



Knights of Pi Math Tournament – Dec. 15, 2012  
Algebra & Operations 5th/6th

1	Sasha is twice as old as Tasha. Five years ago, Tasha was two years younger than Pasha. If Pasha is twelve, how many years old is Sasha?
2	The sum of two numbers is 23, and their product is 120. What is the sum of their squares?
3	Joe and Matt each have a certain number of nickels. If Matt gives Joe 7 nickels, they will have the same number of nickels. If Joe gives Matt 14 nickels, Matt will have twice as many nickels as Joe. How many nickels do Joe and Matt have in total?
4	Mitch and Cam are running in opposite directions around a circular track with a circumference of 960 <i>m</i> . Mitch runs at a speed of 50 <i>m/s</i> and Cam runs at a speed of 70 <i>m/s</i> . If they start at the same point, after how many seconds will they meet?
5	A bowl of 200 milliliters (mL) of water has a 10% concentration of lemonade. How many mL of pure lemonade should be added to the water to increase its concentration to 20%?
6	The wholesale price of a tuxedo is 200 dollars. Steven has a coupon for a 25% discount. However, in order to make a profit, the store has set the retail price of the tuxedo 20% higher than the wholesale price. What is the final price Steven has to pay?
7	Brian has taken 5 reading quizzes and has scored an average of 80 on the quizzes. If he scored 70, 80, 85, and 95 on four of the quizzes, what did Hoi score on the other quiz?
8	Fiona has a basket with exactly five types of fruit. The basket is 24% mango, 28% banana, 16% apple, and 12% pear. If the remaining fruit consists of exactly five papayas, how many mangoes are in the basket?
9	Find the sum $1^3 + 2^3 + \dots + 9^3$ .
10	Scientist Arnold Edward Coli has discovered a new strain of bacteria. The number of bacteria Arnold has triples every hour. If Arnold has 243 bacteria after 4 hours, how many bacteria did he begin with?