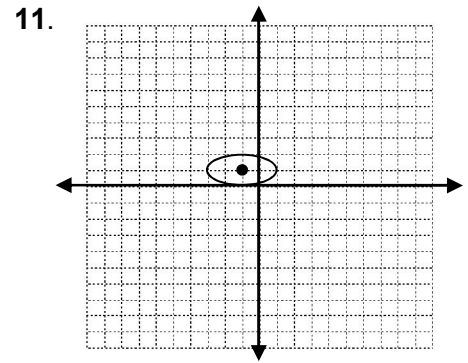
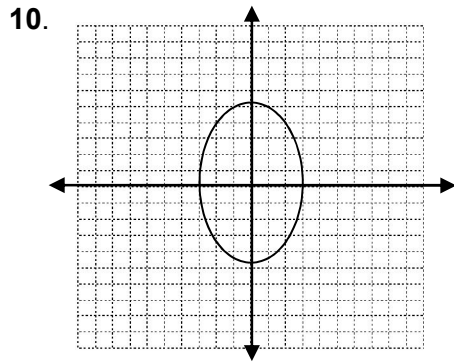
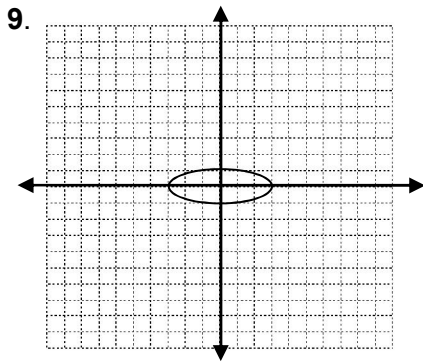
Center: \_\_\_\_\_  
Vert: \_\_\_\_\_  
CV: \_\_\_\_\_  
Foci: \_\_\_\_\_

8.  $\frac{x^2}{25} + \frac{(y-2)^2}{36} = 1$



Center: \_\_\_\_\_  
Vert: \_\_\_\_\_  
CV: \_\_\_\_\_  
Foci: \_\_\_\_\_

Find the standard form of the equation of each ellipse.



Find the standard form of the equation of each ellipse satisfying the given conditions.

12. Foci:  $(\pm 5, 0)$ ; Vertices  $(\pm 8, 0)$

13. Foci:  $(0, \pm 4)$ ; Vertices:  $(0, \pm 7)$

14. Foci:  $(\pm 2, 0)$ ; y-intercepts:  $\pm 3$

15. Major axis horizontal with length 8; length of minor axis 4; Center  $(0, 0)$

16. Major axis vertical with length 10;  
Length of minor axis 4; Center  $(-2, 3)$

17. Endpoints of Major Axis:  $(7, 9)$  &  $(7, 3)$   
Endpoints of Minor Axis:  $(5, 6)$  &  $(9, 6)$

Convert each equation to standard form by completing the square.

18.  $x^2 + 4y^2 + 10x - 8y + 13 = 0$

19.  $4x^2 + y^2 + 16x - 6y - 39 = 0$

20. The path of the earth around the sun is an ellipse with the sun at one focus. The ellipse has a major axis of 186,000,000 miles and eccentricity of 0.017. Find the distance between the earth and the sun when the earth is (a) closest to the sun and (b) farthest from the sun.

