

## VCTM 2016 Math Beauty Contest

**For each grade level, be sure to include a paragraph that full explains your thinking**

### **K – 2: This is the same description we use for K – 2 entries each year:**

Please create a pattern that is either a growing or repeating pattern or both. Please be sure to tell what your thinking was by writing a paragraph explaining your thoughts about your creation of the pattern. Students who are not able to write the paragraph may dictate it to an adult who can write exactly what the student says.

### **3 – 5:**

Sam went to the store with his dad. In the parking lot he saw 4 wheel cars and 2 wheel motorcycles. He counted the number of cars and motorcycles he saw. There were 9 times as many cars as motorcycles. He figured out the number of wheels that he saw and there were 228 wheels altogether. He also figured out that there were a total of 60 cars and motorcycles altogether. How many cars did he see and how many motorcycles did he see?

### **6 – 8:**

There was a restaurant that made subs for people to eat. You could buy a sub 12 inches long and get 4 free cookies or a sub 6 inches long and get 2 free cookies. One night in just one hour the restaurant sold twice as many subs that were 12 inches long as subs that were 6 inches long. They gave away 50 cookies altogether. How many subs that were 12 inches long did they sell and how many subs that were 6 inches long did they sell in just one hour?

### **9 – Algebra I:**

One day Tom, who was in high school and was taking a geometry class, was looking at the big window in the kitchen in his house and he decided to write a story problem about what he saw. Here is the story problem that he wrote. One day I was looking at the big window in the kitchen in my house and I noticed that the big window was made of 6 small window panes that were the same size. There were 2 rows of 3 window panes that went across the window from left to right which made 6 window panes altogether. I noticed that all the outside edges of the 6 window panes together formed a large square. I decided to measure the size of each of the window panes. **Each** edge of the 6 window panes that formed the **top and the bottom outside horizontal edges of the window** was 3 inches less in size than **each** of the edges of the 4 window panes that formed the **right and left outside vertical edges of the window**. I figured out that the total perimeter for the outside edge of the window was 72 inches. I also figured out that the area for the whole window with all 6 of the window panes was 324 inches. What was the size of each of the 6 window panes that made the kitchen window that I was looking at?

**Above Algebra 1:**

One day Mark went with his family to a big city that had a lot of tall buildings. On one of the streets he saw 14 buildings. He decided to count the number of floors from the ground up to the top of the building that were in each of the 14 buildings. Each of the floors in each of the buildings was 10 feet tall. The tallest buildings had 20 floors each. He saw some buildings with 10 floors, some with 8 floors and some with 5 floors. There were  $\frac{1}{3}$  as many 10 floor buildings as 20 floor buildings and  $\frac{1}{3}$  as many 8 floor buildings as 20 floor buildings and 2 less 5 floor buildings than 20 floor buildings. How many 20 floor buildings were there? How many 10 floor buildings were there? How many 8 floor buildings were there and how many 5 floor buildings were there? Mark added up the total number of feet for all of the buildings combined and discovered that the total was a fraction of a mile. What **fraction of a mile** was the total number of feet of all the buildings combined?