**Geometric Sequence/ Series**

Things to Remember…

**Geometric Series**: a series with a constant ratio between successive terms. For example, the series is geometric, because each successive term can be obtained by multiplying the previous term by the same amount. In this example it is by 75% (or .75)

**Let’s look at an example:**

A ball is dropped from a 7 foot height. The ball loses 25% of it’s height after each bounce. How far will it have traveled when it hits the ground for the 10thtime?

To figure this out we need to first set up a sequence and then we can create a geometric series:

**Sequence:**

7, 7(.75), 5.25(.75)…

(7, 5.25, 3.94, 2.95, 2.21, 1.66, 1.25, 0.93, 0.70, 0.53)

**Now we can make this sequence into a series, to find the total distance traveled, by creating a geometric series:**

$S\_{n}=\frac{a(1-r^{n})}{1-r}$

a= first term

 r= common ratio

n= number of terms

$S\_{n}$= sum of first n terms

**When we plug in for these values we get:**

$(\frac{5.25(1-.75^{9})}{1-.75})×2+7$= 45.84 ft