"Math is Cool" Masters – 2011-12

Sponsored by: Shree Investments

6th Grade – May 19, 2012

GENERAL INSTRUCTIONS/INFORMATION applying to all tests and awards:

- *Good sportsmanship is expected throughout the competition by all involved; both competitors and observers. Display of poor sportsmanship may result in disqualification.*
- *Calculators or any other aids may not be used on any portion of this contest.*
- *Unless stated otherwise, all rational, non-integer answers need to be expressed as reduced common fractions except in case of problems dealing with money. In the case of problems requiring dollar answers, answer as a decimal rounded to the nearest hundredth (ie, to the nearest cent).*
- *For fifth and sixth grade, all fractions and ratios must be reduced to simplest form.*
- *Counting or natural numbers refer to the numbers 1,2,3,4 and so on – zero (0) is NOT included.*
- *Units are not necessary as part of your answer unless it is a problem that deals with time and in that case, a.m. or p.m. is required. However, if you choose to use units, they must be correct.*
- *Leave all answers in terms of π where applicable.*
- *Do not round any answers unless stated otherwise.*
- *Record all answers on the colored cover sheets in the answer column only.*
- *Make sure all answer sheets have all the information (name, team number, etc.) at the top of the sheet filled out.*
- *Tests will be scored as a 0 if answers are not recorded on the answer sheets.*
- *Blank answer sheets and answer sheets with no name will be scored as a 0.*
- *Individual Awards are determined by the sum of an individual's Mental Math score and Individual Test score. Individual Mental Math contributes to approximately 8% of the individual score. Individual ties are broken based on the following in this order: total individual points, total questions answered correctly, individual Mental Math score, total correct from Individual Test problems 31-40, total correct from Individual Test questions 16-30, single questions answered correctly on the Individual Test starting with question 40 and working backwards.*
- *Team Awards are determined by the team score which is calculated by 2(Top 3 Mental Math scores) + 2(Multiple Choice) + 6(Team) + 3(Relay) + (College Bowl) for approximate weights of 25%, 20%, 30%, 15% and 10% respectively. Team ties are broken based on highest event score in order of events starting with Mental Math.*

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Mental Math Contest

MENTAL MATH - 30 seconds per question – 25% of team score

When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. ***You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong.*** *Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.*

	Question
1	What is the sixth smallest prime number?
2	I have one dollar in change made up of only pennies and nickels. If I have 25 pennies, how many nickels do I have?
3	If each parking lot can hold 7 cars, how many total cars can 12 parking lots hold?
4	What is three-halves minus three-fourths? Answer as a reduced fraction.
5	What is the largest possible number of points of intersection between one line and two distinct circles? A point of intersection is a point at which the line crosses a circle or a circle crosses another circle.
6	How many counting numbers are less than 54 but greater than 10?
7	What is the mean of the following set of values? {negative two, zero, one, two, negative three} If your answer is not a whole number, give it as a reduced fraction.
8	A cube of side length 4 inches is cut down to half its original height without changing any other dimension. What is the number of square inches in the surface area of the new figure?

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Individual Contest

INDIVIDUAL TEST - 35 minutes – 40 problems

You may NOT be seated next to anyone from your school. If you are, MOVE NOW to avoid being disqualified! When you are prompted to begin, tear off the colored sheet and begin testing. Make sure your name and school are recorded on the answer sheet. The raw score will be 2 points for correct answers to problems 1-30 and 3 points for 31-40. Record your answers on the score sheet. No talking during the test. You will be given a 5 minute time warning.

Record all answers on the colored cover sheet.

	Questions 1-30: 2 points each
1	If the day before yesterday was Monday, what day of the week will it be 17 days after yesterday?
2	Nita draws 15 different squares — one each with whole-number side lengths 1, 2, 3, and so on up through 15 inches. She then calculates the area (in square inches) of each of her squares. For how many of her 15 squares will the area be an odd number?
3	Natasha can draw 1 snake every 20 seconds in math class. How many snakes can she draw during her entire math class, which lasts for 50 minutes?
4	In order to get from Spokane to Moses Lake, Annie drives through Ritzville. Annie drives 100.03 miles from Spokane to Moses Lake. From Ritzville to Moses Lake is 42.04 miles. How many miles is it from Spokane to Ritzville? Write the answer as a decimal.
5	Solve for x in the following equation: 25x – 75 = 100
6	Karen wants to decorate a birthday cake for her friend Hailey. If it takes Karen 8 **seconds** to write each letter in frosting, how many **minutes** would it take for Karen to write "Happy Birthday Hailey" in frosting? Give your answer as a simplified mixed number.
7	Allie needs a half-gallon of milk to make milkshakes and three pints of milk to make custard. How many **CUPS** of milk does Allie need in all?
8	Grant's ants are on the loose! They are marching in 12 rows, with 16 ants in each row. If one anteater can eat 4 ants, how many anteaters will be needed to eat all of Grant's ants?
9	For today's contest, a coach wants to know when to dismiss the mathletes from class so they arrive at the registration table at 3:00 PM. It takes 10 minutes to park the bus and get to the registration table, 40 minutes to drive to the contest location, and 15 minutes for students to leave class and load the bus. What time should the mathletes be dismissed from class?
10	How many prime numbers less than 100 have "6" as one of their digits?
11	What is 44 times 20 divided by 4?
12	The sum of (21 x 1000) and (21000 ÷ 1000) is equal to 21 times X. What is the value of X?

13	Given the equation y = 7x - 9, find x when y = 19.
14	On Moritz's Farm, there are 8 spiders, 7 pigs and 17 ants. A spider has 8 legs, a pig has 4 legs, and an ant has 6 legs. Each organism has one head. What is the total number of heads and legs on Moritz's Farm?
15	Wendy had a math notebook with N pages, each page numbered on only one side of the sheet. Wendy accidentally tore out the middle page of her notebook. If the product of the number on this page and the number on the following page is 240, what is N?
16	For each term below, Bob writes the number of sides in the polygon named. What is the median of the five numbers Bob writes? heptagon, decagon, hexagon, nonagon, dodecagon
17	In the 400-meter hurdle race in track, the first hurdle is 45 meters from the starting line. The last hurdle is 40 meters from the finish line while all the other hurdles are 35 meters apart. How many hurdles are in the 400-meter hurdle race?
18	Alice, Bob, Caroline, Debby, and Eureka are standing in a line for the movie "Finding Nemo." In how many orders can these five people stand in line, if Alice must be in the middle of the line OR Bob must be in the front of the line (or both)?
19	A counting number is "cozy" if the sum of its digits will divide into the number with no remainder. How many 2-digit counting numbers less than 25 are "cozy"?
20	A grocery store has equal numbers of green apples and yellow apples. The green apples were put into bags of 14 apples per bag with 3 left over, while the yellow apples were put into bags of 10 per bag with 5 left over. What is the least number of green apples the store could have?
21	Brian's little brother Jimmy, who is just learning arithmetic, wrote the incorrect multiplication equation 943 x 75 = 63215. Brian changed three of the 10 digits of this equation to 0, producing a correct equation. What is the sum of the 3 digits that Brian changed to 0?
22	Which of the three symbols shown in the parentheses (< , > , =) should go in the blank between the following two fractions? $\frac{12}{5} \_\_ \frac{7}{3}$
23	Geraldine has a sack with 5 pink rabbits, 6 yellow rabbits, one blue rabbit, and 38 purple rabbits. How many rabbits would Geraldine have to take from her sack in order to ensure that she will have taken out at least one pink rabbit?
24	Allison went to the school auction and spent $56. She bought a coat and a hat. The ratio of the cost of the coat to the cost of the hat was 4:3. How much money (in dollars) did she spend on the coat?
25	If M and N are both negative numbers, which of the following will always result in a negative answer? (Answer with one or more of the letters A, B, C, D, or with the word "none".) (A) M + N (B) M – N (C) M • N (D) M ÷ N
26	Sandy's special number is a 2-digit counting number less than 50. Sandy reverses the digits of her special number to make a second number. If both of these numbers are prime, what is the largest possible value of Sandy's special number?
27	Find the value of the missing number (?) in the following equation: $\sqrt{4+9+36} = \sqrt{4}+\sqrt{9}+\sqrt{?}$
28	Find the sum of the first 10 COMPOSITE counting numbers. (A counting number is composite if it can be divided without remainder by more than two different counting numbers, including itself.)
29	What is the value of x? $2^{1000} + 2^{1000} = 2^{x}$
30	Robert is stacking baseballs in the form of a pyramid. The base is a rectangle that measures 4 baseballs by 6 baseballs. Each baseball above the base rests on 4 baseballs below it. How many total baseballs are used in this pyramid?

Challenge Questions: 3 points each

31	The Cool Math Club held a bake sale. They sold cakes for $3.50 each and pies for $6 each, and raised a total of $119. The club donated 40 percent of the money raised from selling **cakes** to a charity. What is the minimum number of dollars the club could have donated to charity?
32	Bailey's clock runs slow. For every minute of time that passes, her clock hands only move 40 seconds. If she sets her clock correctly at 3 PM, what is the correct time when her clock next shows 7:24 PM?
33	In how many different ways can 7 diamonds be given to Anna, Bobby, and Chris if each person receives at least one diamond?
34	Adam can run a lap on a certain circular track in 50 seconds. Grampy Sampy can run a lap on this track in 90 seconds. They start at the same location at the same time and move in the same direction. If they each run at a constant speed, how many seconds will it take before Adam is next even with Grampy Sampy? If your answer is not a whole number, give it as a decimal.
35	Mark has some cookies, but Noah doesn't. Mark gives $\frac{3}{4}$ of his cookies to Noah. Half of the cookies Noah gets are peanut butter, which Noah doesn't like. So Noah gives the peanut butter cookies back to Mark. Mark eats $\frac{3}{5}$ of the cookies he has now, saving 28 cookies for later. How many cookies did Mark start with? (Only whole cookies are exchanged.)
36	Ruthie has 10 coins, all either nickels, dimes, or quarters. She has N nickels, D dimes, and Q quarters, where N, D, and Q are all different, and are each at least 1. Amazingly, she would have the same amount of money if she had Q nickels, N dimes, and D quarters. How many **cents** does Ruthie have?
37	Val rolled three standard cubical dice and multiplied the numbers she rolled. The product of the three numbers is 24. As a reduced common fraction, what is the probability that one of the numbers Val rolled is 6?
38	When simplified, the complex fraction below is equal to $\frac{14}{11}$. What number does x stand for? $\cfrac{x}{2+\cfrac{3}{2+\cfrac{5}{8}}}$
39	How many of the first 200 counting numbers are multiples of either 3 or 4, but not of 6 or 8?
40	Terry draws an M by N array of unit squares, forming a rectangle. There are 495 ways to travel along the lines of the grid by a shortest path from the top left corner to the bottom right corner. What is the area, in square units, of Terry's rectangle?

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Team Multiple Choice Contest

Four schools participated in a math competition, with each school represented by five contestants. Contestants took 4 tests as individuals (Mental Math, Speed Math, Mystery Test, and Individual Test), and 3 tests working in teams (Hustle, School Bowl, and Relay). Each test has a maximum of 100 points. The tables below show the results for the four teams and for the 5 contestants from one team (Mount Rainier). The overall team scores are determined by combining scores from the 3 Team tests, with each test contributing a certain percentage to the overall score. The percentages contributed by the 3 tests are not necessarily equal. Overall scores are not rounded. **USE THIS INFORMATION AS NEEDED TO SOLVE THE PROBLEMS BELOW.**

Individuals from Mount Rainier

Contestant	Mental Math	Speed Math	Mystery Test	Individual Test
Trung	56	40	5	66
Bert	17	45	97	27
Stacey	80	?	20	68
James	77	53	?	64
Ernie	22	30	2	?

Team	Hustle	School Bowl	Relay	Overall
Mount Rainier	71	32	63	49.1
Pullman	77	?	66	78.7
Moses Lake	62	44	69	55.1
Highline	51	40	55	46.7

1	Of the 5 Mount Rainier contestants, 3 ranked higher than all their teammates on at least one test. Which 2 Mount Rainier students did not rank higher than their teammates on any test? A) Ernie & Trung B) Bert & James C) Stacey & Trung D) Ernie & James E) Bert & Ernie
2	What is the average (mean) of Stacey's scores if her Speed Math score was the average of the Speed Math scores of her four teammates? A) 42 B) 52.5 C) 53 D) 50.4 E) Answer not given.
3	The average (mean) of the Individual Test scores for the five Mount Rainier contestants was 51.2. What was the mean of Ernie's four test scores? A) 18 B) 26.3 C) 31 D) 12.8 E) Answer not given.
4	The participants of Mount Rainier want to sit around a circular table for lunch. However, Bert and Ernie must always sit next to each other. How many different ways can they seat themselves? Consider only the order in which they sit, not their position relative to the room. A) 6 B) 12 C) 24 D) 120 E) Answer not given.

PROBLEM RESTATED: Four schools participated in a math competition, with each school represented by five contestants. Contestants took 4 tests as individuals (Mental Math, Speed Math, Mystery Test, and Individual Test), and 3 tests working in teams (Hustle, School Bowl, and Relay). Each test has a maximum of 100 points. The tables below show the results for the four teams and for the 5 contestants from one team (Mount Rainier). The overall team scores are determined by combining scores from the 3 Team tests, with each test contributing a certain percentage to the overall score. The percentages contributed by the 3 tests are not necessarily equal. Overall scores are not rounded. **USE THIS INFORMATION AS NEEDED TO SOLVE THE PROBLEMS BELOW.**

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5	The Mount Rainier team buys 3 pizzas. Each pizza costs $6.55, and they pay with a $20 bill. How many different combinations of coins can they receive in change, if change is only made with dimes, nickels, and/or pennies? A) 14 B) 16 C) 18 D) 20 E) Answer not given.
6	The Mount Rainier team buys 3 pizzas, each with 8 slices. Trung eats four fewer slices than three times the number James eats. James eats one more slice than Stacey, who eats five slices fewer than Ernie. Ernie eats seven slices of pizza. Bert eats all the remaining slices of pizza. How many slices does Bert eat? A) 5 B) 6 C) 7 D) 8 E) Answer not given.
7	At the end of the competition, each of the four schools is awarded a plaque for its rank (1st through 4th place). Unfortunately, someone mixed up the awards so each school is handed a plaque at random. What is the probability that no school gets the correct plaque? A) 1/24 B) 1/8 C) 3/8 D) 5/8 E) Answer not given.
8	The five Mystery Test scores of the Moses Lake team were all different counting numbers. The average of the five scores was 60, and the range was 80. The lowest score was at least 10% of the highest score. What is the largest possible value of the median of these five scores? A) 60 B) 63 C) 79 D) 90 E) Answer not given.
9	If 20% of the overall team score comes from the Hustle score, what percentage of the overall team score comes from the Relay score? A) 50% B) 40% C) 30% D) 20% E) 10%
10	What was Pullman's School Bowl score? A) 87 B) 95 C) 93 D) 74 E) Answer not given.

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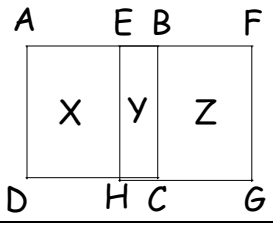
Team Contest

1	Peter is flying from New York to Scotland. The flight is 8 hours long and there is a 5-hour time difference, such that if it is 3 PM in New York it is 8 PM in Scotland. If Peter leaves New York at 5 AM, what time will it be in Scotland when he arrives?
2	The product of 7 times 13 is 91. What is the product of 7 times 7 times 10 times 13 times 13 times 10?
3	The phrase "GO COUGS" is written repeatedly without spaces (GOCOUGSGOCOUGSG…). When enough letters are written so that the 3-letter sequence OCO occurs 33 times, how many times has the letter G been written?
4	Two congruent squares (ABCD and EFGH) are overlapped as shown, to form regions X, Y, and Z. The ratio of the areas of these three regions is X:Y:Z = 2:1:2. What is the least possible whole-number area (in square units) of rectangle AFGD if the length of segment EB is a whole number of units? 
5	A square number is the result of multiplying a counting number by itself. My house number has five digits (*abcde*). If each pair of consecutive digits (*ab*, *bc*, *cd*, and *de*) forms a 2-digit square number, what is my house number? (NOTE: A 2-digit number cannot have 0 as its tens digit.)
6	A river flows at 2 miles per hour. Going upstream on the river in a rowboat, it takes Jen 4 hours and 40 minutes to travel 14 miles. If Jen continued to row at this same rate, how many **fewer MINUTES** will it take her to travel 14 miles downstream on her return trip than it took her to travel 14 miles upsteam?
7	The cherry tree I planted last spring had 60 cherries on it. Thirty percent of the cherries were eaten by birds and 28 cherries were wormy. I used the rest of the cherries to make a cupcake. If 5 cherries eaten by birds were wormy, how many cherries did I have for my cupcake?
8	Ming rolls a fair cubical die and tosses a weighted (unfair) coin. The probability that he rolls a prime number and tosses a head is 1/8. What is the probability that he will get 3 tails in 3 tosses of this unfair coin? Answer as a reduced fraction.
9	Uncle Scrooge hid $2100 cash, divided among four boxes. He hid only $50 bills in a blue box, only $20 bills in a red box, only $10 bills in a yellow box, and only $5 bills in a white box. In one box, he hid 50 bills, in the second box he hid 20 bills, in the third box he hid 10 bills, and in the fourth box he hid 5 bills. How many dollars did Uncle Scrooge hide in the yellow box?
10	Lisa chooses three integers, not necessarily different. Their product is 36 and their sum is S. What is the sum of all possible values of S? (NOTE: The set of integers consists of the counting numbers, 0, and the negatives of the counting numbers.)

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Relay Contest

RELAYS - 5 minutes per relay – 4 problems per relay - 2 relays – 15% of team score

There is no talking during this event and you must always be facing forward. Person #1 will be given an answer sheet and will need to fill out the information at the top. The proctor will hand out a strip of paper to each person containing problem(s). These need to be face down on your desk until it is time for the relay to start. Person #1 will have problem #1 on his/her paper. Person #2 will have problem #1 and #2 printed on his/her paper. Person #3 will have problem #2 and #3 on his/her paper and Person #4 will have problem #3 and #4 on his/her paper. Once the relay begins, everyone may turn over their strip of paper and begin working. You may write on the strip of paper to come up with answers to the problems on your strip of paper. However, when person #1 figures out his/her problem, he/she will record ***ONLY his/her final answer*** *on the answer sheet and pass only the answer sheet back to the person #2. Person #2 has the option of changing Person #1's answer if he/she wants by crossing it out and putting a new answer. Once Person #2 records at least an answer for problem #2 on the answer sheet, he/she passes only the answer sheet behind to Person #3. This continues until person #4 puts an answer on the answer sheet and gives it to the proctor. A correct answer for problem #1, #2 and #3 is worth 1 point each. A correct answer from problem #4 is worth 2 points making each relay worth 5 points. You will see the expression* ***TNYWG*** [Proctor: write this on the board] *which means: "the number you will get". This is where you insert your teammate's answer into the new problem that you have on your paper so you can finish solving it. Once the relay begins, turn over your strip of paper and* ***make sure you have the right person number.*** *Each teammate has the option of changing any answers on the answer sheet when they have it in their possession, but once it is passed back, they will not see the answer sheet again. Remember, no talking and remain facing forward to avoid being disqualified!*

	Relay #1	
Question 1	If 48 potatoes can feed 12 people for 2 days, how many potatoes can feed 5 people for 3 days?	30 [potatoes]
Question 2	TNYWG is 15% of what number?	200
Question 3	Evaluate TNYWG ÷ (2 + 2 x 2 – 2 ÷ 2) + TNYWG.	240
Question 4	Subtract the smallest prime number greater than 50 from TNYWG.	187
	Relay #2	
Question 1	Evaluate $\sqrt{4 \cdot 5 \cdot 10 \cdot 2}$	20
Question 2	TNYWG is equal to 4x – 20. Evaluate $(23 - 3x)^2$	49
Question 3	Multiply the greatest common factor of TNYWG and 56 by the greatest common factor of 60 and 144.	84
Question 4	Find the volume in cubic units of a pyramid whose base area is TNYWG square units and whose height is $\frac{TNYWG}{3}$ units.	784 [cubic units]

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COLLEGE KNOWLEDGE BOWL ROUND #1 – SET 1

#	Problem	Answer
1	There are a total of 96 legs in a group of six-legged beetles. How many beetles are there in the group?	16 [beetles]
2	What is the smallest possible sum of the digits of a counting number between 12 and 2012?	1
3	How many zeros will it take to write the number "ten million"?	7 [zeros]
4	A triangle has an area of 36 square inches. If the base is 18 inches, what is the height, in inches?	4 [inches]
5	On Sunday, Sarah ate one cherry. She then ate two cherries on Monday, four on Tuesday, eight on Wednesday, and so on, through Saturday of that week. How many cherries did Sarah eat that week?	127 [cherries]
6	What is five factorial divided by six factorial?	1/6
7	There are 4 red marbles, 5 blue marbles, and some yellow marbles in a bag. If Beth takes one marble out of the bag, at random, the probability is one-fourth that the marble will be blue. How many yellow marbles are in the bag?	11 [yellow marbles]
8	Jay draws a square with a perimeter of 60 centimeters. Inside Jay's square, Kay draws a square with a perimeter of 28 centimeters. How many square centimeters are in the area that is outside Kay's square but inside Jay's square?	176 [square cm]
9	What is the product of the seventh prime number and the tenth prime number?	493
10	Michael Phelps consumes 8000 calories every day and only eats two things: spaghetti and sandwiches. Every serving of spaghetti is 500 calories and every serving of sandwiches is 800 calories. Today he ate a total of 13 servings of food. How many servings of spaghetti did he eat?	8 [servings]

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COLLEGE KNOWLEDGE BOWL ROUND #2 - SET 2

#	Problem	Answer
1	When I subtract my favorite number from 676, the result is 293. What is my favorite number?	383
2	Jimmy can make 15 different combinations of one shirt and one jacket. He has at least four jackets and at least two shirts. How many jackets does Jimmy have?	5 [jackets]
3	When I count backwards from 99 by 5's, what is the second EVEN number I will say?	84
4	It takes Jacob 132 minutes to run the 12 miles from his school to his house. At this rate, how many minutes would it take Jacob to run one mile?	11 [minutes]
5	What is the radius in centimeters of a circle whose diameter is 15 centimeters? If your answer is not a whole number, give it as a DECIMAL.	7.5 [cm]
6	I pay $2.25 for 4 OUNCES of cheese. At this same price per weight, how much (in dollars) would 6 POUNDS of cheese cost?	54 [dollars]
7	When the fraction twelve over forty-eight is fully reduced, what will be the sum of the numerator and the denominator?	5
8	Ellen adds 320 plus a counting number less than 50. When this sum is divided by 9, the remainder is 0. What is the sum of all possible values of the number Ellen added to 320?	159
9	When Liza added the first thirteen counting numbers, she got the incorrect sum of 79. Liza's mistake was that she left out one of the thirteen numbers, but she correctly added the other twelve. Which number did Liza leave out of her sum?	12
10	Kyle starts climbing a hill on Tuesday morning. Every morning he climbs 70 feet, and every afternoon, he falls back 20 feet. If the hill is 365 feet tall, on what day of the week will Kyle reach the top of the hill?	Monday

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COLLEGE KNOWLEDGE BOWL ROUND #3 - SET 3

#	Problem	Answer
1	What is the tens digit of the number twenty-four thousand, five hundred one?	0
2	What time will it be 75 minutes before 10:30 AM?	9:15 AM
3	When two-thousand, nine-hundred ninety is divided by 13, what is the sum of the quotient and the remainder?	230
4	Mary is embroidering tigers on her backpack. Each of her tigers has either 7 stripes or 6 stripes. If Mary embroiders 33 stripes, how many tigers are on her backpack?	5 [tigers]
5	I can trade 5 leprechauns for 7 turtle monsters, and 4 turtle monsters for 3 gnomes. How many gnomes will I get in return for trading 20 leprechauns?	21 [gnomes]
6	Three sides of my square have a total length of 18 inches. In square inches, what is the area of my square?	36 [sq. inches]
7	On a True-False test of 5 problems, Danny guesses randomly on each problem. Danny is X times as likely to get exactly two problems right as to get all five problems right. What is X?	[X=] 10
8	Mitchell and all of his friends are standing in a circle, equally spaced, for a game of Farkleball. Starting from Mitchell, who said "1", the players in the circle count off in a clockwise direction by ones. If the player who said "12" is directly opposite the player who said "32", how many friends does Mitchell have?	39 [friends]
9	Gregg picks 3 flowers on Sunday. Each day after that he picks one more flower than the day before. If he can put at most 4 flowers in each of his vases, how many vases will he need to hold all the flowers he has picked by the end of one week?	11 [vases]
10	What is the sum of one-sixth plus one-third plus one-fourth? If your answer is not a whole number, give it as a reduced common fraction.	3/4

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COLLEGE KNOWLEDGE BOWL ROUND #4 - SET 4

#	Problem	Answer
1	Find the value of 63 plus 36 plus 98.	197
2	Cakes A, B and C are all rectangular in shape and all two inches thick. Measured in inches, Cake A has length 9 and width 10, cake B has length 46 and width 2, and cake C has length 13 and width 7. In cubic inches, what is the volume of the cake with the largest volume?	184 [cubic inches]
3	How many degrees are in the supplement to a right angle?	90 [degrees]
4	Joyce exercised each day for a week. On Monday through Friday, she exercised for 7 minutes, 3 minutes, 7 minutes, 5 minutes, and 6 minutes, respectively. She forgot to write down how long she exercised on Saturday and Sunday, but she knows that the single most frequent value for the week was 5 minutes. How many minutes did Joyce exercise that week?	38 [minutes]
5	When my favorite number is squared, the result is 576. What is my favorite number?	24
6	Suzy sells socks in sets. Seven sock sets sell for 63 cents. Assuming a constant sock-to-cent ratio, how many **CENTS** will 16 sock sets sell for?	144 [cents]
7	Ron has a 90-inch-long rope. He cuts the rope 9 times to make pieces of equal length. How many inches long is each little piece of rope?	9 [inches]
8	Face cards are kings, queens, and jacks. Caleb made a special deck of cards by discarding all clubs, face cards, and threes from a standard deck of cards. If a card is drawn at random from this new deck, what is the probability that it has an even number on it? Answer as a reduced fraction.	5/9
9	In how many ways can Ash choose 3 of his 5 different Pokémon to battle with?	10 [ways]
10	Leah needs one and one-fourth cups of chocolate chips to make a batch of cookies and three and one-half cups of chocolate chips to make a batch of fudge. How many cups of chocolate chips does she need to make two batches of cookies and two batches of fudge? Give your answer as a mixed number.	nine and one-half [cups]

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6th Grade – May 19, 2012

COLLEGE KNOWLEDGE BOWL ROUND #5 - SET 5

#	Problem	Answer
1	Six ponies are carrying fairies to their kingdom. Each pony is carrying two fairies and each fairy is carrying five wands. How many total wands are there?	60 [wands]
2	To make a peanut butter and jelly sandwich, you will need 1 scoop of peanut butter, 3 scoops of jelly and 2 slices of bread. If you have 20 scoops of peanut butter, 23 scoops of jelly and 31 slices of bread, how many complete sandwiches can you make?	7 [sandwiches]
3	Gerald Giraffe is 11 feet 11 inches tall. When Gerald's height is expressed as Y **YARDS** and X **INCHES**, where both Y and X are counting numbers, what is the smallest possible value of Y plus X?	38
4	Moritz has a seven-eighths chance of making a goal each time he tries. What is the expected number of goals he will make if he tries to shoot 24 goals?	21 [goals]
5	A triangle has angles of 39 degrees, x degrees, and 2x degrees. Find the value of x.	[x=] 47
6	In a barn of cows and chickens, each animal wears one hat and one shoe or boot per foot. Each chicken wears running shoes and each cow wears cowboy boots. To supply everybody in the barn, 74 pieces of footwear are needed, along with 25 hats. How many cowboy boots are needed?	48 [cowboy boots]
7	Fourteen plus half my number is equal to 22. What is fourteen minus twice my number?	negative 18
8	Forester Fred wants to plant his fifteen identical tree seedlings in a rectangle so that there are equal numbers of trees in each row and equal numbers of trees in each column. The rows will be oriented along a north-south axis. How many arrangements can he make?	4 [arrangements]
9	Angle A measures 112 degrees. Angle B is acute. Angle A is greater than angle B by X degrees. What is the smallest possible whole-number value for X?	23
10	Each orange weighs at least 3 ounces and at most 9 ounces. At 79 cents a pound, what is the difference between the maximum and minimum cost in dollars of a dozen oranges? Round your answer to the nearest whole cent.	[$]3.56 [or 3 dollars, 56 cents]

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6th Grade – May 19, 2012

COLLEGE KNOWLEDGE BOWL ROUND #6 - SET 6

#	Problem	Answer
1	Sonia is walking north in a straight line. She then turns left, and then turns right three times, and finally she turns left again. What direction does Sonia end up facing — north, east, west, or south?	east
2	A certain regular polygon has a perimeter of 72 inches. The side length of the polygon is 9 inches. What is the name for a polygon with this many sides?	octagon
3	What is 400 percent of the number that is 40 percent of 360?	576
4	Biff has 323 more dollars than Eho does. Together, Biff and Eho have 513 dollars. How many dollars does Biff have?	418 [dollars]
5	It takes 3 workers one hour to build one birdhouse. At this rate, how many workers would it take to build 21 birdhouses in half an hour?	126 [workers]
6	Julia likes to bake GIGANTIC cakes! Today she baked a cake made up of 12 equal slices with a total volume of 72 cubic miles. If Georgia the Giant ate two-and-a-half slices of the cake, what is the volume, in cubic miles, of the remaining cake?	57 [cubic miles]
7	How many counting numbers will divide into 42 with no remainder?	8 [numbers]
8	How many cubes of edge length 1.5 units would it take to make a solid cube with edge length 9 units?	216 [cubes]
9	Jae and Jimmy together bought 140 cheeseburgers, which they lined up in a row. They agreed that Jimmy would eat every 7^{th} burger and Jae would eat every 3^{rd} burger. When they both tried to eat the same burger, they would play rock-paper-scissors and the winner would eat the burger. How many burgers did they eat in all?	60 [burgers]
10	Denise drives to her grandma's house at a speed of 60 miles per hour and returns home at a speed of 40 miles per hour. What is her average speed in miles per hour?	48 [mph]

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6th Grade – May 19, 2012

COLLEGE KNOWLEDGE BOWL ROUND - EXTRA

#	Problem	Answer
1	What is the median of the following collection of numbers? {1, 1, 4, 5, 6, 7, 7, 7, 10}	6
2	Jimmy Neutron can solve a Rubik's cube from start to finish in 3 SECONDS. How many Rubik's cubes can he solve in two HOURS?	2400 [Rubik's cubes]
3	If Miya earns 1 pizza for every 7 books she reads, how many books will she need to read to earn 1 pizza every day for the month of June?	210 [books]

Final Score:

KEY

First Score

(out of 8)

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6th Grade – May 19, 2012

Name_____Team #_____ Room #_____

School Name _____ Proctor Name_____

Mental Math Contest

MENTAL MATH - 30 seconds per question – 25% of team score

When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. ***You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong.*** *Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.*

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	13		
2	15 [nickels]		
3	84 [cars]		
4	3/4		
5	6 [points]		
6	43 [numbers]		
7	-2/5		
8	64 [sq in]		

"Math is Cool" Masters – 2011-12

6th Grade – May 19, 2012

School Name_____Team #_____

Proctor Name_____Room #_____

Final Score:

KEY

First Score

(out of 20)

TEAM MULTIPLE CHOICE - 15 minutes – 10 problems – 20% of team score

This test is the only test where you will be penalized for incorrect responses. You will receive 2 points for a correct letter response, 0 points for leaving it blank and -1 point for an incorrect response. When you are prompted to begin, tear off the colored sheet, pass out a copy of the test to each team member, and begin testing. Since this is a multiple choice test, ONLY a letter response should be listed as an answer on the answer sheet.

DO NOT WRITE IN SHADED REGIONS

Answer		-1, 0 or 2	-1, 0 or 2
1	A		
2	B		
3	E [21.25]		
4	B		
5	D		
6	C		
7	C		
8	D		
9	C		
10	A		

"Math is Cool" Masters – 2011-12

6th Grade – May 19, 2012

School Name_____Team #_____

Proctor Name_____Room #_____

Final Score:

KEY

First Score

(out of 10)

TEAM TEST - 15 minutes – 10 problems – 30% of team score

*When you are prompted to begin, tear off the colored sheet and give a copy of the test to each of your team members and begin testing. Each problem is scored as **1 or 0**. Record all answers on colored answer sheet.*

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	6 PM		
2	828,100		
3	65 [times]		
4	15 [sq units]		
5	81649		
6	160 [min]		
7	19 [cherries]		
8	27/64		
9	[$] 50		
10	50		

"Math is Cool" Masters -- 2011-12

KEY

6th Grade – May 19, 2012

School:_____Team #_____

Proctor: _____ Room #_____

RELAY # 1

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
30 [potatoes]	**200**	**240**	**187**
1 or 0	1 or 0	1 or 0	2 or 0

RELAY # 2

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
20	**49**	**84**	**784 [cu un]**
1 or 0	1 or 0	1 or 0	2 or 0

Final Score:

First Score
(out of 8)

"Math is Cool" Masters – 2011-12

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6th Grade – May 19, 2012

Name_____Team #_____ Room #_____

School Name _____ Proctor Name_____

Mental Math Contest

MENTAL MATH - 30 seconds per question – 25% of team score

When it is time to begin, the proctor will read the first question twice. You may not do any writing or talking while arriving at a solution. Once you have a solution, record it on the sheet in front of you. ***You may not change or cross out answers once you have written an answer down. If there are eraser marks, write-overs, or crossed-out answers, they will be marked wrong.*** *Once all students have laid their pencils on the desk, another question will be asked. If a student doesn't lay his/her pencil down, the maximum wait time is 30 seconds after completion of the second reading of the question before another question is asked. You may continue to work on a problem while the next question is being read. The value of each question is a one or zero. Each student will be asked the same eight questions. Individual scores used to determine individual placing will be determined by the sum of the Mental Math score and the Individual Test score for each individual. In addition, the top three Mental Math scores from one team will be totaled and doubled and will contribute to 25% of the team score.*

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1			
2			
3			
4			
5			
6			
7			
8			

"Math is Cool" Masters – 2011-12

6th Grade – May 19, 2012

School Name_____Team #_____

Proctor Name_____Room #_____

Final Score:

First Score
(out of 20)

TEAM MULTIPLE CHOICE - 15 minutes – 10 problems – 20% of team score

This test is the only test where you will be penalized for incorrect responses. You will receive 2 points for a correct letter response, 0 points for leaving it blank and -1 point for an incorrect response. When you are prompted to begin, tear off the colored sheet, pass out a copy of the test to each team member, and begin testing. Since this is a multiple choice test, ONLY a letter response should be listed as an answer on the answer sheet.

DO NOT WRITE IN SHADED REGIONS

	Answer	-1, 0 or 2	-1, 0 or 2
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

"Math is Cool" Masters – 2011-12

6th Grade – May 19, 2012

School Name_____Team #_____

Proctor Name_____Room #_____

Final Score:

First Score
(out of 10)

TEAM TEST - 15 minutes – 10 problems – 30% of team score

When you are prompted to begin, tear off the colored sheet and give a copy of the test to each of your team members and begin testing. Each problem is scored as ***1 or 0****. Record all answers on colored answer sheet.*

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

"Math is Cool" Masters – 2011-12

May 19, 2012

Final Score: 1-15	Final Score: 16-30	Final Score: 31-40
KEY	KEY	KEY

STUDENT NAME: _____ **School Name:** _____

Proctor Name: _____ Team #: _____ Room #: _____

6th Grade Individual Contest – Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	Friday		
2	8 [squares]		
3	150 [snakes]		
4	57.99 [miles]		
5	[x=] 7		
6	2 8/15 [min]		
7	14 [cups]		
8	48 [anteaters]		
9	1:55 PM		
10	2 [prime numbers]		
11	220		
12	1001		
13	[x=] 4		
14	226		
15	29 [pages]		
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16	9		
17	10 [hurdles]		
18	42 [ways]		
19	6 [numbers]		
20	45 [apples]		
21	14		
22	>		
23	46 [rabbits]		
24	[$]32.00 or [$]32		
25	A		
26	37		
27	4		
28	112		
29	[x=] 1001		
30	50 [baseballs]		
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31	[$] 14.00 or [$] 14		
32	9:36 PM		
33	15 [ways]		
34	112.5 [seconds]		
35	112 [cookies]		
36	155 [cents or ¢]		
37	3/5		
38	[x=] 4		
39	50 [numbers]		
40	Either 494 OR 32 [sq units]		
31-40 TOTAL:			

6th Grade

Final Score: 1-15	Final Score: 16-30	Final Score: 31-40

"Math is Cool" Masters – 2011-12

May 19, 2012

STUDENT NAME: _____ **School Name:** _____

Proctor Name: _____ Team #: _____ Room #: _____

6th Grade Individual Contest – Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
31-40 TOTAL:			

6th Grade