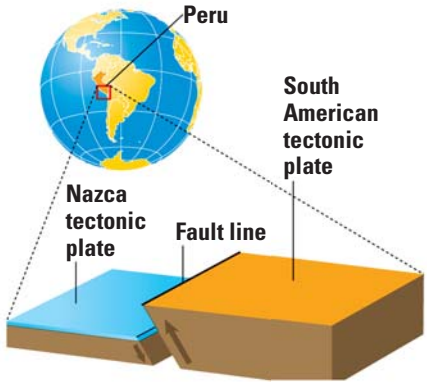
60. MULTI-STEP PROBLEM Biologists have found that an alligator's length ℓ (in inches) and weight w (in pounds) are related by the function $\ell = 27.1 \ln w - 32.8$. Graph the function. Use your graph to estimate the weight of an alligator that is 10 feet long.

61. EXTENDED RESPONSE The energy magnitude M of an earthquake can be modeled by

$$M = 0.29(\ln E) - 9.9$$

where E is the amount of energy released (in ergs).



a. In 2001, a powerful earthquake in Peru, caused by the slippage of two tectonic plates along a fault, released 2.5×10^{24} ergs. What was the energy magnitude of the earthquake?

b. Find the inverse of the given function. *Describe* what it represents.

62. EXTENDED RESPONSE A study in Florida found that the number of fish species s in a pool or lake can be modeled by the function

$$s = 30.6 - 20.5(\log A) + 3.8(\log A)^2$$

where A is the area (in square meters) of the pool or lake.

a. Graph Use a graphing calculator to graph the function on the domain $200 \leq A \leq 35{,}000$.

b. Estimate Use your graph to estimate the number of fish species in a lake with an area of 30,000 square meters.

c. Estimate Use your graph to estimate the area of a lake that contains 6 species of fish.

d. Reasoning *Describe* what happens to the number of fish species as the area of a pool or lake increases. *Explain* why your answer makes sense.

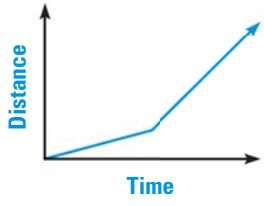
63. CHALLENGE The function $s = 0.159 + 0.118(\log d)$ gives the slope s of a beach in terms of the average diameter d (in millimeters) of sand particles on the beach. Find the inverse of this function. Then use the inverse to estimate the average diameter of the sand particles on a beach with a slope of 0.2.

MIXED REVIEW FOR TAKS

TAKS PRACTICE at classzone.com

REVIEW
Lesson 2.2; TAKS Workbook

64. TAKS PRACTICE Which statement best describes the graph of a person's distance traveled over time? *TAKS Obj. 1*



(A) The person first runs, then walks.

(B) The person travels at a constant speed.

(C) The person first walks, then runs.

(D) The person's speed decreases over time.

REVIEW
TAKS Preparation p. 408; TAKS Workbook

65. TAKS PRACTICE A window is a regular hexagon. Its perimeter is 60 inches. What is the approximate area of the window? *TAKS Obj. 8*

(F) 155.9 in.^{2} (G) 259.8 in.^{2} (H) 300.0 in.^{2} (J) 519.6 in.^{2}