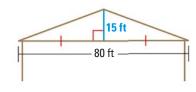**46. BIOLOGY** A red sea urchin grows its entire life, which can last 200 years. The diagram gives information about the growth in the diameter d of one red sea urchin. What is the average growth rate of this urchin over the given period?

Growth of Red Sea Urchin
Age 30   Age 110
d = 11.9 cm d = 15.5 cm

47. MULTI-STEP PROBLEM A building code requires the minimum slope, or *pitch*, of an asphalt-shingle roof to be a rise of 3 feet for each 12 feet of run. The asphalt-shingle roof of an apartment building has the dimensions shown.

  a. Calculate What is the slope of the roof?

  b. Interpret Does the roof satisfy the building code?

  c. Reasoning If you answered "no" to part (b), by how much must the rise be increased to satisfy the code? If you answered "yes," by how much does the rise exceed the code minimum?

15 ft
80 ft

48. ↙ TAKS REASONING Plans for a new water slide in an amusement park call for the slide to descend from a platform 80 feet tall. The slide will drop 1 foot for every 3 feet of horizontal distance.

  a. What horizontal distance do you cover when descending the slide?

  b. Use the Pythagorean theorem to find the length of the slide.

  c. Engineers decide to shorten the slide horizontally by 5 feet to allow for a wider walkway at the slide's base. The plans for the platform remain unchanged. How will this affect the slope of the slide? *Explain*.

49. CHALLENGE A car travels 36 miles per gallon of gasoline in highway driving and 24 miles per gallon in city driving. If you drive the car equal distances on the highway and in the city, how many miles per gallon can you expect to average? (*Hint:* The average fuel efficiency for all the driving is the total distance traveled divided by the total amount of gasoline used.)

MIXED REVIEW FOR TAKS

TAKS PRACTICE at classzone.com

50. ↙ TAKS PRACTICE A city is building a rectangular playground in a community park. The city has 560 feet of fencing to enclose the playground. The length of the playground should be 40 feet longer than the width. What is the length of the playground if all of the fencing is used? *TAKS Obj. 10*

  (A) 120 ft   (B) 160 ft

  (C) 200 ft   (D) 300 ft

51. ↙ TAKS PRACTICE A computer technician charges $185 for parts needed to fix a computer and $45 for each hour that he works on the computer. Which equation best represents the relationship between the number of hours, h, the technician works on the computer and the total charges, c? *TAKS Obj. 1*

  (F) $c = 45 - 185h$ (G) $c = 45 + 185h$

  (H) $c = 185 - 45h$ (J) $c = 185 + 45h$