

## Writing Equations of Ellipses

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

1) Vertices:  $(10, 0), (-10, 0)$   
Co-vertices:  $(0, 9), (0, -9)$

2) Vertices:  $(0, 6), (0, -6)$   
Co-vertices:  $(5, 0), (-5, 0)$

3) Vertices:  $(12, 0), (-12, 0)$   
Foci:  $(2\sqrt{11}, 0), (-2\sqrt{11}, 0)$

4) Vertices:  $(14, 0), (-14, 0)$   
Foci:  $(3\sqrt{19}, 0), (-3\sqrt{19}, 0)$

5) Foci:  $(-7, 5 + \sqrt{13}), (-7, 5 - \sqrt{13})$   
Co-vertices:  $(-1, 5), (-13, 5)$

6) Foci:  $(7, 9), (-1, 9)$   
Co-vertices:  $(3, 12), (3, 6)$

7) Foci:  $(\sqrt{17}, 0), (-\sqrt{17}, 0)$   
Endpoints of major axis:  $(9, 0), (-9, 0)$

8) Foci:  $(\sqrt{115}, 0), (-\sqrt{115}, 0)$   
Endpoints of major axis:  $(\sqrt{195}, 0), (-\sqrt{195}, 0)$

9) Foci:  $(7 + 2\sqrt{35}, -4), (7 - 2\sqrt{35}, -4)$   
Endpoints of minor axis:  $(7, -2), (7, -6)$

10) Foci:  $(-5, 7 + \sqrt{115}), (-5, 7 - \sqrt{115})$   
Endpoints of minor axis:  $(4, 7), (-14, 7)$

11) Center:  $(6, -5)$   
Vertex:  $(6, 7)$   
Focus:  $(6, -5 - 6\sqrt{3})$

12) Center:  $(-3, -4)$   
Vertex:  $(6, -4)$   
Focus:  $(-3 - \sqrt{65}, -4)$

13) Center:  $(4, 8)$   
Vertex:  $(4, 8 - \sqrt{170})$   
Co-vertex:  $(4 - \sqrt{15}, 8)$

14) Center:  $(7, -10)$   
Vertex:  $(-6, -10)$   
Co-vertex:  $(7, -17)$

- 15) Center:  $(-3, 3)$   
Vertex:  $(-10, 3)$   
 $c^2 = 33$

- 16) Center:  $(1, -7)$   
Vertex:  $(1, 1)$   
 $c^2 = 55$

- 17) Center:  $(-9, 5)$   
Focus:  $(-9 + 2\sqrt{14}, 5)$   
Co-vertex:  $(-9, 10)$

- 18) Center:  $(6, -4)$   
Focus:  $(6 + 2\sqrt{6}, -4)$   
Co-vertex:  $(6, 1)$

- 19) Center:  $(4, 0)$   
Focus:  $(4, 3\sqrt{7})$   
Width: 18

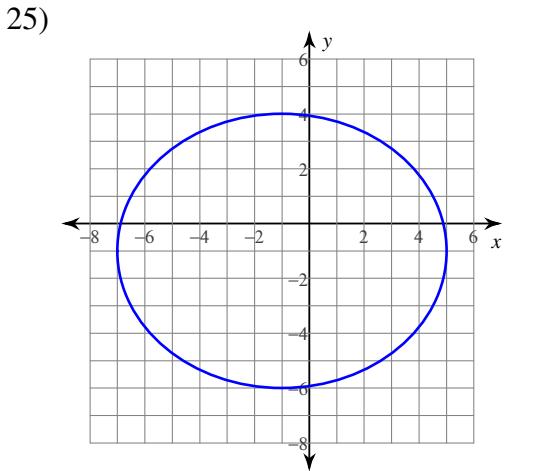
- 20) Center:  $(4, -8)$   
Height: 18  
Width: 14

- 21) Center:  $(9, -7)$   
 $a = 9$   
 $b = 4$   
Width: 8

- 22) Center at origin  
Focus:  $(3\sqrt{15}, 0)$   
y-intercept:  $(0, 3)$

- 23) Endpoints of major axis:  $(4, 18), (4, -4)$   
Endpoints of minor axis:  $(12, 7), (-4, 7)$

- 24) Major axis is vertical  
Center:  $(8, -2)$   
Major axis is 18 units long  
Minor axis is 8 units long



- 26) Eccentricity =  $\frac{\sqrt{91}}{10}$   
Co-vertices:  $(12, 1), (6, 1)$

## Writing Equations of Ellipses

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

- 1) Vertices:  $(10, 0), (-10, 0)$   
Co-vertices:  $(0, 9), (0, -9)$

$$\frac{x^2}{100} + \frac{y^2}{81} = 1$$

- 3) Vertices:  $(12, 0), (-12, 0)$   
Foci:  $(2\sqrt{11}, 0), (-2\sqrt{11}, 0)$

$$\frac{x^2}{144} + \frac{y^2}{100} = 1$$

- 5) Foci:  $(-7, 5 + \sqrt{13}), (-7, 5 - \sqrt{13})$   
Co-vertices:  $(-1, 5), (-13, 5)$

$$\frac{(x + 7)^2}{36} + \frac{(y - 5)^2}{49} = 1$$

- 7) Foci:  $(\sqrt{17}, 0), (-\sqrt{17}, 0)$   
Endpoints of major axis:  $(9, 0), (-9, 0)$

$$\frac{x^2}{81} + \frac{y^2}{64} = 1$$

- 9) Foci:  $(7 + 2\sqrt{35}, -4), (7 - 2\sqrt{35}, -4)$   
Endpoints of minor axis:  $(7, -2), (7, -6)$

$$\frac{(x - 7)^2}{144} + \frac{(y + 4)^2}{4} = 1$$

- 11) Center:  $(6, -5)$   
Vertex:  $(6, 7)$   
Focus:  $(6, -5 - 6\sqrt{3})$

$$\frac{(x - 6)^2}{36} + \frac{(y + 5)^2}{144} = 1$$

- 13) Center:  $(4, 8)$   
Vertex:  $(4, 8 - \sqrt{170})$   
Co-vertex:  $(4 - \sqrt{15}, 8)$

$$\frac{(x - 4)^2}{15} + \frac{(y - 8)^2}{170} = 1$$

- 2) Vertices:  $(0, 6), (0, -6)$   
Co-vertices:  $(5, 0), (-5, 0)$

$$\frac{x^2}{25} + \frac{y^2}{36} = 1$$

- 4) Vertices:  $(14, 0), (-14, 0)$   
Foci:  $(3\sqrt{19}, 0), (-3\sqrt{19}, 0)$

$$\frac{x^2}{196} + \frac{y^2}{25} = 1$$

- 6) Foci:  $(7, 9), (-1, 9)$   
Co-vertices:  $(3, 12), (3, 6)$

$$\frac{(x - 3)^2}{25} + \frac{(y - 9)^2}{9} = 1$$

- 8) Foci:  $(\sqrt{115}, 0), (-\sqrt{115}, 0)$   
Endpoints of major axis:  $(\sqrt{195}, 0), (-\sqrt{195}, 0)$

$$\frac{x^2}{195} + \frac{y^2}{80} = 1$$

- 10) Foci:  $(-5, 7 + \sqrt{115}), (-5, 7 - \sqrt{115})$   
Endpoints of minor axis:  $(4, 7), (-14, 7)$

$$\frac{(x + 5)^2}{81} + \frac{(y - 7)^2}{196} = 1$$

- 12) Center:  $(-3, -4)$   
Vertex:  $(6, -4)$   
Focus:  $(-3 - \sqrt{65}, -4)$

$$\frac{(x + 3)^2}{81} + \frac{(y + 4)^2}{16} = 1$$

- 14) Center:  $(7, -10)$   
Vertex:  $(-6, -10)$   
Co-vertex:  $(7, -17)$

$$\frac{(x - 7)^2}{169} + \frac{(y + 10)^2}{49} = 1$$

15) Center:  $(-3, 3)$

Vertex:  $(-10, 3)$

$c^2 = 33$

$$\frac{(x+3)^2}{49} + \frac{(y-3)^2}{16} = 1$$

17) Center:  $(-9, 5)$

Focus:  $(-9 + 2\sqrt{14}, 5)$

Co-vertex:  $(-9, 10)$

$$\frac{(x+9)^2}{81} + \frac{(y-5)^2}{25} = 1$$

19) Center:  $(4, 0)$

Focus:  $(4, 3\sqrt{7})$

Width: 18

$$\frac{(x-4)^2}{81} + \frac{y^2}{144} = 1$$

21) Center:  $(9, -7)$

$a = 9$

$b = 4$

Width: 8

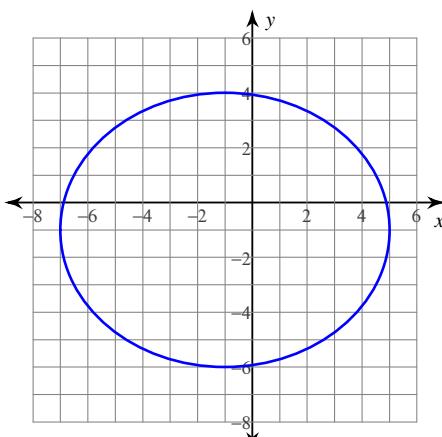
$$\frac{(x-9)^2}{16} + \frac{(y+7)^2}{81} = 1$$

23) Endpoints of major axis:  $(4, 18), (4, -4)$

Endpoints of minor axis:  $(12, 7), (-4, 7)$

$$\frac{(x-4)^2}{64} + \frac{(y-7)^2}{121} = 1$$

25)



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

16) Center:  $(1, -7)$

Vertex:  $(1, 1)$

$c^2 = 55$

$$\frac{(x-1)^2}{9} + \frac{(y+7)^2}{64} = 1$$

18) Center:  $(6, -4)$

Focus:  $(6 + 2\sqrt{6}, -4)$

Co-vertex:  $(6, 1)$

$$\frac{(x-6)^2}{49} + \frac{(y+4)^2}{25} = 1$$

20) Center:  $(4, -8)$

Height: 18

Width: 14

$$\frac{(x-4)^2}{49} + \frac{(y+8)^2}{81} = 1$$

22) Center at origin

Focus:  $(3\sqrt{15}, 0)$

y-intercept:  $(0, 3)$

$$\frac{x^2}{144} + \frac{y^2}{9} = 1$$

24) Major axis is vertical

Center:  $(8, -2)$

Major axis is 18 units long

Minor axis is 8 units long

$$\frac{(x-8)^2}{16} + \frac{(y+2)^2}{81} = 1$$

26) Eccentricity =  $\frac{\sqrt{91}}{10}$

Co-vertices:  $(12, 1), (6, 1)$

$$\frac{(x-9)^2}{9} + \frac{(y-1)^2}{100} = 1$$