### Lesson 4 Practice Problems

1. A bacteria population is tripling every hour. By what factor does the population change in hour? Select **all** that apply.
2. A medication has a half-life of 4 hours after it enters the bloodstream. A nurse administers a dose of 225 milligrams to a patient at noon.
   1. Write an expression to represent the amount of medication, in milligrams, in the patient’s body at:
      1. 1 p.m. on the same day
      2. 7 p.m. on the same day
   2. The expression represents the amount of medicine in the body some time after it is administered. What is that time?
3. The number of employees in a company has been growing exponentially by 10% each year. By what factor does the number of employees change:
   1. Each month?
   2. Every 3 months?
   3. Every 20 months?
4. The value of a truck decreases exponentially since its purchase. The two points on the graph shows the truck’s initial value and its value a decade afterward.

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  1. Express the car’s value, in dollars, as a function of time , in decades, since purchase.
  2. Write an expression to represent the car’s value 4 years after purchase.
  3. By what factor is the value of the car changing each year? Show your reasoning.

1. The value of a stock increases by 8% each year.
   1. Explain why the stock value does not increase by 80% each decade.
   2. Does the value increase by more or less than 80% each decade?
2. Decide if each statement is true or false.
   1. is a solution to .
   2. is equivalent to .
   3. is a solution to .

* (From Unit 4, Lesson 3.)

1. Lin is saving $300 per year in an account that pays 4.5% interest per year, compounded annually. About how much money will she have 20 years after she started?
   1. $545.45
   2. $3,748.78
   3. $9,411.43
   4. $1,124,634.54

* (From Unit 2, Lesson 26.)



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