NAME _____ DATE _____ PERIOD _____

7-7 Skills Practice

Geometric Sequences as Exponential Functions

Determine whether each sequence is *arithmetic, geometric,* or *neither.* Explain.

1. 7, 13, 19, 25, ...

2. –96, –48, –24, –12, ...

3. 108, 66, 141, 99, ...

4. 3, 9, 81, 6561, ...

5. $\frac{7}{3}$, 14, 84, 504, ...

6. $\frac{3}{8}$, $-\frac{1}{8}$, $-\frac{5}{8}$, $-\frac{9}{8}$, ...

Find the next three terms in each geometric sequence.

7. 2500, 500, 100, ...

8. 2, 6, 18, ...

9. –4, 24, –144, ...

10. $\frac{4}{5}$, $\frac{2}{5}$, $\frac{1}{5}$, ...

11. –3, –12, –48, ...

12. 72, 12, 2, ...

13. Write an equation for the nth term of the geometric sequence 3, – 24, 192, ...
Find the ninth term of this sequence.

14. Write an equation for the nth term of the geometric sequence $\frac{9}{16}$, $\frac{3}{8}$, $\frac{1}{4}$, ...
Find the seventh term of this sequence.

15. Write an equation for the nth term of the geometric sequence 1000, 200, 40, ...
Find the fifth term of this sequence.

16. Write an equation for the nth term of the geometric sequence – 8, – 2, $-\frac{1}{2}$, ...
Find the eighth term of this sequence.

17. Write an equation for the nth term of the geometric sequence 32, 48, 72, ...
Find the sixth term of this sequence.

18. Write an equation for the nth term of the geometric sequence $\frac{3}{100}$, $\frac{3}{10}$, 3, ...
Find the ninth term of this sequence.

Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.

NAME _____ DATE _____ PERIOD _____

7-7 Practice

Geometric Sequences as Exponential Functions

Determine whether each sequence is *arithmetic*, *geometric*, or *neither*. Explain.

1. 1, −5, −11, −17, ...

2. 3, $\frac{3}{2}$, 1, $\frac{3}{4}$, ...

3. 108, 36, 12, 4, ...

4. −2, 4, −6, 8, ...

Find the next three terms in each geometric sequence.

5. 64, 16, 4, ...

6. 2, −12, 72, ...

7. 3750, 750, 150, ...

8. 4, 28, 196, ...

9. Write an equation for the nth term of the geometric sequence 896, −448, 224, ... Find the eighth term of this sequence.

10. Write an equation for the nth term of the geometric sequence 3584, 896, 224, ... Find the sixth term of this sequence.

11. Find the sixth term of a geometric sequence for which $a_2 = 288$ and $r = \frac{1}{4}$.

12. Find the eighth term of a geometric sequence for which $a_3 = 35$ and $r = 7$.

13. PENNIES Thomas is saving pennies in a jar. The first day he saves 3 pennies, the second day 12 pennies, the third day 48 pennies, and so on. How many pennies does Thomas save on the eighth day?

Lesson 7-7

Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.

NAME _____ DATE _____ PERIOD _____

7-7 Word Problem Practice

Geometric Sequences as Exponential Functions

1. **WORLD POPULATION** The CIA estimates the world population is growing at a rate of 1.167% each year. The world population for 2007 was about 6.6 billion.

   a. Write an equation for the world population after n years. (*Hint:* The common ratio is not 0.01167.)

   b. What will the estimated world population be in 2017?

2. **MUSEUMS** The table shows the annual visitors to a museum in millions. Write an equation for the projected number of visitors after n years.

Year	Visitors (millions)
1	4
2	6
3	9
4	$13\frac{1}{2}$
n	?

3. **BANKING** Arnold has a bank account with a beginning balance of $5000. He spends one-fifth of the balance each month. How much money will be in the account after 6 months?

4. **POPULATION** The table shows the projected population of the United States through 2050. Does this table show an *arithmetic sequence*, a *geometric sequence* or neither? Explain.

Year	Projected Population
2000	282,125,000
2010	308,936,000
2020	335,805,000
2030	363,584,000
2040	391,946,000
2050	419,854,000

Source: U.S. Census Bureau

5. **SAVINGS ACCOUNTS** A bank offers a savings account with a 0.5% return each month.

   a. Write an equation for the balance of a savings account after n months. (*Hint*: The common ratio is not 0.005.)

   b. Given an initial deposit of $500, what will the account balance be after 15 months?

Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.

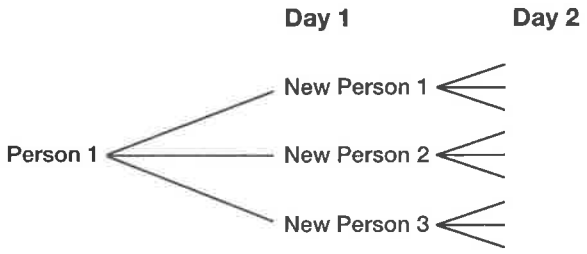
NAME _____ DATE _____ PERIOD _____

7-7 Enrichment

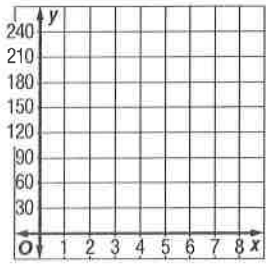
Pay it Forward

The idea behind "pay it forward" is that on the first day, one person does a good deed for three different people. Then, on the second day, those three people will each perform good deeds for 3 more people, so that on Day 2, there are 3×3 or 9 good deeds being done. Continue this process to fill in the chart. A tree diagram will help you fill in the chart.

Day	# of Deeds
0	1
1	3
2	9
3	
4	
5	



1. Graph the data you found in the chart as ordered pairs and connect with a smooth curve.



2. What type of function is your graph from Exercise 1? Write an equation that can be used to determine the number of good deeds on any given day, x.

3. How many good deeds will be performed on Day 21?

The formula $T = \frac{3^{n+1} - 3}{2}$ can be used to determine the **total** number of good deeds that have been performed, where n represents the day. For example, on Day 2, there have been $3 + 9$ or 12 good deeds performed. Using the formula, you get, $\frac{3^{2+1} - 3}{2}$ or $\frac{3^3 - 3}{2} + \frac{27 - 3}{2}$ or a total of 12 good deeds performed.

4. Use the formula to determine the approximate number of good deeds that have been performed through Day 21.

5. Look up the world population. How does your number from Exercise 4 compare to the world population?

Lesson 7-7

Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc.