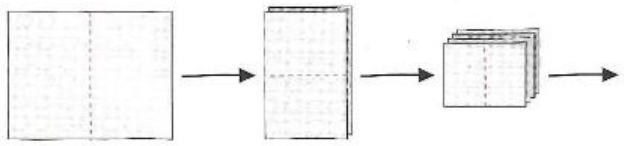
Unit 3 Day 3 – Arithmetic vs. Geometric Classwork Name _____

Chen, the secretary of the Student Government Association, is making ballots for tonight's meeting. He starts by cutting a sheet of paper in half. He then stacks the two pieces and cuts them in half. He stacks the resulting four pieces and cuts them in half. He repeats this process, creating smaller and smaller pieces of paper.



After each cut, Chen counts the ballots and records the results in a table.

Number of Cuts	Number of Ballots
1	2
2	4
3	
4	

Chen wants to predict the number of ballots after any number of cuts.

1. Make a table to show the number of ballots after each of the first 10 cuts.

Cuts	1	2	3	4	5	6	7	8	9	10
Ballots										

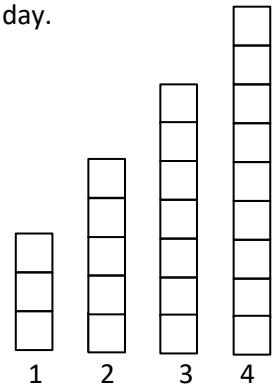
2a) Write a recursive formula to represent the number of ballots.
b) Write an explicit formula to represent the number of ballots.

3a) Suppose Chen could make 20 cuts. How many ballots would he have?
b) How many ballots would he have if he could make 30 cuts?

4. How many cuts would it take to make enough ballots for all 500 students at Chen's school?

5. Is this situation represented by an arithmetic or geometric sequence? How do you know?

Scott's Workout – Scott has decided to add push-ups to his daily exercise routine. He is keeping track of the number of push-ups he completes each day in the bar graph below, with day one showing he completed three push-ups. After four days, Scott is certain he can continue this pattern of increasing the number of push-ups he completes each day.



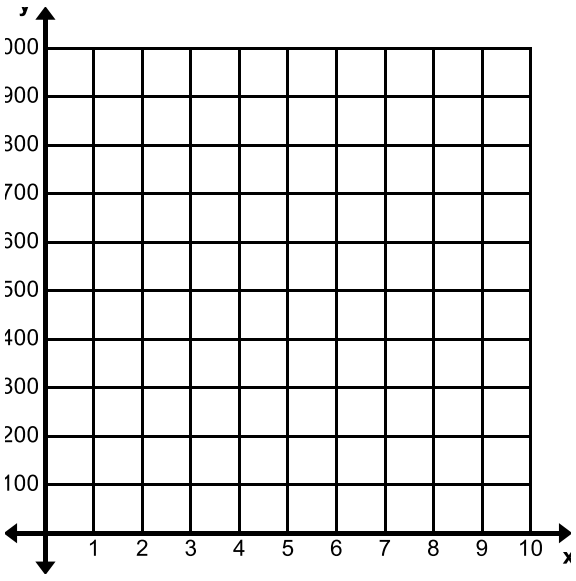
6. How many push-ups will Scott do on day 6?

7. How many push-ups will Scott do on day 45?

8. Write a recursive equation to model the number of push-ups Scott will complete on any given day.

9. Is this an arithmetic or geometric sequence? How do you know?

10. Sketch a graph of Chen's ballot situation.



11. Sketch a graph of Scott's push-up situation.