Grade 8: VOLUME of CYLINDERS MATH JOURNAL

<u>Learning Goal</u>: a) determine, through investigation using a variety of tools and strategies, the relationship between the area of the base and height and the volume of a ***cylinder***, and generalize to develop the formula;
b) Solve problems that require conversions involving metric units of area, **volume, and capacity**.

Zohib's company is designing prototypes for an environmentally friendly stainless steel water bottle. The bottles need to be cylindrical and fit into the average car cup holder that has a diameter of approximately 6.5cm. The prototype bottle has a base radius of 3 cm and stands 21.2cm tall. What is the volume of the bottle and about how much water can it hold?

Zohib's company wants to create several alternate designs with slightly larger or smaller base areas. If they reduce the base area by 10%, or increase the base area by 10%, how does it affect the bottle height? How do changes to the base area affect the height of the cylindrical bottle?

MYP Math Criterion B : Investigating Patterns/ ON: Application				
MYP - O	**1 - 2**	**3 - 4**	**5 - 6**	**7 - 8**
Ontario R	1- 1 1+	2- 2 2+	3- 3 3+	4- 4 4+
The student does not meet the expectations listed below.	The student is able to: **-apply**, with teacher support, mathematical problem-solving techniques to recognize simple patterns, relationships or general rules -**state** predictions consistent with simple patterns relationships or general rules	The student is able to: **-apply** mathematical problem-solving techniques to recognize patterns with some effectiveness -**suggest** how these patterns, relationships or general rules work.	The student is able to: **-apply** mathematical problem-solving techniques to recognize patterns, relationships, general rules, with considerable effectiveness -**suggest** relationships or general rules and draws appropriate conclusions consistent with findings	The student is able to: **-select** and **apply** mathematical problem-solving techniques to recognize correct patterns, relationships or general rules with a high degree of effectiveness -**describe** patterns as relationships or general rules consistent with correct findings

MYP Math Criterion C: Communication/ ON: Communication				
	1 - 2	**3 - 4**	**5 - 6**	**7 - 8**
Ontario R	1- 1 1+	2- 2 2+	3- 3 3+	4- 4 4+
The student does not meet the expectations listed below.	The student is able to: **-use** limited mathematical language	The student is able to: **-use** some appropriate mathematical language - adequately **organize** information using a logical structure with some success	The student is able to: -usually **use** appropriate mathematical language -present work that is usually **organized** using a logical structure with success	The student is able to: -consistently **use** appropriate mathematical language -present work that is consistently **organized** using a logical structure with success