

# 4.3–4.4 Quiz

**DATA** **Wastewater Filtration** In Exercises 1–4, use the information below.

A factory discharges wastewater into a river. The initial concentration of pollutants in the wastewater is 2000 parts per billion (ppb). Before entering the river, the water must pass through multiple filters to reduce the concentration to an acceptable level of 10 ppb.



1. A single filter removes 70% of pollutants in the wastewater.
  - a. What is the concentration of pollutants after passing through three filters?
  - b. How many filters must the water pass through to meet the acceptable level?
  
2. A single filter removes half the pollutants in the wastewater.
  - a. What is the concentration of pollutants after passing through four filters?
  - b. How many filters must the water pass through to meet the acceptable level?
  - c. Is it possible to remove all the pollutants? Explain your reasoning.
  
3. After the water passes through 1 filter, the concentration of pollutants is 900 ppb. Each filter removes the same percent of pollutants. How many filters must the water pass through to meet the acceptable level?
  
4. After passing through 2 filters, the concentration of pollutants is 320 ppb. Each filter removes the same percent of pollutants. What is the concentration of pollutants after passing through four filters?

**DATA** 5. **Water Treatment Equipment** A factory owner buys water treatment equipment for \$10,000. Make a straight-line depreciation schedule for the equipment using a useful life of 5 years and a salvage value of \$1000.

**DATA** 6. **Water Treatment Equipment** A factory owner buys water treatment equipment for \$25,000. The useful life of the equipment is 10 years, and the salvage value is \$0. The factory owner uses double declining-balance depreciation. What is the value of the equipment after 5 years?



Depreciation Schedule	
Year	Value
0	\$20,000
1	\$15,000
2	\$11,000
3	\$8000
4	\$6000
5	\$5000

**DATA** 7. **Financial Records** A factory owner buys \$20,000 worth of water treatment equipment. The owner depreciates the equipment over 5 years, and the salvage value is \$5000. The depreciation schedule for the equipment is shown. What depreciation method did the owner use? Explain your reasoning.