

## Lesson 3: Deriving equations of Ellipses

Date \_\_\_\_\_ Period \_\_\_\_\_

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

1) Vertices:  $(11, 5), (-5, 5)$   
Co-vertices:  $(3, 11), (3, -1)$

2) Vertices:  $(3, 16), (3, -10)$   
Co-vertices:  $(5, 3), (1, 3)$

3) Vertices:  $(9, 1), (9, -17)$   
Co-vertices:  $(17, -8), (1, -8)$

4) Vertices:  $(-6, 17), (-6, -9)$   
Foci:  $(-6, 4 + \sqrt{105}), (-6, 4 - \sqrt{105})$

5) Vertices:  $(3, 8), (-19, 8)$   
Foci:  $(-8 + \sqrt{21}, 8), (-8 - \sqrt{21}, 8)$

6) Vertices:  $(17, -9), (3, -9)$   
Foci:  $(10 + 2\sqrt{10}, -9), (10 - 2\sqrt{10}, -9)$

7) Foci:  $(9, 12), (9, -12)$   
Endpoints of major axis:  $(9, 13), (9, -13)$

8) Foci:  $(-3, 4 + \sqrt{19}), (-3, 4 - \sqrt{19})$   
Endpoints of major axis:  $(-3, 14), (-3, -6)$

9) Foci:  $(6 + 3\sqrt{5}, 4), (6 - 3\sqrt{5}, 4)$   
Endpoints of major axis:  $(13, 4), (-1, 4)$

## Lesson 3: Deriving equations of Ellipses

Date \_\_\_\_\_ Period \_\_\_\_\_

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

- 1) Vertices:  $(11, 5), (-5, 5)$   
 Co-vertices:  $(3, 11), (3, -1)$

$$\frac{(x-3)^2}{64} + \frac{(y-5)^2}{36} = 1$$

- 2) Vertices:  $(3, 16), (3, -10)$   
 Co-vertices:  $(5, 3), (1, 3)$

$$\frac{(x-3)^2}{4} + \frac{(y-3)^2}{169} = 1$$

- 3) Vertices:  $(9, 1), (9, -17)$   
 Co-vertices:  $(17, -8), (1, -8)$

$$\frac{(x-9)^2}{64} + \frac{(y+8)^2}{81} = 1$$

- 4) Vertices:  $(-6, 17), (-6, -9)$   
 Foci:  $(-6, 4 + \sqrt{105}), (-6, 4 - \sqrt{105})$

$$\frac{(x+6)^2}{64} + \frac{(y-4)^2}{169} = 1$$

- 5) Vertices:  $(3, 8), (-19, 8)$   
 Foci:  $(-8 + \sqrt{21}, 8), (-8 - \sqrt{21}, 8)$

$$\frac{(x+8)^2}{121} + \frac{(y-8)^2}{100} = 1$$

- 6) Vertices:  $(17, -9), (3, -9)$   
 Foci:  $(10 + 2\sqrt{10}, -9), (10 - 2\sqrt{10}, -9)$

$$\frac{(x-10)^2}{49} + \frac{(y+9)^2}{9} = 1$$

- 7) Foci:  $(9, 12), (9, -12)$   
 Endpoints of major axis:  $(9, 13), (9, -13)$

$$\frac{(x-9)^2}{25} + \frac{y^2}{169} = 1$$

- 8) Foci:  $(-3, 4 + \sqrt{19}), (-3, 4 - \sqrt{19})$   
 Endpoints of major axis:  $(-3, 14), (-3, -6)$

$$\frac{(x+3)^2}{81} + \frac{(y-4)^2}{100} = 1$$

- 9) Foci:  $(6 + 3\sqrt{5}, 4), (6 - 3\sqrt{5}, 4)$   
 Endpoints of major axis:  $(13, 4), (-1, 4)$

$$\frac{(x-6)^2}{49} + \frac{(y-4)^2}{4} = 1$$