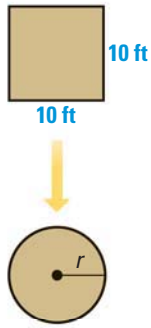
40. **TAKS REASONING** The equation $h = 0.019s^2$ gives the height h (in feet) of the largest ocean waves when the wind speed is s knots. *Compare* the wind speeds required to generate 5 foot waves and 20 foot waves.

41. **TAKS REASONING** You want to transform a square gravel parking lot with 10 foot sides into a circular lot. You want the circle to have the same area as the square so that you do not have to buy any additional gravel.



a. Model Write an equation you can use to find the radius r of the circular lot.

b. Solve What should the radius of the circular lot be?

c. Generalize In general, if a square has sides of length s, what is the radius r of a circle with the same area? *Justify* your answer algebraically.

42. **BICYCLING** The air resistance R (in pounds) on a racing cyclist is given by the equation $R = 0.00829s^2$ where s is the bicycle's speed (in miles per hour).

a. What is the speed of a racing cyclist who experiences 5 pounds of air resistance?

b. What happens to the air resistance if the cyclist's speed doubles? *Justify* your answer algebraically.

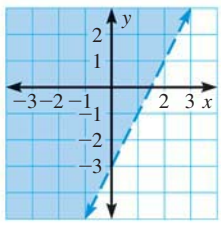
43. **CHALLENGE** For a swimming pool with a rectangular base, Torricelli's law implies that the height h of water in the pool t seconds after it begins draining is given by $h = \left(\sqrt{h_0} - \frac{2\pi d^2\sqrt{3}}{lw}t\right)^2$ where l and w are the pool's length and width, d is the diameter of the drain, and h_0 is the water's initial height. (All measurements are in inches.) In terms of l, w, d, and h_0, what is the time required to drain the pool when it is completely filled?

MIXED REVIEW FOR TAKS

TAKS PRACTICE at classzone.com

REVIEW Lesson 2.8; Taks Workbook

44. **TAKS PRACTICE** The graph of which inequality is shown? *TAKS Obj. 1*



(A) $y < 2x - 3$

(B) $y > 2x - 3$

(C) $y \leq 2x - 3$

(D) $y \geq 2x - 3$

REVIEW Lesson 2.2; Taks Workbook

45. **TAKS PRACTICE** Which two lines are perpendicular? *TAKS Obj. 7*

(F) $3x + y = -1$ and $x + 3y = -24$

(G) $3x - y = 12$ and $3x + y = 15$

(H) $3x + y = -1$ and $-x + 3y = 6$

(J) $3x - y = 12$ and $x - 3y = 9$