40. ★ **TAKS REASONING** A business is studying the cost to remove a pollutant from the ground at its site. The function $y = \dfrac{15x}{1.1 - x}$ models the estimated cost y (in thousands of dollars) to remove x percent (expressed as a decimal) of the pollutant.

   a. Graph the function. *Describe* a reasonable domain and range.

   b. How much does it cost to remove 20% of the pollutant? 40% of the pollutant? 80% of the pollutant? Does doubling the percent of the pollutant removed double the cost? *Explain*.

41. ★ **TAKS REASONING** The *Doppler effect* occurs when the source of a sound is moving relative to a listener, so that the frequency f_l (in hertz) heard by the listener is different from the frequency f_s (in hertz) at the source. The frequency heard depends on whether the sound source is approaching or moving away from the listener. In both equations below, r is the speed (in miles per hour) of the sound source.

Moving away: $f_l = \dfrac{740 f_s}{740 + r}$ Approaching: $f_l = \dfrac{740 f_s}{740 - r}$

   a. An ambulance siren has a frequency of 2000 hertz. Write two equations modeling the frequencies you hear when the ambulance is approaching and when the ambulance is moving away.

   b. Graph the equations from part (a) using the domain $0 \le r \le 60$.

   c. For any speed r, how does the frequency heard for an approaching sound source compare with the frequency heard when the source moves away?

42. **CHALLENGE** A sailboat travels at a speed of 10 knots for 3 hours. It then uses a motor for power, which increases its speed to 15 knots. Write and graph an equation giving the boat's average speed s (in knots) for the entire trip as a function of the time t (in hours) that it uses the motor for power.

TAKS PRACTICE at classzone.com

MIXED REVIEW FOR TAKS

43. ★ **TAKS PRACTICE** On Monday, Anna reads one quarter of a novel. On Tuesday, she reads one third of the remaining pages. On Wednesday, she reads one quarter of the remaining pages. On Thursday, she reads the remaining 105 pages. How many pages does the novel have? *TAKS Obj. 10*

   (A) 219   (B) 280   (C) 340   (D) 420

44. ★ **TAKS PRACTICE** Which equation best describes the relationship between x and y shown in the table? *TAKS Obj. 4*

x	0.2	0.5	0.8	1.1
y	0.16	1	2.56	4.84

   (F) $y = 4x$ (G) $x = 4y$ (H) $x = 4y^2$ (J) $y = 4x^2$