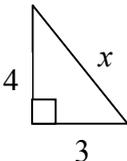## Mount Rainier Math Invitational
Sixth Grade – February 1, 2008
Individual Test

Put all answers on the colored answer sheet. All fraction answers must be reduced.

	Problems 1 through 20 are worth 2 points each
1	Evaluate: 170 x 59
2	What is the next term in the sequence 1, 9, 25, 49, 81,…?
3	What is the perimeter of a regular hexagon with sides two less than six?
4	What is 7!?
5	On what day is Kelsey's birthday this year if her birthday is May 5th?
6	What is the sum of the first ten squares?
7	What is the angle between the hour and the minute hand at six o'clock?
8	Berta is shorter than Kelsey, who is shorter than Abbdule. Stacey is taller than Berta. Stacey has a cat. Abbdule is 2' 2" taller than Berta, who is 3" shorter than Kelsey, who is an inch shorter than Stacey. If Abbdule is 7' 2", how tall is Stacey, in inches?
9	What is the <u>name</u> of the side with length x?
10	What is the length of x in the triangle from question 9?
11	Jonne, Jakob, and Jinngul went to a store that sells three different types of spaghetti sauce. They want to get the most sauce for their money. The Heimer sauce is $2 for 15.5 fl oz, the Schmidt sauce is $6 for 30 fl oz, and the Barbossa is $3 for 18 fl oz. How much would it cost for them to buy two jars of sauce with a 10% off coupon before tax?
12	What percent of 300 is 57?
13	What is the slope of the line containing the points (4, 2) and (7, 8)?
14	If An is holding a book with 734 pages and opens it a random, what is the probability that she will open it to a page whose digits add up to 16?
15	Abbdule, Buurdah, Kelsey, and Stacey are jumping rope with two other people turning the rope. Abbdule jumps every time, Buurdah every other, Kelsey every third, and Stacey every fourth. If they all jump together on the first spin, how many times will Abbdule have to jump before they all jump together again?
16	Solve for x: $4x + 2x + x + \dfrac{1}{2}x + \dfrac{1}{3}x + \dfrac{1}{6}x = \dfrac{2^6}{2^2}$

17	Hillary bakes a plate of macaroons. Berduhh eats half of the macaroons, then Zoey (Kelsey's dog) eats a fourth of the remaining macaroons. Finally, Octagonne (Berduhh's pet spider) eats 10 of the macaroons. Unfortunately, Hillary only has two macaroons left. How many did she originally bake?
18	How many diagonals does an octagon have?
19	What is the sum of the first 23 odd numbers?
20	Kelsey is hungry, so she decides to see what is in her fridge, where there are plenty of sandwich ingredients, so she is going to make a sandwich. There are 2 types of bread, 3 types of meat, 4 types of cheese, and 5 types of vegetables. How many distinct sandwiches can Kelsey make and eat if a sandwich consists of one type of bread, one type of meat, and one type of cheese?
	Problems 21 through 30 are worth 3 points each
21	What is the surface area of a cube with side length $3!$?
22	Two pandas named Biff and Bob have to eat bamboo all day. Biff eats ten stalks a minute and Bob eats twelve every two minutes. How long will it take for them to eat a small forest of 180 stalks of bamboo together?
23	There are four distinct circles sewn on a piece of velvet. What is the maximum number of points where at least two of the circles intersect?
24	What is the sum of the exterior angles of a nonagon?
25	A right triangle has a leg of 1.5 and the other leg is the square of 2. What is the area?
26	How many times does seven evenly go into 43,104,685,924,027?
27	Evaluate 3@5 if a@b = $\dfrac{ab + 2a + b + (b - a)^2}{(a + b)(a - b)}$
28	Andrew receives a box of 16 marbles in the mail. He ordered 3 clear marbles, 6 yellow marbles, 2 blue marbles, and 5 red marbles. He likes yellow best. What is the probability he pulls 1 yellow marble and then 1 clear marble without replacement?
29	What is the sum of $\sqrt{169}$ and $\sqrt{625}$?
30	Oliver is playing a game where there are 10 ping pong balls each under a paper cup. If he picks one of the 6 cups with a silver ball, he gets a dollar. If he picks the cup with the gold bald ball, he gets 5 dollars. For each of the 3 purple balls he'd get a quarter. If he picks 2 different cups (without replacement), how likely is it that he will earn more than 5 dollars?