"Math is Cool" Masters – 2010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

Individual Contest

GENERAL INSTRUCTIONS applying to all tests:

- *Good sportsmanship is expected throughout the competition by all involved. Bad sportsmanship may result in disqualification.*
- *Calculators or any other aids may not be used on any portion of this contest.*
- *Unless stated otherwise:*
  - *For problems dealing with money, a decimal answer should be given.*
  - *Express all rational, non-integer answers as reduced common fractions.*
- *For fifth and sixth grade, all fractions and ratios must be reduced.*
- *Counting or natural numbers refer to the numbers 1,2,3,4 and so on and do NOT include 0.*
- *Units are not necessary unless it is a problem that deals with time and, in that case, am or pm is needed. 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 filled out at the top of the sheet.*
- *Tests will be scored as a 0 if answers are not recorded correctly on the answer sheets.*
- *Blank answer sheets and answer sheets with no name will also be scored as a 0.*

INDIVIDUAL TEST - *35 minutes*

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. Each problem is scored as a 1 or 0. Record your answers on the score sheet. No talking during the test. You will be given a 5 minute warning.

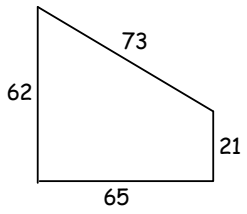
"Math is Cool" Masters – 2010-11

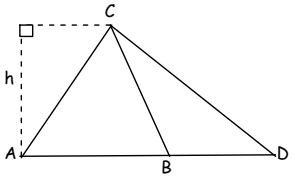
Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

Individual Contest

Record all answers on the colored cover sheet.

	Questions 1-30: 2 points each
1	Find the sum and write your answer with numerals (not words): fifty thousand + nine thousand + two thousand.
2	Dan weighs 187 pounds and Jane weighs 134 pounds. How many more pounds does Dan weigh than Jane?
3	Joe, Diane, and Frank are getting ready to go to the water park. Their mom has 9 one-dollar bills, 6 quarters, and 12 dimes to split evenly among the 3 of them. How much, in dollars, will each child receive?
4	Out of the following numbers, how many are prime? 2, 8, 15, 19, 21, 23, 25, 33
5	What is the remainder when 87 is divided by 4?
6	Liz puts a layer of red rocks, a layer of blue rocks, and a layer of green rocks in her aquarium. The red rocks are not on the bottom. The blue rocks are not in the middle. The top layer is not red or blue. In what order, from bottom to top, are the colors layered?
7	What is the product of 208 and 52?
8	Which of the three symbols shown in parentheses $(<,\ >,\ =)$ should go in the blank between the following two numbers? $\frac{7}{10}$ ___ $\frac{3}{5}$
9	How many pints are in 4 gallons?
10	What is the number of units in the perimeter of the shape shown in the figure? 
11	At a concert, you and a friend are sitting in section M of the auditorium. In section M, there are 28 rows and 24 seats in each row. What is the total number of seats in section M?
12	The mall opens at 9:30 AM. Nancy takes 45 minutes to set up a sample-tasting station which must be ready when the mall opens. If it takes her 25 minutes to get to the mall, what time must Nancy leave her house in order to be set up before the mall opens?
13	Find the value of the following expression when $Y = 4$: $(3 \times Y) - 7 + Y$

14	At the end of each day, Sophia adds all of the coins she found that day to her piggy bank. Today she found 7 quarters, 4 dimes, 7 nickels, and 13 pennies. How much, in dollars, is she adding to her piggy bank today?
15	How many sides does a quadrilateral have?
16	What is the difference between the largest 4-digit counting number and the smallest 3-digit counting number?
17	A sign along a straight north-south road points north to Oaktown 8 miles away, south to Elmwood 17 miles away, and north to Pineville 20 miles away. Alice travels along this road from Pineville to Elmwood and then to Oaktown. How many miles does she travel?
18	There are eight cats, six dogs, and ten birds at the pet store. What is the simplified ratio of cats (C) to dogs (D) to birds (B)? Give your answer in colon form (C:D:B).
19	Find the sum of negative 8 and positive 3.
20	Find the sum of the first 20 counting numbers that are multiples of 4.
21	How many times must a piece of paper be folded exactly in half in order to divide it into 256 equal sections?
22	Frodo has a 9-by 10-**yard** rectangular plot of land. He wants to put in orc-repelling posts around the perimeter every $1\frac{1}{2}$ **feet**. How many posts does Frodo need?
23	One-fifth of all the jellybeans in a jar were red. Alice added enough red jellybeans to the jar so that now half the jellybeans in the jar are red. What is the smallest number of jellybeans Alice could have added to the jar?
24	In practicing for a math contest, Alice scored 10 more points than Bob. Together, Alice and Bob scored 10 more points than Carol and Dan together. Dan scored 8 more points than Carol. How many points did Alice score, if Carol scored 40 points?
25	Find the total number of dots on a **pair** of standard cubical dice.
26	How many counting numbers will divide into 40 with no remainder?
27	There are 5280 feet in a mile. What is the smallest whole number of miles that would total more than one hundred thousand feet?
28	A semicircle of radius 6 cm is enclosed in the smallest possible rectangle. What is the area, in square cm, of the rectangle?
29	A book about gardening has 7 pages with photographs, each separated from the next page of photographs by 5 pages of text. All pages of the book are numbered in order. The last photograph in the book is on page 79. What is the page number of the first photograph in the book?
30	The area of triangle BDC is one-third of the area of triangle ACD (figure not drawn to scale). What is the simplified ratio of the length of segment BD to that of segment AB? Give your answer in colon form ($BD : AB$). 

Challenge Questions: 3 points each	
31	I have some dimes, which I can put into stacks with either 50 dimes in each stack, or 70 dimes in each stack, or 75 dimes in each stack, with no dimes left over in any case. In DOLLARS, what is the smallest possible value of my dime collection?
32	Andy counts up by 5s, starting with 3. Betsy counts down by 4s, starting with 97. What is the sum of all numbers that Andy and Betsy <u>both</u> say?
33	How many prime numbers less than 100 are either 1 less than a square number or 1 more than a square number?
34	Stacey buys a CD costing $19.48, and pays with a twenty-dollar bill. The cashier gives her change in dimes, nickels and/or pennies. How many different ways can the change be made?
35	The total length of three sides of a rectangle is 9 inches. What is the greatest possible area of the rectangle, in square inches, if all sides are a whole number of inches?
36	Give the letter or letters of all of the following statements that are true about the set of numbers $\{12, 0, -21, 6\}$. If no statement is true, answer "none". (A) Exactly 3 of the 4 numbers are even. (B) Exactly 3 of the 4 numbers are positive. (C) Exactly 3 of the 4 numbers are greater than the mean (average) of all 4 numbers. (D) Exactly 3 of the 4 numbers can be divided by 3 with no remainder.
37	For the first 100 counting numbers, Joel calculates the square of each number, then subtracts the number itself from this square. When he writes out the final answers to these calculations, how many of these 100 answers will have 0 as the units (ones-place) digit?
38	Alice writes an addition problem, adding two 2-digit counting numbers to get a sum of 134. Bob erases the tens digit of one of Alice's addends, adds again, and gets a sum of 84. What is the smallest possible value for the larger of Alice's two addends?
39	Malia puts together six 4-by-4-by-1 inch square layers with 1-inch cubes, then stacks them up to form a rectangular prism. This prism rests on a wooden table, on its square base. All the 1-inch cubes Malia used are white except one, which is red. As a fraction, what is the probability that the red cube is visible if it is located at random?
40	Ron and Hermione are on a road trip. They decide to split the driving: for every three miles Ron drives, Hermione drives 5. Ron averages 30 miles per hour (mph) and Hermione averages 80 mph. What is the overall average speed for the trip, in mph? If your answer is not a whole number, round to the nearest whole number.

"Math is Cool" Masters – 2010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

Team Multiple Choice Contest

1	Samantha earns $5 every Monday, Wednesday, and Friday. She earns $3 every Tuesday, Thursday, and Saturday. She is saving up to buy a camera, which costs $199. She starts saving her earnings on Wednesday. On what day of the week will Samantha first have enough money to buy the camera? A) Monday B) Tuesday C) Wednesday D) Thursday E) Answer not given

USE THIS INFORMATION FOR PROBLEMS #2 AND #3.

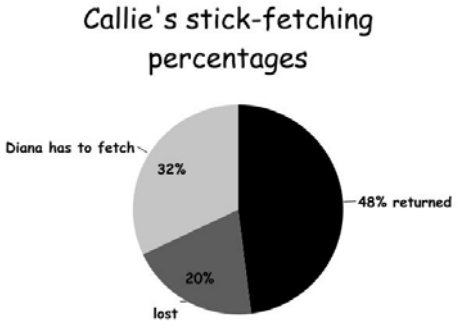
The table shows the average depth, in feet, for the oceans of the world.

OCEAN	DEPTH, ft
Atlantic	12,881
Arctic	3,953
Pacific	15,215
Indian	13,002
Southern	14,750

2	The oil spill in the Gulf of Mexico came from a well drilled at a depth of five thousand feet. How many of the oceans in the table have an average depth greater than that of this well? A) 5 B) 4 C) 3 D) 2 E) 1
3	To the nearest hundred feet, how much greater is the average depth of the deepest ocean than the average depth of the shallowest ocean? A) 11,200 ft B) 11,000 ft C) 10,800 ft D) 11,300 ft E) 11,600 ft

USE THIS INFORMATION FOR PROBLEMS 4, 5, and 6.

Diana throws 75 sticks for her dog Callie to fetch. The pie chart shows the percent of these sticks that Callie returns to Diana ("returned"). Of the sticks that Callie does not return, some Diana has to fetch herself, and some are never seen again ("lost").



4	How many of the sticks that Diana throws are lost? A) 75 B) 32 C) 48 D) 20 E) Answer not given
5	What is the ratio of the number of sticks Diana fetches to the number of sticks Callie returns? A) 2 to 3 B) 1 to 2 C) 3 to 2 D) 3 to 5 E) 3 to 4
6	Of the sticks not returned by Callie, what fraction of them are lost? A) $\frac{1}{5}$ B) $\frac{5}{13}$ C) $\frac{4}{15}$ D) $\frac{5}{17}$ E) Answer not given

USE THIS INFORMATION FOR PROBLEMS #7 AND #8.

The U.S. (except Alaska and Hawaii) is divided into four time zones. Boston is in the Eastern time zone, Chicago in the Central time zone, Salt Lake City in the Mountain time zone, and Los Angeles (L.A.) in the Pacific time zone. The westernmost zone is the Pacific zone, where the time is Pacific Standard Time (PST). The table shows how PST is related to time in the other 3 time zones.

Mountain Standard Time	PST + 1
Central Standard Time	PST + 2
Eastern Standard Time	PST + 3

7	A plane is flying from Chicago to L.A. at 500 miles per hour. The distance between the cities is 2000 miles. If the plane leaves Chicago at 10:00 AM (Chicago time) and takes two hours for a stop in Salt Lake City, what time will it be in L.A. when the plane arrives? A) 2 PM B) 12 PM C) 4 PM D) 6 PM E) Answer not given
8	A plane leaves Boston at 10:00 AM (Boston time) and flies non-stop to L.A., 2700 miles away, at 580 miles per hour (mph). On the same route, a second plane is flying non-stop from L.A. to Boston at 620 mph. If the second plane leaves L.A. at 10:00 AM (Los Angeles time), what time will it be in L.A. when the two planes meet? A) 12:25 PM B) 10:42 AM C) 10:48 AM D) 11:33 AM E) Answer not given

USE THIS INFORMATION FOR PROBLEMS #9 AND #10.

Biff buys one or more notebooks at $1.98 each, and Eho buys one or more notebooks at $1.76 each. The total cost of all the notebooks is between $15 and $20 (ignoring tax). The total exact bill for all the notebooks can be paid entirely in nickels.

9	On the basis of the information given above, how many different total amounts might the notebooks have cost? A) 1 B) 3 C) 5 D) 7 E) 9
10	If Biff and Eho can each pay their separate exact bills entirely in nickels, how many nickels did they have to pay in all? A) 374 B) 352 C) 308 D) 187 E) 286

"Math is Cool" Masters – 2010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

Team Contest

1	Express the decimal number "zero point two three seven" as a fraction.
2	Sandra has a jug that holds 2011 milliliters. She buys juice in bottles holding one-half liter. How many bottles of juice will she need to buy to fill the jug?
3	I add two different prime numbers and then divide this sum by 2. My answer is a prime number. What is the smallest my answer could be?
4	If $A@B = (A \times B) - \frac{A}{B}$, find $12@3$.
5	Artie works from 8:15 AM to 3:45 PM, with an hour off for lunch starting at 11:15 AM. Beth works from 9:30 AM to 2:00 PM, with a lunch break from 11:45 AM to 12:30 PM. How many **minutes** a day are Artie and Beth at work at the same time?
6	How many different 3-digit counting numbers are there whose first and last digits are odd and whose middle digit is twice the last digit?
7	Abel ate 8 apples in 18 minutes. Abby ate apples at only half Abel's rate. How many minutes did it take Abby to eat 180 apples?
8	When the word ADDITION is written many times in a row with no spaces, what will be the 3-letter sequence formed by the 50th letter, the 100th letter, and the 1000th letter, in that order?
9	In the following equation, three 3-digit whole number addends are added (as shown) to produce a 4-digit sum. Each underlined letter stands for a different digit, all of them **even**. Find the digit that the letter a stands for. $\underline{a}78 + 6\underline{b}6 + 15\underline{c} = 1\underline{d}38$
10	A shop sells apples at 40¢ each and oranges at 50¢ each. They also sell bags with 3 apples and 2 oranges for $2.00 per bag, and bags with 1 apple and 3 oranges for $1.80 per bag. What is the least Martin could pay (in dollars) to get at least five apples and at least 6 oranges from this shop?

"Math is Cool" Masters – 2010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

Relay Contest

RELAYS - 5 minutes per relay – 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(s) and will need to fill out the top. The proctor will hand out a strip of paper to each person. These need to be face down on your desk until it is time for the relay to start. 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 your answer. However, when person #1 figures out his/her problem, he/she will record ***just his/her final answer*** *on the answer sheet and pass only the answer sheet back to the person behind. This continues until person #4 puts an answer on the answer sheet and gives it to the proctor. A correct answer from person #1, #2 and #3 is worth 1 point each. A correct answer from person #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 put your teammate's answer that they pass back to you, and then you should be able to solve your question. Once the relay begins, turn over your strip of paper and* ***make sure you have the right person number.*** *Remember, no talking and remain facing forward to avoid being disqualified!*

	Relay #1	Answer
Person 1	How many total marbles are in 7 jars if each jar has 17 marbles?	119 [marbles]
Person 2	What do you get when you subtract $2 \times (1 + 3 + 5)$ from TNYWG?	101
Person 3	What is the remainder when the sum of TNYWG and 14 is divided by the square of (2×5)?	15
Person 4	How many buses would be needed to carry $(10 \times 2 \times 9)$ students if each bus can carry TNYWG students?	12 [buses]
	Relay #2	Answer
Person 1	How many sides does an octagon have?	8 [sides]
Person 2	Amanda has TNYWG standard U.S. coins. What is the smallest number of cents she could have if she has no more than two coins with the same value?	82 [cents]
Person 3	Multiply the sum of the digits of this year (two thousand eleven) times the product of the digits of TNYWG.	64
Person 4	When Tim multiplies X copies of the number 2 together, he gets TNYWG. What is X?	[X=] 6

"Math is Cool" Masters – 2010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

Final Score: KEY

School Name_____Team #_____

Proctor Name_____Room #_____ Division: ____

Mental Math Contest

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

PERSON 1 NAME:		**1 or 0**
1.1	What is the area in square feet of a square with sides of length three feet?	9 [sq feet]
1.2	Find the mode of the following set of numbers: three, two, two, three, five, four, three.	3
1.3	I am putting my forty-two cookies into packages of half a dozen cookies each. How many packages will I need?	7 [packages]
1.4	Twice my number plus fourteen is equal to four times my number. What is my number?	7
PERSON 2 NAME:		
2.1	What is the sum of the three smallest **even** counting numbers?	12
2.2	What is the side length in inches of an equilateral triangle whose perimeter is twenty-four inches?	8 [inches]
2.3	Round the following number to the tenths place: two point three four five six. Express your answer as a decimal.	2.3
2.4	I have a bag of 3 red marbles, 4 blue marbles, and 5 green marbles. I draw one marble at random. As a reduced fraction, what is the probability that this marble is **not** blue?	2/3
PERSON 3 NAME:		
3.1	My brother Donald took his two dogs for a walk. What is the total number of human and dog feet that went on this walk?	10 [feet]
3.2	What is twenty-five percent of forty?	10
3.3	Find the product of thirteen times eight.	104
3.4	A quadrilateral of perimeter 74 inches has sides of seventeen, nineteen, and twenty-three inches. What is the length in inches of the fourth side?	15 [inches]
PERSON 4 NAME:		
4.1	What is the probability of rolling a four with one fair cubical die? Express your answer as a fraction in simplest form.	1/6
4.2	What is the smallest prime number greater than 8?	11
4.3	How many cents do I have if I have one quarter, two dimes, three nickels, and two pennies?	62 [cents]
4.4	How much more is the **product** of the first four counting numbers than the **sum** of the first four counting numbers?	14

"Math is Cool" Masters – 1010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

COLLEGE KNOWLEDGE BOWL ROUND #1 - SET 1

#	Problem	Answer
1	Jane has twelve chickens that each lay one egg a day. A raccoon comes and takes two eggs a day from the chicken house. How many days will it take Jane to collect five dozen eggs?	6 [days]
2	What is the difference between 392 and 153?	239
3	If today is Tuesday, what day of the week was it three days before yesterday?	Friday
4	What is the median of the following set of numbers? 8, 4, 3, 7, 5	5
5	Gregg is 11 inches taller than Marcy. Tealah is 5 inches shorter than Gregg. Marcy is 5 feet 2 inches tall. How tall is Tealah, in feet and inches? The number of inches in your answer must be less than 12.	5 feet 8 inches
6	What is four-twelfths plus seven-twelfths?	11/12 [eleven-twelfths or eleven over twelve]
7	A square has side length three inches, and a regular pentagon has side length four inches. How many inches greater is the perimeter of the pentagon than the perimeter of the square?	8 [inches]
8	Name all the following numbers of cents that can **not** be made with exactly three standard U.S. coins: seven cents, ten cents, twenty cents, thirty-five cents.	10 [cents]
9	Suzie was reading her favorite math book. She started on page 41 and read through page 100, except that she skipped all pages whose page numbers had the digit "3" in them. How many pages did Suzie read?	54 [pages]
10	How many zeros would it take to write the number of centimeters in half a kilometer?	4 [zeros]

"Math is Cool" Masters – 1010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

COLLEGE KNOWLEDGE BOWL ROUND #2 - SET 2

#	Problem	Answer
1	What is five-sevenths minus three-sevenths?	2/7 [two-sevenths or two over seven]
2	What is the mean or average of the following set of numbers? 8, 4, 9, 3, 6	6
3	What is the smallest counting number greater than 10 that can be divided by 9 with no remainder?	18
4	Yesterday Freddy ran for 23 minutes before taking a break for 2 minutes. He then ran for 17 minutes longer. How many minutes did Freddy run yesterday?	40 [minutes]
5	What is the perimeter in inches of a rectangle with side lengths 8 and 4 inches?	24 [inches]
6	Last week, Meg bought two magazines on Monday, three on Tuesday, four on Wednesday, and five on Thursday. She bought no more magazines for the rest of the week. Nancy bought two magazines a day for five days last week. How many more magazines did Meg buy than Nancy?	4 [magazines]
7	What is the sum of 24, 13, 82, and 43?	162
8	When four hundred twenty is multiplied by ten, the product is how much less than five thousand?	800
9	Bob has three times as many dollars as Alice. Carol has four times as many dollars as Alice. If Bob has twelve dollars, what is the total number of dollars that Alice and Carol have?	20 [dollars]
10	In a certain game, Jay starts with a stack of 50 bricks. He needs to make a stack of exactly 36 bricks. In each move, he can either add 4 bricks to his stack or take 6 bricks away from his stack. What is the smallest number of moves Jay can make to win his game?	4 [moves]

"Math is Cool" Masters – 1010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	What is 3 plus 7 plus 9 plus 5 plus 12?	36
2	There were forty identical pieces of candy in a box. Charlie ate three out of every four pieces of candy in the box. What percent of the candy did Charlie eat?	75 [%]
3	Bobby is 4 feet 5 inches tall. How many inches tall is Bobby?	53 [inches]
4	How many seconds are in a day?	86,400 [seconds]
5	Joe has pennies, dimes, and quarters in his pocket. These coins have a total value of one dollar and ten cents. If he has 15 pennies and 3 quarters, how many dimes does Joe have in his pocket?	2 [dimes]
6	There are five peacocks at the Sampson farm, and the Sampson family collects the feathers the birds lose. If each peacock loses 37 tail feathers every summer, how many summers will it take to collect 555 tail feathers?	3 [summers]
7	Sally went to the store and bought two items for an average of twenty dollars. If one item cost twenty-five dollars, what was the price in dollars of the other item?	15 [dollars]
8	A palindrome is a counting number that reads the same when its digits are reversed. A 3-digit palindrome is added to 250. What is the smallest possible sum that could result?	351
9	At 3 PM, Alice has no cookies, so she starts baking some. Alice bakes four dozen cookies each hour, and eats fifteen cookies each hour. At 6 PM, how many cookies does Alice have?	99 [cookies]
10	Mitchell's house is 48 miles away from school. When he was one-fourth of the way from his house to school he realized that he left his backpack at home, so he turned around to go get it before driving on to school. What is the total number of miles that Mitchell traveled?	72 [miles]

"Math is Cool" Masters – 1010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

COLLEGE KNOWLEDGE BOWL ROUND #4 - SET 4

#	Problem	Answer
1	Convert 80 percent to a reduced fraction.	4/5 [four-fifths or four over five]
2	How many days are there in the years two thousand eleven through two thousand fourteen combined?	1461 [days]
3	If you have 5 dimes, 27 pennies, and 3 quarters, how many **cents** do you have?	152 [cents]
4	Emily has 63 pieces of candy. She wants to share her candy with two of her friends. If she splits her candy evenly among her friends and herself, how many pieces of candy will each person get?	21 [pieces]
5	A watermelon weighs nine and a half pounds. How many ounces does the watermelon weigh?	152 [ounces]
6	What is 2 times 4 times 9?	72
7	What is the largest counting number that divides without remainder into 16, 24, 64, and 80?	8
8	My 12-hour digital clock shows hours and minutes, but not seconds. It is now just 3:25 PM, and the sum of the digits on my clock is 10. How many minutes will go by until the next time the sum of the digits on my clock is 10?	9 [minutes]
9	To write the reversal of a number, write the digits of the number in reverse order. For example, the reversal of ninety-two is twenty-nine. What is the sum of forty-three and its reversal?	77
10	A candle burns down at a steady rate of one-half inch per hour. The candle is lit at 5 PM, and at 8 PM it is four and a half inches tall. If it continues burning, at what time will the candle be half its original height?	11 PM

"Math is Cool" Masters – 1010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

COLLEGE KNOWLEDGE BOWL ROUND #5 - SET 5

#	Problem	Answer
1	A carnival at the Spokane Fairgrounds was open eight hours a day for four days. Each hour, five new people showed up. In all, how many new people showed up at the carnival?	160 [people]
2	Tanya wrote a book of her favorite math problems. She numbered the pages of her book, from page 1 through page 75. How many digits did Tanya write in numbering these pages?	141 [digits]
3	What is the name of a polygon that has half as many sides as a hexagon?	triangle
4	Jimmy needs to be in bed by 8 PM. To get ready for bed, it takes Jimmy 3 minutes to put his pajamas on, 4 minutes to brush his teeth, 7 minutes to pack his lunch for tomorrow, and 2 minutes to say good night to his mom and dad. What time does he need to start getting ready for bed to be finished by 8 PM ?	7:44 PM
5	What is the remainder when 236 is divided by 7?	5
6	Biff and Eho have the same secret counting number. When Biff multiples his secret number by itself and Eho multiplies his secret number by three, they get the same answer. What is Biff's secret counting number?	3
7	How many counting numbers less than one hundred are multiples of three and also multiples of seven?	4 [numbers]
8	A ream of paper is 500 sheets, and a full box holds 10 reams. If two and a half reams of paper have been removed from a full box, how many sheets of paper remain in the box?	3750 [sheets]
9	The digital product of a counting number is the product of its digits. What is the smallest 2-digit prime number whose digital product is even?	23
10	I have invented a new math operation called STAR. "X STAR Y" means to subtract the sum of X and Y from the product of X and Y. If "6 STAR Y" equals 29, what number does Y stand for?	7

"Math is Cool" Masters – 1010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

COLLEGE KNOWLEDGE BOWL ROUND #6 - SET 6

#	Problem	Answer
1	What is 20 plus 5 minus 7?	18
2	Emily goes to the store with ten dollars. She buys a candy bar for one dollar and twenty cents, and a soda for one dollar and fifty cents. In dollars, how much money will Emily have left after purchasing these items?	[$] 7.30
3	What is the product of 17 and 200?	3400
4	If the area of a square is 64 square centimeters, what is the number of centimeters in the perimeter of the square?	32 [cm]
5	What is one-fourth of 524?	131
6	Stephanie goes to the pet store to buy some fish. There are five tanks that each have ten fish. She buys five fish from one tank, three fish from another, and two fish from the next. After Stephanie takes her fish, the pet store splits the remaining fish evenly among the five tanks again. How many fish will then be in each tank?	8 [fish]
7	How many hours are in the month of June?	720 [hours]
8	Arthur works four math problems. Each problem takes one minute less than the problem before it. It took Arthur six minutes to work the second problem. How many minutes did it take Arthur to work all four problems?	22 [minutes]
9	If a 2-digit counting number is multiplied by a different 2-digit counting number, what is the largest possible number of digits in the product?	4 [digits]
10	At a certain math contest, each student takes three different tests. There are thirteen different tests being given at the contest. How many students must a school send to the contest so that at least two different students can take every test?	9 [students]

"Math is Cool" Masters – 1010-11

Sponsored by: Inland NW Section of American Chemical Society

4th Grade – May 21, 2011

COLLEGE KNOWLEDGE BOWL ROUND - EXTRA

#	Problem	Answer
1	It takes 15 **minutes** for Janet to bathe one dog. At this rate, how many **hours** will it take Janet to bathe eight dogs?	2 [hours]
2	Allen takes a test where each right answer gets five points but each wrong answer takes 2 points away from his total score. There are 10 questions on the test. Allen gets half of them right and half of them wrong. How many points does Allen score?	15 [points]
3	Find the smallest counting number by which I could multiply 45 to get a product greater than one thousand.	23

"Math is Cool" Masters – 2010-11

4th Grade – May 21, 2011

School Name_____Team #_____

Proctor Name_____Room #_____Division: _____

Final Score:

KEY

First Score

(out of 20)

Team Multiple Choice Contest – 15 minutes – 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.***

Correct responses are worth 2 points, incorrect responses are worth -1 point and no response is 0 points.

DO NOT WRITE IN SHADED REGIONS

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

"Math is Cool" Masters – 2010-11

4th Grade – May 21, 2011

School Name_____Team #_____

Proctor Name_____Room #_____Div: _____

Final Score:

KEY

First Score

(out of 10)

Team Contest – Score Sheet – 15 minutes – 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 a 1 or 0. Record all answers on the colored answer sheet.

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	$\frac{237}{1000}$		
2	5 [bottles]		
3	5		
4	32		
5	195 [min]		
6	10 [numbers]		
7	810 [min]		
8	DIN		
9	8		
10	[$] 4.70		

"Math is Cool" Masters -- 2010-11

KEY

4th Grade – May 21, 2011

School:_____Team #_____

Proctor: _____ Room #_____Div _____

RELAY # 1

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
119 [marbles]	**101**	**15**	**12 [buses]**
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
8 [sides]	**82 [cents]**	**64**	**[x=] 6**
1 or 0	1 or 0	1 or 0	2 or 0

"Math is Cool" Masters – 2010-11

4th Grade – May 21, 2011

School Name_____Team #_____

Proctor Name_____Room #_____Division: _____

Final Score:

First Score
(out of 20)

Team Multiple Choice Contest – 15 minutes – 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.***

Correct responses are worth 2 points, incorrect responses are worth -1 point and no response is 0 points.

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 – 2010-11

4th Grade – May 21, 2011

School Name_____Team #_____

Proctor Name_____Room #_____Div: _____

Final Score:

First Score
(out of 10)

Team Contest – Score Sheet – 15 minutes – 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 a 1 or 0. Record all answers on the 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			