Name

12-4B Lesson Master

Questions on SPUR Objectives
See Student Edition pages 862–865 for objectives.

SKILLS Objective B

In 1 and 2, write an equation for an ellipse satisfying the given conditions.

1. The endpoints of the major and minor axes are (6, 0), (–6, 0), (0, 4), and (0, –4). _____

2. The foci are at (0, 5) and (0, –5) and the focal constant is 26. _____

PROPERTIES Objective E

3. For the ellipse with equation $\frac{x^2}{100} + \frac{y^2}{51} = 1$, find the

   a. length of the major axis. _____ b. length of the minor axis. _____

   c. x- and y-intercepts. _____ d. coordinates of the foci. _____

4. Find the focal constant of the ellipse with equation $\frac{x^2}{24} + \frac{y^2}{49} = 1$. _____

PROPERTIES Objective F

In 5–7, determine whether the figure described is a *parabola*, a *circle*, or an *ellipse*.

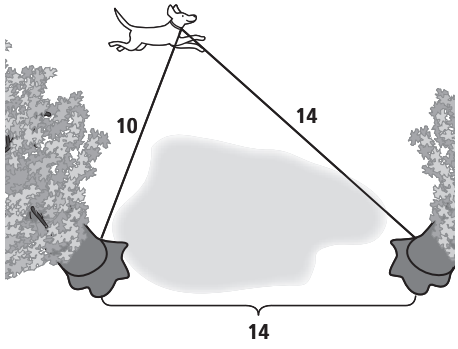
5. The set of all points whose distances from (p, q) and $y = t$ are equal. _____

6. The set of all points whose distance from (p, q) is a. _____

7. The set of all points whose distances from (x_1, y_1) and (x_2, y_2) sum to a. _____

USES Objective G

8. A leash on Grinsby's collar attached to a 24-foot rope looped around two trees which are 14 feet apart allows the dog to walk freely in the backyard. Consider a graph in which each unit represents one foot. Place the origin halfway between the trees and place the trees (represent them as points) on the x-axis. Write an equation to represent the boundary of Grinsby's play area.



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9. The orbit of Mars around the sun approximates an ellipse with the sun at one focus (F_1). The closest and farthest distances of Mars from the center of the sun are 128.5 and 155.0 million miles, respectively.

   a. About how far is F_2, the second focus, from the center of the sun? _____

   b. What is the approximate length of the orbit's minor axis? _____

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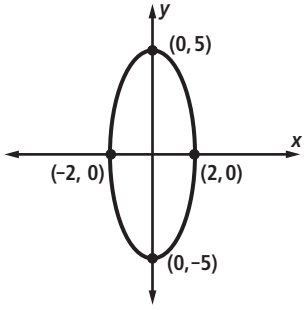
REPRESENTATIONS Objective I

10. Write an equation for the ellipse graphed at the right.



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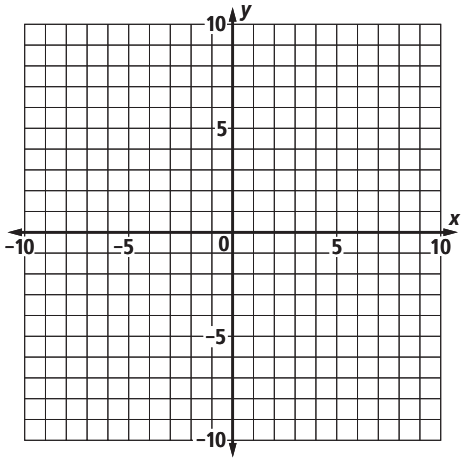
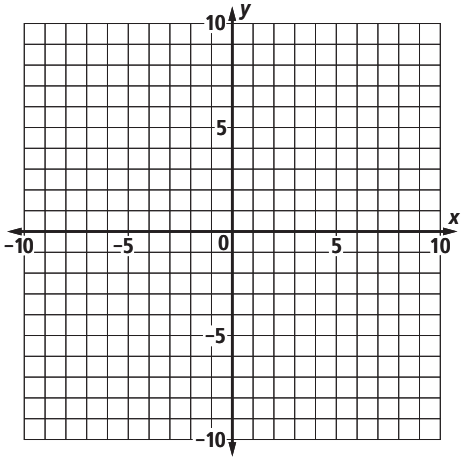
11. Graph the ellipse with equation $\frac{x^2}{4} + \frac{y^2}{9} = 1$ on the grid at the right.



REPRESENTATIONS Objective L

12. Sketch an ellipse with foci at (0, 4) and (0, –4) and minor axis length 6 on the grid below.



13. Graph the set of points whose distances from $(\sqrt{15}, 0)$ and $(-\sqrt{15}, 0)$ add to 8 below.