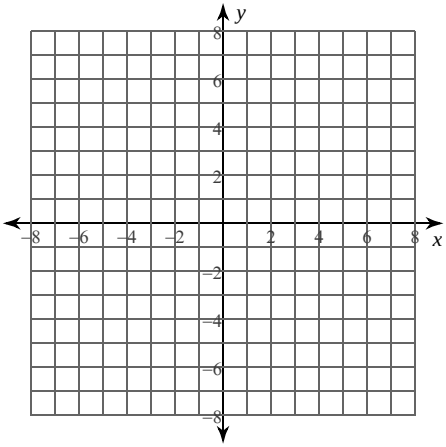
Name_____

Ellipses

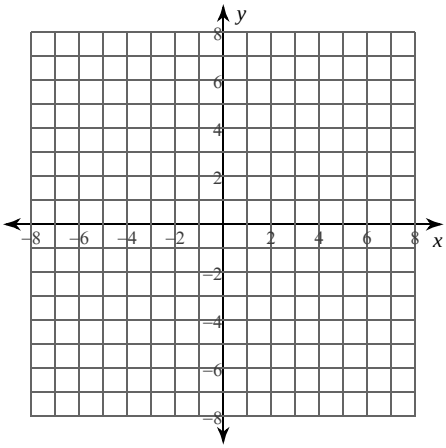
Date_____ Period____

Identify the center, vertices, co-vertices, and foci of each. Then sketch the graph.

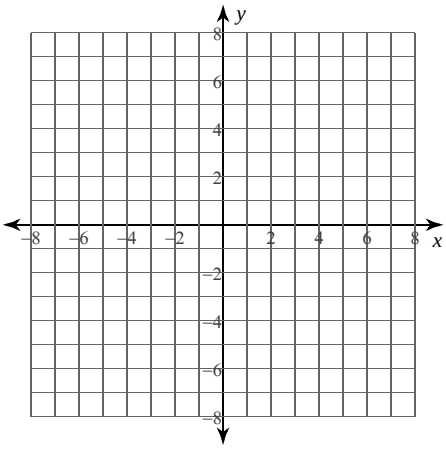
1) $\frac{(x+3)^2}{16} + \frac{(y-1)^2}{4} = 1$



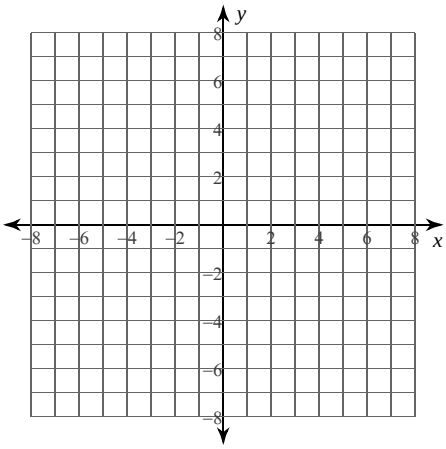
2) $\frac{(x-3)^2}{5} + \frac{(y-1)^2}{15} = 1$



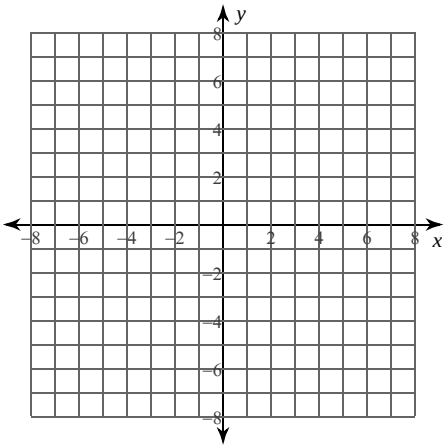
3) $\frac{(x-1)^2}{9} + \frac{(y+5)^2}{4} = 1$



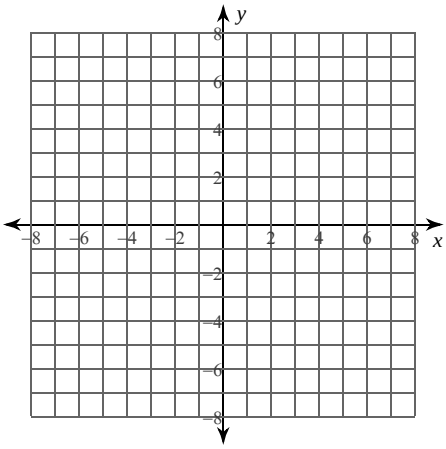
4) $\frac{x^2}{49} + \frac{(y-3)^2}{9} = 1$



5) $x^2 + 9y^2 + 6x - 90y + 225 = 0$



6) $9x^2 + 4y^2 - 36x + 24y + 36 = 0$



Identify the center, vertices, co-vertices, foci, length of the major axis, length of the minor axis, length of the latus rectum, and eccentricity of each.

7) $3x^2 + 35y^2 - 60x + 140y - 85 = 0$

8) $36x^2 + 5y^2 - 90y - 495 = 0$

Use the information provided to write the standard form equation of each ellipse.

9) Vertices: $(6, -6), (-10, -6)$
Foci: $(-2 + 2\sqrt{7}, -6), (-2 - 2\sqrt{7}, -6)$

10) Vertices: $(13, 9), (-3, 9)$
Foci: $(5 + 2\sqrt{7}, 9), (5 - 2\sqrt{7}, 9)$

11) Vertices: $(5, 9), (-13, 9)$
Co-vertices: $(-4, 14), (-4, 4)$

12) Foci: $(3, 10 + \sqrt{105}), (3, 10 - \sqrt{105})$
Co-vertices: $(11, 10), (-5, 10)$

13) Foci: $\left(\frac{4\sqrt{35} + 7}{2}, \frac{3}{2}\right), \left(\frac{-4\sqrt{35} + 7}{2}, \frac{3}{2}\right)$
Endpoints of minor axis: $\left(\frac{7}{2}, \frac{7}{2}\right), \left(\frac{7}{2}, -\frac{1}{2}\right)$

14) Center: $(-8, 5)$
Vertex: $(-8, 15)$
Focus: $(-8, 5 + \sqrt{51})$

15) Endpoints of major axis:
$(-4, -6), (-16, -6)$

Endpoints of minor axis:
$(-10, -2), (-10, -10)$

16) Eccentricity = $\frac{\sqrt{15}}{4}$
Center: $(-5, 5)$
Co-vertex: $(-8, 5)$