MCT 4C Name: _____
Mr. Kempe Due: _____

Assignment #2B – Math Madness!

[30 marks]

Assignment Objective

- Complete 4 or 6 "A" Questions [K/U, 8 marks]
- Complete 3 of 4 "B" Questions [ATIPS, 12 marks]
- Complete 1 of 2 "C" Questions [C, 5 marks]
- An additional 5 marks will be awarded based on how well your solutions are presented. [C, 5]

If you complete extra questions in "A" or "B", you will be give the "best of" marks.
Do not complete more than one "C" question. If you do, I will mark the first one in the assignment, and ignore the second.

Part A: Filling in my Brackets [K/U, 2 marks each]

For problems 1 to 6, factor as much as possible.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

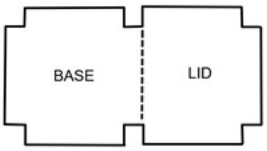
Part B: Team Groupings [ATIPS, 4 marks each]

1. Consider the function y = _____
   a. Fully factor this function.
   b. Determine the roots (x-intercepts), y-intercept, and end behaviour of the function.
   c. Sketch the graph of this function.

2. The formula for the surface area of a square-based prism is $SA = 2w^2 + 4hw$, where w is the width of the square and h is the height of the prism.
   a. Determine the surface area when the width is _____ and the height is _____.
   b. Determine the height when the width is _____ and the surface area is _____.
   c. Determine the width when the height is _____ and the surface area is _____.

MCT 4C Name: _____
Mr. Kempe Due: _____

3. A doughnut box (with lid) is made from cutting square corners out of a piece of cardboard that measures _____ inches by _____ inches.



   a. Create a model for the volume of this box.
   b. Expand and simplify your model.
   c. Determine the volume of the box when the size of the cut is 1 inch.
   d. Use technology to determine the size of cut that produces the maximum possible volume.

4. A piece of (very) large concrete is shown in the picture. The wall of the pipe is _____ft. thick. The length of the pipe is _____ times longer than the full diameter of the pipe.
   a. Create a model for the volume of concrete required for this pipe.
   b. Expand and simplify your model.
   c. Use technology to determine dimensions of a pipe that requires a volume of 4109.71 cubic feet of concrete.

Part C: Taking the Big Shot! [C, 5 marks]

1. Create some kind of presentable material that explains how to factor, with reference to the sequence of factoring discussed in class. You can create anything you like – poster, powerpoint, comic strip – so long as it explains the process and contains at least two different examples that show the process being applied.

2. You have used the **quadratic formula** in this (and previous courses) to solve quadratic equations. In this exercise, you will investigate the **cubic formula**.
   a. Read this article about the Cubic formula. (Link is via the website version.)
   b. Record the formula in your assignment.
   c. Use the formula to find one root of the function _____.