##### **VCTM MATH BEAUTY CONTEST PRACTICE PROBLEMS BY EACH GRADE GROUP**

##### **K – 2** SOLs: K15, K 16, 1.16, 1.17, 2.20 (This is the 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.

**3rd – 5th Practice Problems**

**If students want to work together to solve these problems that is fine but they must do the official problem for this year’s contest on their own. When they work together on the practice problems they can get ideas from each other about strategies to use for problem solving.**

**3rd – 5th** SOLs: 3.4, 3.6, 4.4, 5.4, 5.18 At the local sandwich shop they made sandwiches that people could come in and get quickly because they were already prepared and in a package. They made 100 sandwiches early in the morning. They made turkey sandwiches, ham sandwiches and cheese sandwiches. They made the same number of ham sandwiches as cheese sandwiches. They made twice as many ham sandwiches as turkey sandwiches. How many turkey sandwiches did they make? How many ham sandwiches did they make? How many cheese sandwiches did they make?

## 3rd – 5th SOLs: 3.8, 3.9, 3.19, 4.6, 4.7, 4.21, 4.22, 5.3, 5.20, 5.21

One Saturday Tom and Joan went to the bike shop with their parents. Tom and Joan decided to count the number of bikes and the number of tricycles that were there. They also counted the number of wheels on all of the bikes and tricycles. There were 110 wheels altogether. They found out that there were 4 times as many bikes as tricycles. There were a total of 50 bikes and tricycles altogether. How many bikes were there? How many tricycles were there?

**3rd – 5th** SOLs: 3.8, 3.19, 4.4, 4.15, 5.4, 5.17

John got some money from his parents for his 10th birthday. They wanted him to have some fun counting money so they gave him coins. When he finished counting the money he had $13.00. There were only quarters, dimes and nickels. There were twice as many dimes as quarters. There were twice as many nickels as dimes. John had 140 coins altogether. How many nickels were there? How many dimes were there? How many quarters were there?

**6th – 8th Practice Problems**

**If students want to work together to solve these problems that is fine but they must do the official problem for this year’s contest on their own. When they work together on the practice problems they can get ideas from each other about strategies to use for problem solving.**

**6th – 8th** SOLs: 6.6, 6.18, 6.19, 7.2, 7.3, 7.4, 7.12, 7.14, 8.3, 8.4, 8.15, 8.17 John had saved the money that he earned from cutting grass. He had put it in a special container in his room. He decided to count it at the end of the summer to see how much he had earned. He had $20 dollar bills, $10 dollar bills and $5 dollar bills. He had 45 bills altogether. He had half as many $10 dollar bills as $20 dollar bills and 3 times as many $5 dollar bills as $20 dollar bills. When he finished counting the money he had $400. He was really excited because he had enough money to buy a bike for his little sister and a bike for his little brother and a bike for himself and still have some money left to save. How many of each bill did he have?

**6th – 8th** SOLs: 6.6, 6.21, 6.23, 7.19, 7.20. 7.22, 8.3, 8.15, 8.17 Jan’s mother bought a big bag of candy with Tootsie Rolls, Starbursts and Blow Pops in it in order to make a piñata for Jan’s birthday party. There were 450 pieces of candy in the bag. There was an equal amount of Blow Pops and Starbursts. There were twice as many Tootsie Rolls as Blow Pops and Star Bursts combined. How many Tootsie Rolls were there? How many Blow Pops were there? How many Starbursts were there?

**6th – 8th** SOLs: 6.6, 7.3, 7.4, 7.14, 7.16, 8.14, 8.15

The Jones children went to the grocery store with their mother. They saw that there were cars, motorcycles and 18-wheelers big trucks in the parking lot. They asked their mom if they could count them and she said that they could. She helped them count. When they finished counting they figured out that there were 4 times as many motorcycles as 18-wheeler trucks and 5 times as many cars as motorcycles. They figured out that there were 212 wheels on all the vehicles combined. How many cars were there? How many motorcycles were there and how many 18-wheeler trucks were there? The children liked to make up problems that they could share with their family and friends and get them to figure them out. They thought it was like working a puzzle. They had fun doing this. See if you can figure out their problem.

**9th – Algebra 1 Practice Problems**

**If students want to work together to solve these problems that is fine but they must do the official problem for this year’s contest on their own. When they work together on the practice problems they can get ideas from each other about strategies to use for problem solving.**

**9th – Algebra 1** SOLs: A.1, A.4, A.8 Bobby and his family were on a trip and stopped to get gas. After they got their gas they decided to go into the restaurant that was at the gas station, which was also a truck stop. They sat near the window while they ate. There were a lot of cars, 4 wheel trucks, motorcycles and 18-wheeler trucks in the parking lot. There were 1/3 as many 4-wheel trucks as cars and ¼ as many motorcycles as 4-wheel trucks. There were a total of 85 vehicles including cars, motorcycles and 4-wheel trucks. After they had counted the 4-wheel trucks, cars and motorcycles they counted the 18-wheeler trucks and found out that there were 1/5 as many of the 18-wheeler trucks as the total of the other vehicles. How many cars were there? How many 4-wheel trucks were there? How many motorcycles were there and how many 18-wheeler trucks were there?

## 9th – Algebra 1 SOLs: A.1, A.2, A.3, A.5

Charles was saving the change that his parents and grandparents gave him. He wanted to buy a special game. He had saved $36.00. When he counted it he noticed that he had nickels, dimes and quarters only. He also figured out that he had ½ as many dimes as nickels and ½ as many nickels as quarters. When he counted the number of coins that he had there were 210. How many nickels were there? How many dimes were there? How many quarters were there? How much money did he have in each group of the coins?

**9th – Algebra 1** SOLs: A.1, A.4, A.7, A.8, A.11

Mark cashed a check for $323.00. He asked the cashier for $20 bills, $10 bills, $5 bills and $1 bills. He got ½ as many $10 bills as $20 bills and ¼ as many $5 bills as $20 bills and 2/3 as many $1 bills as $20 bills. He put the 29 bills that the cashier gave him in his wallet. How many of each bill did he get and how much money did he have in each group of bills?

**Above Algebra** **I Practice Problems**

**If students want to work together to solve these problems that is fine but they must do the official problem for this year’s contest on their own. When they work together on the practice problems they can get ideas from each other about strategies to use for problem solving.**

**Above Algebra** **I** SOLs: AII.4, AII.10Mary lived on a farm. They had cows, horses, pigs, chickens and turkeys. She helped her parents by feeding the animals. She knew how many of each of the animals and birds they had on the farm. She liked to create math problems that would be interesting and fun to solve. One day she decided to make one up about the animals and birds on their farm. She knew that there were twice as many chickens as turkeys and half as many pigs as cows. There were the same number of chickens as cows and the same number of turkeys as pigs. She also knew that there were 5 more horses than pigs. There were 75 animals and birds altogether. She even figured out how many feet there were altogether. There were 240 feet altogether on the animals and birds. How many cows were there? How many horses were there? How many pigs were there? How many chickens were there? How many turkeys were there? Have fun figuring out Mary’s problem about her animals and birds.

## Above Algebra I SOL: AII.13, AII.19

Taquisha liked to work with geometric solids. She decided to make a creation with the geometric solids that she had. Before Taquisha began to create her design and all of her geometric solids were still loose and not connected in any way, she counted the vertices and found that there were 100 vertices. She had 3 types of figures to use. She had cubes, rectangular prisms (that were not cubes), and triangular pyramids. She had 1/3 as many triangular pyramids as cubes and 2/3 as many rectangular prisms that were not cubes as triangular pyramids. How many cubes were there? How many triangular pyramids were there? How many rectangular prisms, that were not cubes, were there?

**Above Algebra** **I** SOLs: AII 4, AII 11

Tom and his family went on a vacation. They drove a total of 1500 miles. They traveled for 6 days. On the 2nd day they drove 1.5 times as many miles as they did on the first day. On the 3rd day they drove 1.25 as many miles as they did on the first day. On the 4th day they drove the same amount of miles as on the 3rd day. On the 5th day they drove 1/3 as many miles as they did on the second day and on the 6th day they drove the same number of miles as day 2 and day 5 combined. How many miles did they drive each day?