

# "Where did Noah keep his bees?"

Find the center and the foci for the following ellipses. The answer to each problem will match a letter that will allow you to figure out the joke.

1.  $\frac{x^2}{9} + \frac{y^2}{12} = 1$

T: C(-1, 0); F(-1,  $\pm 3$ )

2.  $\frac{(x-3)^2}{4} + \frac{(y+2)^2}{7} = 1$

V: C(4, -2); F(6, -2) & (2, -2)

3.  $4(x+2)^2 + 7y^2 = 28$

H: C(0, 2); F( $\pm\sqrt{15}$ , 0)

O: C(6, 3); F(1, -3) & (14, 5)

4.  $3x^2 + y^2 + 6x = 6$

E: C(0, 0); F(0,  $\pm\sqrt{3}$ )

S: C(-1, 0); F(-1,  $\pm\sqrt{6}$ )

5.  $x^2 + 4y^2 - 16y = 4$

C: C(0, -5); F(0,  $-5 \pm 2\sqrt{5}$ )

W: C(0, 2); F( $\pm 5$ , 0)

6.  $x^2 + 12x + 5y^2 + 30y = -1$

A: C(-6, -3); F(2, -3) & (-14, -3)

I: C(3, -2); F(3,  $-2 \pm \sqrt{3}$ )

7.  $2x^2 + 3y^2 - 16x + 12y = -20$

Y: C(-2, 0); F(-2,  $\pm\sqrt{3}$ )

8.  $7x^2 + 2y^2 + 20y = 6$

R: C(-2, 0); F( $-2 \pm \sqrt{3}$ , 0)

X: C(0, 5); F( $\pm\sqrt{5}$ , -5)

6   3   8   5   2   7   1   4

Answer: \_\_\_\_\_

# "Where do birds invest their money?"

Write the following ellipse equations in standard form. The answer to each problem will match a letter that will allow you to figure out the joke.

- Center at the origin, x-intercept is  $\pm 4$ , y-intercept is  $\pm 3$ .
- Center at the origin, x-intercept is  $\pm\sqrt{5}$ , y-intercept is  $\pm\sqrt{2}$ .
- Center at the origin, focus at  $(4, 0)$ , vertex at  $(6, 0)$ .
- Foci at  $(0, \pm 3)$ , length of the major axis is 10.
- Foci at  $(\pm 2, 0)$ , length of the minor axis is 6.
- Center at  $(2, 2)$ , vertex at  $(6, 2)$ , focus at  $(3, 2)$ .
- Center at  $(-1, 3)$ , vertex at  $(-1, -2)$ , focus at  $(-1, 1)$ .
- Foci at  $(4, 3)$  and  $(4, -3)$ , vertex at  $(1, 0)$ .
- Vertex  $(1, 5)$ ,  $(9, 5)$ ,  $(5, 7)$ , and  $(5, 3)$ .
- Center at  $(1, -4)$ , focus at  $(4, -4)$ , length of minor axis is 4.

$$R: \frac{x^2}{16} + \frac{y^2}{25} = 1$$

$$O: \frac{(x+1)^2}{21} + \frac{(y-3)^2}{25} = 1$$

$$E: \frac{x^2}{16} + \frac{y^2}{9} = 1$$

$$M: \frac{(x-1)^2}{13} + \frac{(y+4)^2}{4} = 1$$

$$T: \frac{x^2}{5} + \frac{y^2}{2} = 1$$

$$K: \frac{(x-2)^2}{16} + \frac{(y-2)^2}{15} = 1$$

$$A: \frac{x^2}{36} + \frac{y^2}{20} = 1$$

$$R: \frac{(x-4)^2}{9} + \frac{y^2}{18} = 1$$

$$S: \frac{(x-5)^2}{16} + \frac{(y-5)^2}{4} = 1$$

$$T: \frac{x^2}{13} + \frac{y^2}{9} = 1$$

$$B: \frac{(x-2)^2}{20} + \frac{(y-2)^2}{27} = 1$$

9    2    7    4    6    10    3    8    6    1    5

Answer: \_\_\_\_\_