

Day 3 – Comparing Arithmetic & Geometric Sequences

Now it's time to apply arithmetic and geometric sequences to real world contexts.

Arithmetic	Geometric
Add or Subtract by the same number (common difference)	Multiply by the same number (constant ratio)
Explicit: $a_n = a_1 + (n - 1)d$	Explicit: $a_n = a_1 \cdot r^{n-1}$
Recursive: $a_n = a_{n-1} + d$	Recursive: $a_n = r(a_{n-1})$

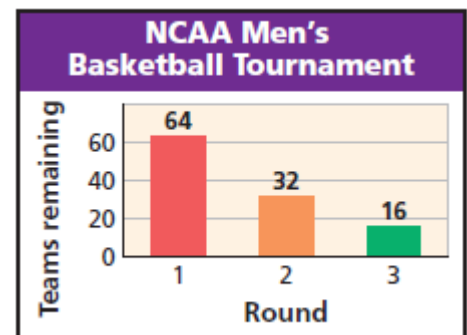
For each of the following problems, determine if it is arithmetic or geometric, create an explicit rule, and then answer the question:

1. In the NCAA men's basketball tournament, 64 teams compete in round 1. Fewer teams remain in each following round, as shown in the graph. How many teams compete in Round 6?

Type: _____

Explicit Formula: _____

Solution: _____



2. The odometer on a car reads 60,473 on Day 1. Every day, the car is driven 54 miles. If this pattern continues, what is the odometer reading on Day 20?

Type: _____

Explicit Formula: _____

Solution: _____

3. To package and ship an item, it costs \$5.75 for the first pound and \$0.75 for each additional pound. What is the cost of shipping of 12 pound package?

Type: _____

Explicit Formula: _____

Solution: _____

4. The table shows a car's value for 3 years after it is purchased. How much will the car be worth in the 10th year?

Type: _____

Explicit Formula: _____

Solution: _____

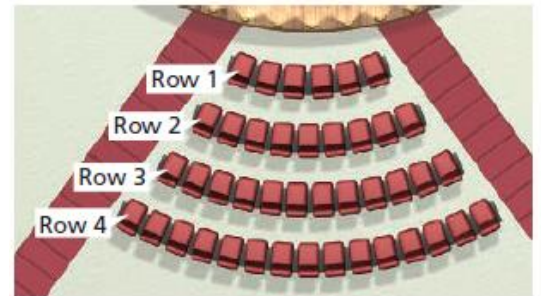
Year	Value (\$)
1	10,000
2	8,000
3	6,400

5. Seats in a concert hall are arranged in the pattern shown. How many seats are in the 15th row?

Type: _____

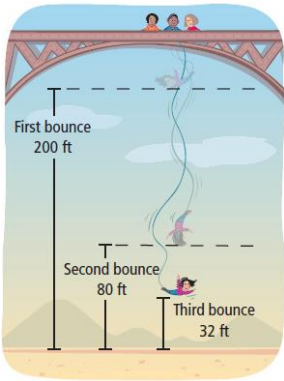
Explicit Formula: _____

Solution: _____



b. A ticket costs \$40. Suppose every seat in the first 10 rows is filled. What is the total revenue from those seats?

6. A bungee jumper jumps from a bridge. The diagram shows the bungee jumper's height above the ground at the top of each bounce. What is the bungee jumper's height at the top of the 5th bounce?



Type: _____
 Explicit Formula: _____
 Solution: _____

7. Three years ago, the annual tuition at a university was \$3000. The tuition for the next few years can be modeled in the table to the right. Let the year 2016 represent year 1.

Type: _____
 Explicit Formula: _____
 a. How much was the tuition in 2013? _____
 b. How much will the tuition be in 2020? _____

Year	Tuition
2016	\$3000
2017	\$3300
2018	\$3630



8. Karen started selling bagels to offices in her area. Her sales for the first three months are shown in the table. If this trend continues, find the amount of sales in Month 8.

Type: _____
 Explicit Formula: _____
 Solution: _____

Month	Sales (\$)
1	\$200.00
2	\$230.00
3	\$264.50