

Geometric Sequences Assignment

1. State the common ratio, then list the next three terms of each geometric sequence.
a) 2, 20, 200, ... b) 48, 24, 12, ... c) 5, - 10, 20, ... d) 3, 9, 27, ...

2. A colony contains 100 insects. Suppose the population doubles every month. How many insects are there after each time?
a) 2 months b) 4 months c) 6 months

3. a) Determine the indicated term of each geometric sequence.
i) 3, 6, 12, ..., t_6 ii) 3, - 6, 12, ..., t_6
iii) 200, 20, 2, ..., t_5 iv) 5, 20, 80, ..., t_7
b) Choose one sequence from part a. Write to explain how you determined the term.

4. Each year, the value of a car depreciates to 70% of its value the previous year. A car was bought new for \$20 000.
a) Determine its approximate value after 5 years.
b) Draw a graph to show how its value drops during the five years.
c) Write an expression to represent its value after n years.

5. A ball is dropped from a height of 2m. After each bounce, it rises to 75% of its previous height.
a) What height does the ball reach after each of the first five bounces?
b) After how many bounces does the ball reach a height of only 20cm?

6. Strep throat is an infection caused by bacteria called streptococci. After you have been infected, it is possible for these bacteria to double in number every 20 min. Suppose a single bacterium began reproducing at noon. About how many bacteria would be present at each time?
i) 1 p.m. ii) 2 p.m. iii) 3 p.m.

7. Copy and complete each geometric sequence.

a) __, 8, 16, __, __ b) __, __, 12, 4, __ c) 1, __, __, -27, __

d) 1, __, 16, __, __ e) __, 160, __, __, __, 10 f) 10, __, __, __, 6250

8.

a) Insert two numbers between 2 and 54, so the four numbers form a geometric sequence.

b) Insert three numbers between 4 and 2500, so the five numbers form a geometric sequence.

c) Choose one of part a or b. Write to explain how you determined the numbers.

9. Suppose a cottage is bought for \$40 000. It appreciates in value by about 7% each year. What is the approximate value after each time?

a) 5 years

b) 10 years

c) n years

Answers:

1a) 10; 2000, 20 000, 200 000 b) 0.5; 6, 3, 1.5 c) -2; -40, 80, -160 d) 3; 81, 243, 729

2a) 400 b) 1600 c) 6400

3a) i) 96 ii) -96 iii) 0.02 iv) 20 480 b) Explanations may vary.

4a) About \$3360 c) $20000(0.7)^n$ 5a) 1.5m, 1.13m, 0.84m, 0.63m, 0.47 b) 8

6i) 8 ii) 64 iii) 512

7a) 4, 8, 16, 32, 64 b) 108, 36, 12, 4, $\frac{4}{3}$ c) 1, -3, 9, -27, 81

d) 1, 4, 16, 64, 256 e) 320, 160, 80, 40, 20, 10 f) 10, 50, 250, 1250, 6250

8a) 6, 18 b) 20, 100, 500 c) Explanations may vary.

9a) About \$56 100 b) About \$78 700 c) $40000(1.07)^n$