33. ⭐ **SHORT RESPONSE** The value of a car can be modeled by the equation $y = 24{,}000(0.845)^t$ where t is the number of years since the car was purchased.

   a. Graph the model. Estimate when the value of the car will be $10,000.

   b. Use the model to predict the value of the car after 50 years. Is this a reasonable value? *Explain.*

34. MULTI-STEP PROBLEM When a plant or animal dies, it stops acquiring carbon-14 from the atmosphere. Carbon-14 decays over time with a half-life of about 5730 years. The percent P of the original amount of carbon-14 that remains in a sample after t years is given by this equation:

$$P = 100\left(\frac{1}{2}\right)^{t/5730}$$

   a. What percent of the original carbon-14 remains in a sample after 2500 years? 5000 years? 10,000 years?

   b. Graph the model.

   c. An archaeologist found a bison bone that contained about 37% of the carbon-14 present when the bison died. Use the graph to estimate the age of the bone when it was found.

35. ⭐ **EXTENDED RESPONSE** The number E of eggs a Leghorn chicken produces per year can be modeled by the equation $E = 179.2(0.89)^{w/52}$ where w is the age (in weeks) of the chicken and $w \geq 22$.

   a. Interpret Identify the decay factor and the percent decrease.

   b. Graph Graph the model.

   c. Estimate Estimate the egg production of a chicken that is 2.5 years old.

   d. Reasoning *Explain* how you can rewrite the given equation so that time is measured in years rather than in weeks.

36. CHALLENGE You buy a new stereo for $1300 and are able to sell it 4 years later for $275. Assume that the resale value of the stereo decays exponentially with time. Write an equation giving the stereo's resale value V (in dollars) as a function of the time t (in years) since you bought it.
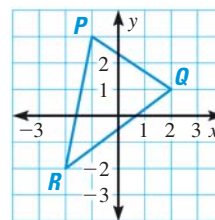

MIXED REVIEW FOR TAKS

TAKS **PRACTICE** at classzone.com

37. 🚩 **TAKS PRACTICE** If $\triangle PQR$ is translated to the left 3 units and down 2 units, in which quadrant will the image of point Q appear? *TAKS Obj. 7*

   Ⓐ Quadrant I   Ⓑ Quadrant II

   Ⓒ Quadrant III   Ⓓ Quadrant IV

38. 🚩 **TAKS PRACTICE** This year's price for a certain laptop computer is 16.7% lower than last year's price of $960. Approximately what percent of this year's price for the computer is last year's price? *TAKS Obj. 9*

   Ⓕ 83.3%   Ⓖ 85.0%   Ⓗ 116.7%   Ⓙ 120.0%