Name

Class

Date

Geometric Sequences

**Determine whether each sequence is geometric. If so, find the common ratio.**

**1.** 3, 9, 27, 81, … **2.** 4, 8, 12, 16, ... **3.** 4, −8, 16, −32, ...

**4.** 1, 0.5, 0.25, 0.125, ... **5.** −5, 0, 5, 10, ... **6.** 64, −32, 16, −8, ...

**Find the tenth term of each geometric sequence.**

**7.** −2, 6, −18, ... **8.** −5, 25, −125, ...

**9.** −3, −12, −48, ... **10.** 0.3, 0.6, 1.2, ...

**11.** ,.. **12. **, 1, ...

**13.** When a pendulum swings freely, the length of its arc decreases geometrically. Find each missing arc length.

**a.** 20th arc is 20 in.; 22nd arc is 18.5 in.

**b.** 8th arc is 27 mm; 10th arc is 3 mm

**14.** The deer population in an area is increasing. This year, the population was 1.025 times last year’s population of 2537.

**a.** Assuming that the population increases at the same rate for the next few years, write an explicit formula for the sequence.

**b.** Find the expected deer population for the fourth year of the sequence.

**Find the missing term of each geometric sequence. It could be the geometric mean or its opposite.**

**15.** 4,  , 16, ... **16.** 9, , 16, ... **17.** 2,  , 8, ...

**18.** 3,  , 12, ... **19.** 2,  , 50, ... **20.** 4,  , 5.76, ...

**Identify each sequence as *arithmetic, geometric,* or *neither*. Then find the next two terms.**

**21**. 9, 3, 1, , … **22.** 1, 0, −2, −5, … **23.** 2, −2, 2, −2, ...

**24.** −3, 2, 7, 12, ... **25.** 1, −2, −5, −8, ... **26.** 1, −2, 3, −4, ...

**Write an explicit formula for each sequence. Then generate the first three terms.**

**27.** *a*1 = 3, *r* = −2 **28.** *a*1 = 5, *r* = 3 **29.** *a*1 = −1, *r* = 4

**30.** *a*1= −2, *r* = −3 **31.** *a*1= 32, *r* = −0.5 **32.** *a*1= 2187, 

**Find the missing terms of each geometric sequence. (*Hint:* The geometric mean of positive first and fifth terms is the third term. Some terms might be negative.)**

**33.** 12,  ,  ,  , 0.75 **34.** −9,,  ,  , −2304

**For the geometric sequence 6, 18, 54, 162, ... , find the indicated term.**

**35.** 6th term **36.** 19th term

**37.** You enlarge the dimensions of a picture to 150% several times. After the first increase, the picture is 1 in. wide.

**a.** Write an explicit formula to model the width after each increase.

**b.** How wide is the photo after the 2nd increase?

**c.** How wide is the photo after the 3rd increase?

**d.** How wide is the photo after the 12th increase?