



Knights of Pi Math Tournament – Dec. 12, 2015  
Block Math 5th/6th

1	Calculate: 2 times 12 times 5
2	If $x @ y = x^2 + y^2$ , $x \# y = 2xy$ , and $x \$ y = (x @ y) + (x \# y)$ , what is the value of $9 \$ 91$ ?
3	The ratio of red to blue to green balls in a large sack is 4:2:3. Given that there are 12 red balls, how many balls are there in total?
4	How many permutations are there of the letters in the word CALCULATE?
5	Find the sum: $1+3+5+\dots+11$
6	A square ABCD has side length 3, and a triangle ABE with point E in ABCD has an area one third that of ABCD. What is the length of the height from E of triangle ABE?
7	The sum of three prime numbers is 20. What is the largest possible difference between the largest and the smallest of the three?
8	George rolls two 6-sided die. What is the probability that the sum of the two die is 5?
9	Given that 2 gallons of paint are needed to paint a circle of radius 2, how many gallons of paint are needed to paint a circle of radius 6?
10	What is the distance between points (7, -5) and (3, -2)?
11	What is the largest five digit number divisible by 11?
12	On any given day, there is a $\frac{1}{3}$ chance that it will rain and a $\frac{1}{5}$ chance that Sean will have a headache. Sean is happy if he doesn't have a headache and if it isn't raining. What is the probability that Sean is not happy?
13	How many positive integers under 100 have an even number of factors?
14	What is the largest area of a triangle, given that two of its sides are 3 and 6?
15	At Small High School, there are exactly 10 students: 5 girls, and 5 boys. All at once, each one of the boys randomly chooses one girl to date, without knowledge of who the other boys are choosing. What is the probability that everyone is perfectly matched up? (In other words, every girl is chosen by exactly one other boy)