

Red Rocks Amphitheater

Suppose that Red Rocks Amphitheater seats 9,234 concert-goers. The first row seats 50, and each row higher up has 2 more seats on each end than the prior row. Suppose also that the seats are numbered from 1 to 9,234. In other words, row 1 has seats 1 through 50 numbered left to right, while row 2 has seats 51 through 104, etc. Use this information to answer the following questions.

1. Complete the following chart. Then, write a recurrence relation for the number of seats in row n .

	# of seats
<u>row # in the row</u>	
1	50
2	54
3	_____
4	_____
5	_____
n	$S_n =$ _____

2. Now find the closed form for the number of seats in row n . (Recall that this is an arithmetic sequence.)

$$S_n = \underline{\hspace{2cm}}$$

3. If Red Rocks does in fact seat 9,234, how many rows exist at the venue?
In other words, for what n does $S_1 + S_2 + S_3 + \cdots + S_n = 9,234$? Show all of your work.

4. How many seats are in the last row?

5. Your seat number is 2913. Describe where you would be sitting. (Which row? Left side, right side, middle?)