MATHEMATICAL JOURNAL
WEEK 1

1. Today, I discussed a little about how Texas Instruments provides many resources for teachers on their website, *education.ti.com*. Find five other Internet sites you can use as resources for technology-based lesson plans. Make sure each entry includes the name of the site and its web address. Give a brief description of what can be found on each website as well as the source of the information, i.e. college-based, teacher-created, educational publisher, etc.

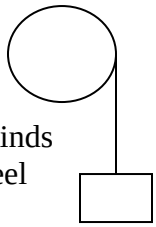
2. **Your Secret Mission!** Greetings, secret agent 00111! Your first mission, should you choose to accept it, is to help Agent M plan a pizza party. Unfortunately, M has no idea how much pizza to order for his 83 guests. Lucky for him, party planning is your specialty! Estimate the number of pizzas he'll need on scratch paper, and then convert that number to binary. What is the number and what is it in binary code?

   Your next mission is to figure out how to communicate with the Triyums (aliens with only 3 fingers). The following questions should help you devise a number system they will understand.
   How many numerals do you think they will use? (Hint: one for each finger!)
   What do you think these numerals are?
   How high can Triyums count?
   How do Triyums write the number three?
   How do Triyums write the number six?
   How do Triyums write the number sixteen?

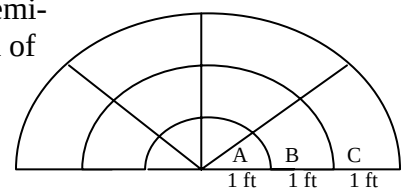
3. Decode the following binary message. The secret decoder has A = 1, B = 2, … Z = 26, 0 = 27, … 9 = 36, "."= 37, ","=38, " ' " = 39, "?" = 40, "!" = 41, and a space = 42.

000100	000101	010100	000101	000011	010100	001001
010110	000101	000100	001001	000111	001001	010100
001011	001110	001111	010111	010011	010100	001000
000101	010011	000101	000011	010010	000101	010100
001111	000110	001000	001111	010111	000011	001111
001101	010000	010101	010100	000101	010010	010011
010111	001111	010010	001011	100101	000011	001111
001101	010000	010101	010100	000101	010010	010011
010110	001001	000101	010111	000101	010110	000101
010010	011001	010100	001000	001001	001110	000111
001001	001110	010100	001000	000101	010111	001111
010010	001100	000100	000001	010011	000001	000011
001111	001101	000010	001001	001110	000001	010100
001001	001111	001110	001111	000110	001111	001110
000101	010011	000001	001110	000100	011010	000101
010010	001111	000101	010011	101001		

4. The length of any circular arc is given by the formula $s = r\theta$ and the area of a sector of a circle is given by the formula, $A = \frac{1}{2}r^2\theta$. In both formulas, r refers to the radius and the angle θ is measured in radians. *Note: $180° = \pi$ radians*



   a. A pulley has a radius of 3.5 feet. As it turns, a cable connected to a box winds onto the pulley. To the nearest foot, how far does the box move if the wheel turns 130° in the counterclockwise direction?
   b. A carpenter is building a window frame that consists of a semi-circular region divided as shown to the right.. Find the area of panes A, B, and C to the nearest hundredth of a square foot. You may use a version of the formula $A = \pi r^2$ or the formula $A = \frac{1}{2}r^2\theta$ from above.



5. Describe a little bit about yourself and your familiarity with technology in the mathematics classroom. Have you used graphing handhelds? If so, what type? What other types of technology have you used in the classroom? How often do you incorporate technology in your teaching? How successful have you been? What tips or tricks do you have to make your technology-based lessons more successful? What do you expect to learn in this course? Do you have any concerns?