Dear Algebra 1 Student,

This year we are asking you to complete a number of small tasks over the summer months. Some of the tasks will be review in nature and some will be more challenging.

You are encouraged to work together but to still do your own work. You need to be able to support all of your answers. You need to make every question and every response your own.

You need to show work and effort for every problem. The answer to each problem should be written on a separate sheet of paper. We are asking you to work on each task. The work is important. The product in Algebra I is both the answer and the supporting work. You are continuing the study of the language of higher mathematics.

Do your best on these questions. Make an honest effort. Seek out assistance.

Due Date: *First Day of School*

See you in September!

Mrs. DeQuarto

**If you have any questions, email sdequarto@carteretschools.org

Task One – A Party in the Field

Mr. Jones and Mr. Sanchez each want to put a fence around their rectangular fields. Mr. Jones has a field that is 36 feet by 25 feet and Mr. Sanchez has a field that will require the same amount of fencing material. Central Lumber is selling fencing for $2 per foot.

A. How much it cost either Mr. Jones or Mr. Sanchez for fencing at Central Lumber? Assume that they will both receive a 20 percent discount and that they will have to pay 7% in sales tax.

B. Assuming that the two fields are not identical in shape, sketch one possible field for Mr. Sanchez. Be sure to include the dimension of each side.

C. The Jones and the Sanchez Families are having a joint party. Using the above information, which field would provide more space for the party?

D. The Pi family moves in next year and they have a rectangular field that requires the same amount as fencing as given above. They want to hold the joint party this year. They argue that their field is the largest of the three and it is the largest rectangular field for the given amount of fencing. What are the dimensions of the field owned by the Pi family?

Task Two – Math Day

We all know that mathematics is everywhere and that every day is Math Day. However, you are asked to record the events of one day and to detail all of the mathematics that you encountered. You should complete this task by writing a short story. You can embellish but try not to write a piece of pure fiction. The story can be one to two pages with single-spacing.

Example:

It is a sunny day in Carteret. I wake up promptly at 7:22 a.m. and my temperature has fallen back to normal. Yes! It is 98.6 degrees and my parents will now let me ride my bicycle to the Museum of Mathematical Marvels. The museum is only 10 miles from my house and I can easily cover this in under an hour. Ten miles per hour is a piece of cake on my new 20-speed bicycle. I bought the bike last year for .

You get the idea. Have fun with it but try to stick to the facts of your day.

Task Three – Probability for Kicks

It is time to toss a coin and conduct a simple probability experiment. As you know, the probability that a fair coin will land on heads or ½ or 50%. This is called the theoretical probability of tossing a heads. The experimental probability is what actually takes place. For example, Kara tosses a fair coin 10 times and obtains 3 heads and 7 tails. The experimental probability for these 10 trials is 3/10 or 30%. It is not necessarily the same as the theoretical probability. Why do you think that it is called probability in the first place? Events may be probable but they are not certain. That is the case here.

You are asked to toss a coin ten times on ten separate days. You are therefore conducting 100 total trials of the simple coin toss experiment. You will record the number of heads for that day, the total number of trials to date, the total number of heads to date, and the experimental probability. Of course, the point is to see how the experimental probability approaches the theoretical probability as the number of trials increases.

Do the experiment. Do not worry if your numbers do not look correct. Your results may not approach 50%. It is possible that 100 trials are not enough. You will combine your results with those of your classmates when we meet in September.

<u>Task Three --Probability Sheet – Single Coin Toss Experiment - Example:</u>

Day	#heads	total # heads	total trials	Exp. Prob. Heads
1	4	4	10	.40 (4/10)
2.	8	12	20	.60 (12/20)
3.	2	14	30	.47 (14/30)

Probability Sheet – Single Coin Toss Experiment

Day	#heads	total # heads	total trials	Exp. Prob. Heads
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Task Three --Questions – Single Coin Toss Experiment

A. What do you generally observe as the total number of trials increases? What is the expected number of heads in 100 trials? What is your final experimental probability?

B. John obtained an experimental probability of .58 for his 100 trials. Amy obtained an experimental probability of .49 for her 100 trials. Ryan argues that Amy conducted the experiment correctly and that John must have made some errors. Is Ryan correct? Explain.

C. Sonya conducts the experiment and obtains one head in 100 trials. Her experimental probability is .01. Ryan argues that Sonja must have made some errors. Is Ryan correct? Explain.

Task Four– Expressions and Equations – Why not?

1. Solve and check the following equation. Do not use a calculator.

   $8 + -2(X + 5) - (X + 4) = 3X + (-8) + 1^{77}$

2. Solve and check the following equation. Do not use a calculator.

   $(-2/3)D - 5/6 = (3/4)D + (1/2)D + 5/8$

3. Simplify the following expression. Do not use a calculator.

   $(3/4)Y + 8Y – 1.4Y + (4/5) – (9/2)$

4. Simplify the following expression. Do not use a calculator.

   $-77+2XY + 3X +7(-2XY+4X) + (-2Y) + 100 – (-4Y)$

5. Solve the following equation.

   $1X + 2X + 3X + 4X + 5X + 6X +...+98X+99X +100X = 50X + 10,000$