# Lesson 6 Practice Problems

1. The two graphs show models characterized by exponential decay representing the area covered by two different algae blooms, in square yards, w weeks after different chemicals were applied.

   a. Which algae bloom covered a larger area when the chemicals were applied? Explain how you know.

   b. Which algae population is decreasing more rapidly? Explain how you know.
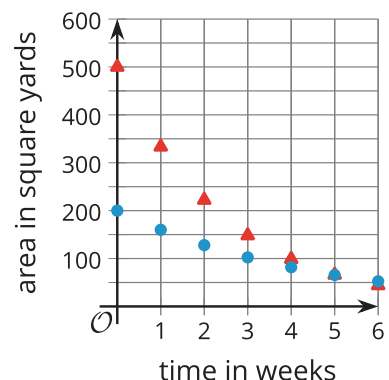
2. A medicine is applied to a burn on a patient's arm. The area of the burn in square centimeters decreases exponentially and is shown in the graph.

   a. What fraction of the burn area remains each week?

   b. Write an equation representing the area of the burn, a, after t weeks.

   c. What is the area of the burn after 7 weeks? Round to three decimal places.
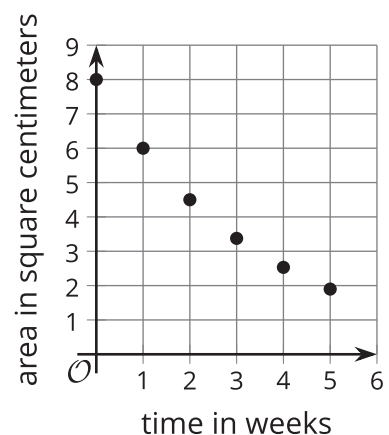
3. a. The area of a sheet of paper is 100 square inches. Write an equation that gives the area, A, of the sheet of paper, in square inches, after being folded in half n times.

    b. The area of another sheet of paper is 200 square inches. Write an equation that gives the area, B, of this sheet of paper, in square inches, after being folded into thirds n times.

    c. Are the areas of the two sheets of paper ever the same after each being folded n times? Explain how you know.

4. The graphs show the amounts of medicine in two patients after receiving injections. The circles show the medicine in patient A and the triangles show that in patient B.

One equation that gives the amount of medicine in milligrams, m, in patient A, h hours after an injection, is

$m = 300\left(\frac{1}{2}\right)^h.$

What could be an equation for the amount of medicine in patient B?

medicine (milligrams)

time (hours)
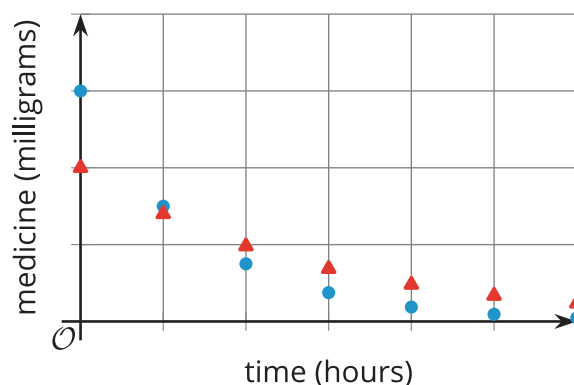
A. $m = 500\left(\frac{3}{10}\right)^h$

B. $m = 500\left(\frac{7}{10}\right)^h$

C. $m = 200\left(\frac{3}{10}\right)^h$

D. $m = 200\left(\frac{7}{10}\right)^h$

5. Select **all** expressions that are equivalent to 3^8.

    A. $3^2 \cdot 3^4$

    B. $3^2 \cdot 3^6$

    C. $\frac{3^{16}}{3^2}$

    D. $\frac{3^{12}}{3^4}$

    E. $\left(3^4\right)^2$

    F. $\left(3^1\right)^7$

(From Unit 5, Lesson 3.)

6. *Technology required.* Use a graphing calculator to determine the equation of the line of best fit. Round numbers to 2 decimal places.

x	10	12	15	16	18	20	24
y	27	22	21	19	15	14	10

(From Unit 3, Lesson 5.)