

Sample 4

A New Arena

- number of seats in the first row is 200 (t_1)
- there are 40 rows
- the number of seats increase by 15 per row (d)
- number of seats in the last row 785 (t_n)
- total number of seats is 19700 (S_n)

$$t_n = t_1 + (n-1)d$$

$$200 + (39)15$$

$$t_n = 785$$

$$S_n = \frac{n}{2}(t_1 + t_n)$$

$$20(200 + 785)$$

$$S_n = 19700$$

Criterion 1 - Excellent
See note in rubric below.

- Price per game for the seats in the first row is \$168 (t_1)
- the price will increase by 1.05 from the 40th row (r)
- Price per game for the seats in the last row is \$25 (t_n)

$$t_n = t_1 r^{n-1}$$

$$(168)(1.05)^{39}$$

$$t_n = 6705$$

There are 40 game
a season

$$\frac{100}{40} = 25$$

$$\frac{6705}{40} = 168$$

Criterion 3 - Proficient
See note in rubric below.

Assumptions:

- Every seat is the same (no wheel chair seats)
- They games will be sold out
- You need to make more money than the \$64 million salary cap
- There are no box seats
- There are not obstacles that block seats (Zombi door)
- That people would pay a high price to watch hockey
- That we did not need enough money to pay for the new building
- People in the 40th row still could see the game

Criterion 2 - Proficient
Criterion 4 - Adequate
All assumptions are stated here, in the same place. See notes below in the rubric.

Mathematics 20-1 Performance Assessment: Rubric

A New Arena

Student Sample 4 Date _____

Level Criteria	4 Excellent	3 Proficient	2 Adequate	1 Limited *	Insufficient/ Blank *
<p>Solve a problem that involves an arithmetic sequence or series (Relations and Functions 9)</p> <p>[CN, PS, R]</p>	<p>Selects appropriate arithmetic sequences and series formulae and applies them correctly to determine the total number of seats and the number of seats in the last row.</p> <p style="color: red;">The student has shown the seat number calculations using the correct formulae and arriving at a correct answer.</p>	<p>Selects appropriate arithmetic sequences and series formulae and applies them in a substantially correct manner to determine the total number of seats and the number of seats in the last row.</p>	<p>Selects appropriate arithmetic sequences and series formulae and applies them in a partially correct manner to determine the total number of seats and the number of seats in the last row.</p>	<p>Unable to select correct formulae and/or unable to apply them to solve the problem.</p>	<p>No score is awarded because there is insufficient evidence of student performance based on the requirements of the assessment task.</p>
<p>Identify assumptions made in the seat number calculation (Relations and Functions 9)</p> <p>[R]</p>	<p>Provides a perceptive explanation of assumptions.</p>	<p>Provides a logical explanation of assumptions.</p> <p style="color: red;">The student has considered gaps for box seats, Zamboni entrances, etc. The student indicates that the number of rows is reasonable. The student should state why the values used were chosen.</p>	<p>Provides a reasonable explanation of assumptions.</p>	<p>Provides a vague explanation of assumptions.</p>	

<p>Solve a problem that involves a geometric sequence or series (Relations and Functions 10)</p> <p>[PS, R]</p>	<p>Selects a geometric sequence formula and applies it correctly to determine the price of seats in the last row.</p>	<p>Selects a geometric sequence formula and applies it substantially correct manner to determine the price of seats in the last row.</p> <p>The work shown here is confusing, but mostly correct. The student has assumed a price of \$1000 per season in row 40 and increased the price geometrically to row 1. The student has shown the price calculation in a convoluted manner, switching between t_1 being 25 and 1000 and working backwards.</p>	<p>Selects a geometric sequence formula and applies it partially correct manner to determine the price of seats in the last row.</p>	<p>Unable to select correct formula and/or unable to apply it to solve the problem.</p>	
<p>Identify assumptions made in the seat price calculation (Relations and Functions 10)</p> <p>[R]</p>	<p>Provides a perceptive explanation of assumptions.</p>	<p>Provides a logical explanation of assumptions.</p>	<p>Provides a reasonable explanation of assumptions.</p> <p>The student needs to elaborate on the assumptions regarding price. Why were the chosen numbers used? What is a reasonable price?</p>	<p>Provides a vague explanation of assumptions.</p>	

* When work is judged to be limited or insufficient, the teacher makes decisions about appropriate intervention to help the student improve.