

Lesson 3 Practice Problems

1. Which expression is equal to $4^0 \cdot 4^2$?

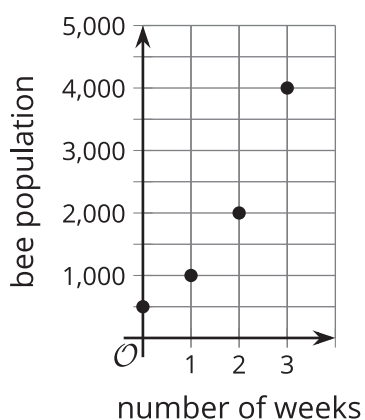
- A. 0
- B. 1
- C. 16
- D. 64

2. Select **all** expressions are equivalent to 3^8 .

- A. 8^3
- B. $\frac{3^{10}}{3^2}$
- C. $3 \cdot 8$
- D. $(3^4)^2$
- E. $(3 \cdot 3)^4$
- F. $\frac{1}{3^{-8}}$

(From Unit 5, Lesson 1.)

3. A bee population is measured each week and the results are plotted on the graph.



- a. What is the bee population when it is first measured?
- b. Is the bee population growing by the same factor each week? Explain how you know.
- c. What is an equation that models the bee population, b , w weeks after it is first measured?

4. A bond is initially bought for \$250. It doubles in value every decade.

a. Complete the table.

b. How many decades does it take before the bond is worth more than \$10,000?

c. Write an equation relating v , the value of the bond, to d , the number of decades since the bond was bought.

decades since bond is bought	dollar value of bond
0	
1	
2	
3	
d	

5. A sea turtle population p is modeled by the equation $p = 400 \cdot \left(\frac{5}{4}\right)^y$ where y is the number of years since the population was first measured.

a. How many turtles are in the population when it is first measured? Where do you see this in the equation?

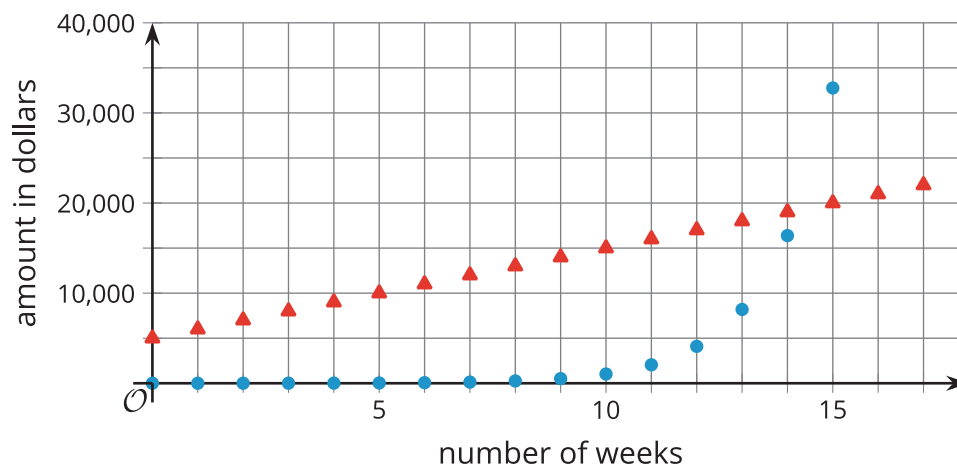
b. Is the population increasing or decreasing? How can you tell from the equation?

c. When will the turtle population reach 700? Explain how you know.

6. Bank account A starts with \$5,000 and grows by \$1,000 each week. Bank account B starts with \$1 and doubles each week.

a. Which account has more money after one week? After two weeks?

b. Here is a graph showing the two account balances. Which graph corresponds to which situation? Explain how you know.



c. Given a choice, which of the two accounts would you choose? Explain your reasoning.

(From Unit 5, Lesson 1.)

7. Match each equation in the first list to an equation in the second list that has the same solution.

A. $y = \frac{2}{5}x + 2$

1. $2x + 5y = 10$

B. $x = -5 - 2.5y$

2. $-2x - 5y = 10$

C. $y = \frac{10}{5} - 0.4x$

3. $-2x + 5y = 10$

D. $2x = 10 - 5y$

E. $-5y = 2x + 10$

F. $x = 5 - \frac{5}{2}y$

(From Unit 2, Lesson 9.)

8. Function F is defined so that its output $F(t)$ is the number of followers on a social media account t days after set up of the account.
- Explain the meaning of $F(30) = 8,950$ in this situation.
 - Explain the meaning of $F(0) = 0$.
 - Write a statement about function F that represents the fact that there were 28,800 followers 110 days after the set up of the account.
 - Explain the meaning of t in the equation $F(t) = 100,000$.

(From Unit 4, Lesson 3.)