![MCj03254860000[1]]()![MCj03253260000[1]]() Who Cut That Pizza Pie?

 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Pizzerias have large crescent-shaped knives for cutting pizza pies quickly and accurately. With one swift skillful swing, the knife cleanly cuts across the diameter of the pizza. Repeat 3 more times and Voila! - 8 slices! While East Coast pizza is cut perfectly into sectors with each piece having its share of the perimeter crust (stuffed or not), St. Louis style pizza is cut in a grid pattern. St. Louis pizza then is disproportionately cut leaving some with no crust and others with barely a bite of cheese (which is preferable as the cheese-product used in St. Louis is not highly palatable!)

While the math teachers sat at lunch discussing the merits of the St. Louis style pizza, the focus turned to the method of cutting the pizza. (Midwesterners never used the word pie when referring to pizza, sometimes leading to more confusion because then they anticipate dessert). If pizza is intended to be a finger food, clearly each piece should have its portion of crust for holding the piece as you eat from the tip of the sector towards the crust perimeter. St. Louis pizza lovers, however, argue that you can cut many more pieces if you cut it in a grid pattern. Quickly, the teachers pulled their pencils out of their pony tails, pocket protectors and behind their ears and started to sketch circles on their napkins. All were in agreement that one cut across the length of the pizza but not necessarily a diameter created two pieces. Then, all concurred that 2 cuts revealed a maximum of 4 pieces, however, not all pieces were of equal size or shape. The bickering began when they analyzed 3 cuts. Readily some teachers chimed in 6 slices!!, Others who pondered longer said they could get more than six pieces from 3 cuts. As the teachers finished the last bites of cold pizza, the debate became more heated. What is the maximum number of pieces you could you get from 3 cuts? 4 cuts? 5, 6, or 7 cuts?? !!!

THE QUESTION: What is the maximum number of pieces that can be produced from a given number of cuts? How many pieces can be produced by 10 cuts?

WHO CUT THAT PIE? Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

![MCj03254860000[1]]()Discrete Math Block\_\_\_\_\_\_\_

Problem Statement (2 points)

In your own words, write a paragraph describing the problem you are trying

to solve. Include specific details and any assumptions that must be made to solve the problem.

Finding the Solution (5 points)
What is the largest number of pieces of pie that can be produced from 1 cut? 2 cuts? 3 cuts? 4 cuts? 5 cuts? 10 cuts? \*\*\*N cuts? Include a diagram for 1 through 4 cuts. Then, **find a pattern** in order to calculate the number of slices for 5 and 10 cuts. Show any work you made to create the pattern (i.e. algebra or a table).

1 cut 2 cuts 3 cuts 4 cuts

Number of Pizza Slices For:

1 cut \_\_\_\_\_\_\_\_\_\_ 2 cuts \_\_\_\_\_\_\_\_\_\_ 3 cuts \_\_\_\_\_\_\_\_\_\_ 4 cuts \_\_\_\_\_\_\_\_\_\_

5 cuts \_\_\_\_\_\_\_\_\_\_ 10 cuts \_\_\_\_\_\_\_\_\_ *n* cuts \_\_\_\_\_\_\_\_\_(Extra credit! +2)

 (Turn Over)

Process (3 points)

In paragraph form, explain what you did to solve the problem. Use a topic/closing sentence, correct grammar and spelling in your work.
 1. How did you start the problem?
 2. Where did you get stuck (if you did)? How did you get “unstuck” (if you needed to)?
 3. How did your diagrams help you discover a pattern? Did you notice any mistakes and then make changes to your original diagram?
 4. Explain the pattern you discovered in words. How did you use your pattern to calculate the 10th (and nth if you did extra credit) values in the pattern?

 Total: \_\_\_\_\_\_\_\_\_/10

