"Math is Cool" Masters – 2013-14

May 17, 2014

Total Correct

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	90		
2	333		
3	94 [miles]		
4	2512		
5	5		
6	19,998		
7	[x=] 123		
8	1/16		
9	9 [mph]		
10	36 [inches]		
11	105		
12	350 [degrees]		
13	B		
14	56 [cm]		
15	-21		
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16	9 [cubes]		
17	[X=] 74 [deg]		
18	54 [ounces]		
19	38		
20	23		
21	22 [days]		
22	40 [kiwis]		
23	14 [pieces]		
24	24 [years]		
25	612 [percent]		
26	0		
27	5		
28	0 [cookies] [or equivalent answer such as "no more" or "same number"]		
29	0.3 or .3 [ounces]		
30	[X=] 30 [degrees]		
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31	[$] 3,477,173.40		
32	28		
33	$8\frac{7}{16}$ [gal]		
34	50 [dimes]		
35	252 [palindromes]		
36	9 [sums]		
37	E		
38	143		
39	1/4		
40	$\sqrt{5}, \sqrt{10}$ (either order)		
31-40 TOTAL:			

6th Grade

Total Correct

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May 17, 2014

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

"Math is Cool" Masters – 2013-14

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May 17, 2014

6th Grade Mental Math Contest

Follow along as your proctor reads these instructions to you. Your Mental Math score sheet is on the back.

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.*

Mental Math – 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score

You may NOT be seated next to anyone from your school. If you are MOVE NOW to avoid being disqualified! 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.*

"Math is Cool" Masters – 2013-14

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6th Grade – May 17, 2014

Mental Math Contest

Mental Math – 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score

You may NOT be seated next to anyone from your school. If you are MOVE NOW to avoid being disqualified! 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.*

#	Problem
1	If it will be midnight in sixty-six minutes, what time is it now? Be sure to include "AM" or "PM" with your answer.
2	If I double my money and then spend eighteen dollars, I will have seventy-four dollars. How many dollars did I have before doubling my money?
3	How many squares, each having a **perimeter** of 12 centimeters, can be cut from a square having a **perimeter** of 60 centimeters?
4	What is the smallest whole number greater than the sum of two-thirds, three-fourths, and four-fifths?
5	What is the smallest whole number you could multiply by the fraction "three-tenths" to get a product greater than ninety?
6	Sandy has two dollars and seventy-five cents, all in quarters. Chris has three dollars and twenty cents, all in nickels. How many more coins does Chris have than Sandy?
7	Today is May **seventeenth**, and **seventeen** is an odd number. Find the sum of all the odd-numbered days in May that are **after** today.
8	Subtract seventy-five percent of ninety-eight from two-hundred percent of fifty. If your answer is not a whole number, give it as a decimal.

"Math is Cool" Masters – 2013-14

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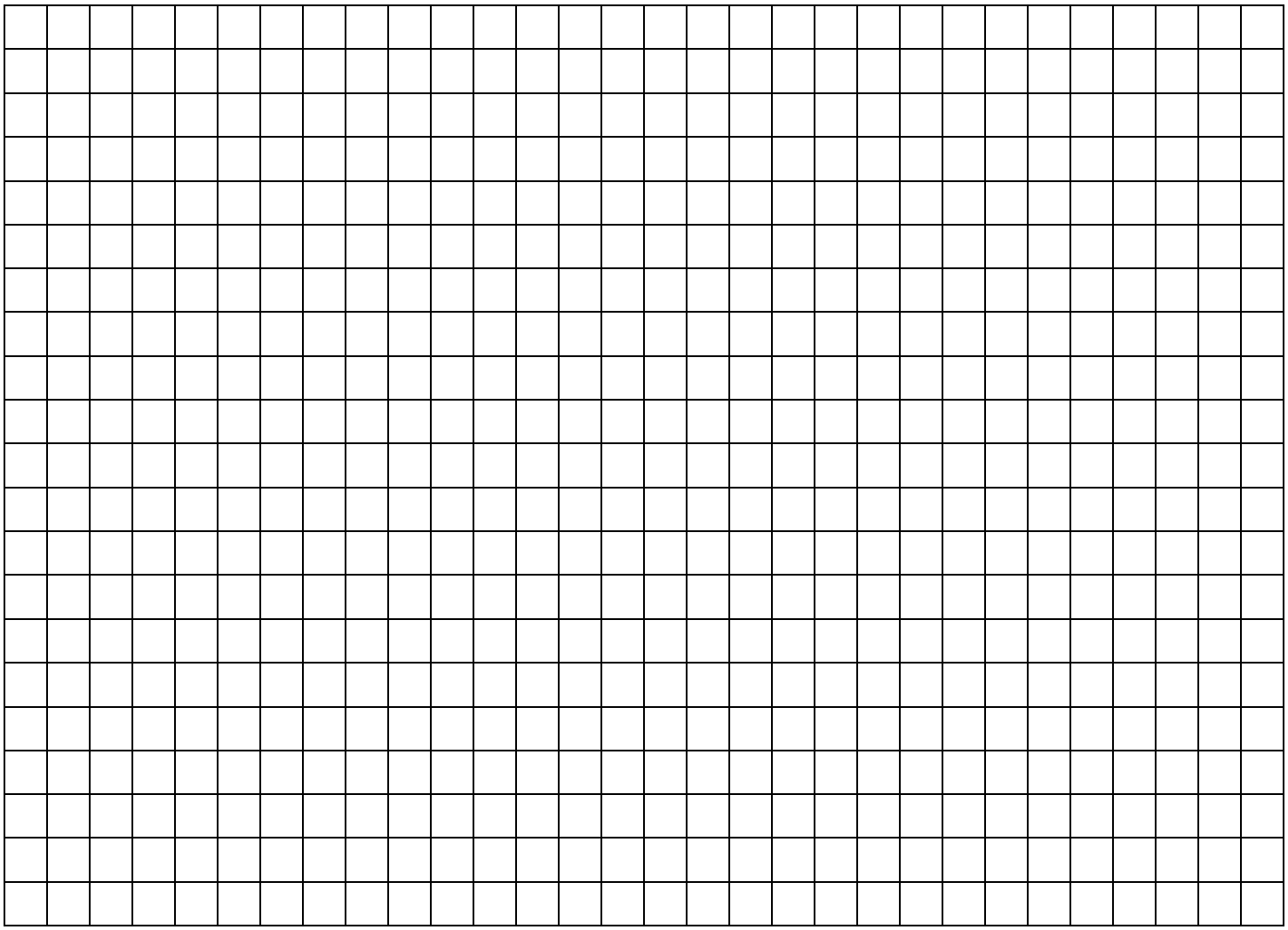
May 17, 2014

Individual Contest – 6th Grade

Tear this cover sheet and scratch paper off and fill out the top of the colored answer sheet prior to the start of the test. The graph below is for your use, if needed.

INDIVIDUAL TEST - 35 minutes

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.



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6th Grade – May 17, 2014

Individual Contest

Record all answers on the colored cover sheet.

	Questions 1-30: 2 points each
1	Lorie skip-counts backwards from 150 by 6, starting "150, 144, …", and so on. What is the largest multiple of 5 she will say that is less than 100?
2	I'm thinking of a counting number greater than 100. All its digits are the same. What is the smallest my number could be if it is a multiple of 9? (**NOTE**: A counting number is a whole number greater than zero; that is, 1, 2, 3, and so on.)
3	Ian drives on a highway from milepost 94 to milepost 36, then turns around and drives back to milepost 72. What is the total number of miles Ian drives?
4	Find the sum of all the odd counting numbers on the following list: 55.5 43 1/3 1970 -7 2,469
5	When the number of centimeters in 4.5 kilometers is expressed in scientific notation, what is the exponent of 10?
6	Find the value of the following sum: 7777 + 6666 + 5555 = ?
7	What is x if $7x - 103 = 4x + 266$?
8	What is one-eighth of 50%? Answer as a simplified (reduced) fraction.
9	Over the course of two days, Diane biked a total of 120 miles at 8 miles per hour. The next day, she biked three hours and covered 42 miles. Over the entire trip, what was her average speed in miles per hour of traveling time?
10	A square and a regular hexagon each have the same side length. A circle is inscribed in the square. If the area of the circle is 9π square inches, what is the perimeter of the **hexagon**, in inches?
11	What is the sum of the numbers in the arithmetic (addition) sequence 5, 10, 15 and so on, up through 30?
12	The clock on the classroom wall shows 4:20 PM. In degrees, what is the **larger** angle formed by the two hands of the clock?
13	Of the following three values, which is largest? GIVE YOUR ANSWER AS A LETTER (A, B, or C). A = 8/9 B = 90/101 C = 81/91
14	The area of a certain triangle is 490 square centimeters. If the base of the triangle is 17.5 cm, what is the triangle's height, in centimeters?
15	Find the value of the following expression when $x = 5$: $18x + 3 - 6(4x - 1)$
16	How many cubes of side length 3 units would it take for their total volume to be greater than the volume of a cube of side length 6 units?
17	The angles of a quadrilateral are X°, 52°, 2X°, and 86°. Find the value of X.
18	A rectangular blanket 2.5 feet by 21 inches weighs 1 pound 2 ounces. Another rectangular blanket of the same material and thickness is 4.5 feet by 35 inches. In OUNCES, how much does the larger blanket weigh?

19	Let **E** = number of edges, F = number of faces, **V** = number of vertices, and **D** = number of face diagonals. In reference to a cube, find the sum of these four values. (NOTE: A face diagonal is a diagonal drawn across a square face of the cube.)
20	If x is equal to 3.2, what is the value of $5x + 7$? If your answer is not a whole number, give it as a decimal.
21	It takes eight workers fourteen days to finish half of a job. For the second half of the job, they are joined by an additional six workers. If all workers work at the same constant rate, what is the TOTAL number of days it takes them to do the ENTIRE job?
22	Two kiwi fruits weigh the same as one plum. Five plums weigh the same as one orange. Three apples weigh the same as two oranges. How many kiwi fruits would it take to weigh the same as six apples? Assume that all fruits of the same type weigh the same.
23	Vivek has a sign saying "MATH IS COOL MASTERS". He cuts it up into pieces such that each piece has a single letter on it. He puts the pieces in a box, shuffles them up, and takes out pieces one at a time at random. How many pieces will he have to take out to be sure of getting 3 **different letters** that do not occur in the word "maths"?
24	Sherry is half as many years old as Paul. In 12 years, Sherry will be two-thirds as old as Paul. How many years old is Paul?
25	Last November, the price of limes was four for a dollar. In April, limes cost $1.78 each. What was the **percent increase** in their price over this time period?
26	The symbol ¶ between two numbers means to divide the smaller number into the larger and take the remainder to the next step. The value of the expression is the final remainder. Parentheses indicate order of operations, as usual. Find the value of the following expression: ((876 ¶22) ¶ (359 ¶ 17))
27	Mitchell adds a certain number to both the numerator and the denominator of the fraction three-fifths. The result is equivalent to four-fifths. What number did Mitchell add?
28	Chet and Donna each have some cookies. If Chet were to give Donna one-third of his cookies, then Donna would have twice as many cookies as Chet. If, instead, Donna were to give half her cookies to Chet, then Chet would have 3 times as many cookies as Donna. If they have between 10 and 40 cookies altogether and no cookies are given away, how many more cookies does Donna have than Chet?
29	A box of Aplets and Cotlets weighs 18.3 ounces. After 5/6 of the Aplets and Cotlets were eaten, the remaining Aplets and Cotlets (plus the box) weighed 3.3 ounces. How many ounces does the box weigh? Answer as a DECIMAL.
30	Biff's angle is X degrees greater than a straight angle. Eho's angle is X degrees less than a straight angle. If the degree measure of Biff's angle is 40% greater than that of Eho's angle, what is X?

Challenge Questions: 3 points each	
31	Bitcoins are magical internet money. In 2009, a Norwegian student named Kristoffer bought 5000 Bitcoins for a total of $26.60. In October 2013 (when the value of one Bitcoin reached $177.20), he sold 1/5 of his Bitcoins. By December 2013, the value of one Bitcoin rose to $1100, and then fell 25%. If Kristoffer had sold all his remaining Bitcoins after this fall in value, what would have been his total **profit** in dollars on all his Bitcoin transactions? (**Profit** is income minus expenses.)

32	Rita, Sara, and Tina all had the same secret number. Rita multiplied their secret number by 5 and then subtracted 4. Sara multiplied their secret number by 8 and then subtracted 10. They both got the same answer! If Tina multiplied their secret number by 17, what number would she have to subtract to get the same answer as Rita and Sara?
33	While visiting Vivian in Texas, Helen buys a 10-gallon cowboy hat. They want to see if it really holds 10 gallons. Helen pours water into the hat a rate of 5 cups per minute, while Vivian pours water into the hat at a rate of 4 cups per minute. After 3 minutes, the hat develops a leak, and leaks at the rate of 3 cups per minute. If it takes them 21 minutes in all to fill the hat, how many gallons of water does the hat hold? If your answer is not a whole number, give it as a simplified mixed number.
34	Roger has 27 standard U.S. coins worth a total of $2.65. No coin is worth more than 30¢ or less than 3¢. Sarah asked Tina, "How many dimes could Roger have?" Give **the SUM of all possible correct answers** to Sarah's question.
35	A palindrome is a counting number that reads the same backwards as it does forwards (like 121). How many 5-digit palindromes are there in which the digit "1" appears at least once? (Note: A 5-digit counting number cannot have 0 in the ten-thousands place.)
36	Zico added two distinct factors of 124 and wrote the sum. He continued until he had a list of all such sums. How many of the sums on his list are greater than 50?
37	Smaug can put his gold coins into either two groups, or three groups, or four groups, with a different **prime** number of coins in each group and no coins left over in each case. Which one or more of the following could NOT be the number of gold coins Smaug has? Your answer should be one or more letters (A through E), in any order. A = 90 B = 75 C = 60 D = 45 E = 30
38	Alison's number has 2 digits, both the same ("AA"), and Brad's number also has 2 digits, both the same ("BB"). When Alison's number and Brad's number are multiplied, the product is the 4-digit counting number 5??2, where each "?" stands for an unknown digit. What is the sum of AA and BB?
39	Charlie randomly chooses a 2-digit counting number less than 30, and finds the sum of its distinct factors. (For example, the distinct factors of 12 are 1, 2, 3, 4, 6, and 12, and their sum is 28.) What is the probability, as a reduced fraction, that Charlie's sum is 40 or greater?
40	A decimal approximation of the irrational number pi (π) is 3.14 (to the nearest hundredth). If you change the decimal to a slash, 3.14 becomes 3/14, which can be interpreted as the date March 14, and so March 14 is called "Pi Day". If the decimal approximation (to the nearest hundredth) of each of the following 5 irrational numbers is interpreted in this way, name all that could have a "Day" named after them: $\sqrt{5}, \sqrt{8}, \sqrt{9}, \sqrt{10}, \sqrt{12}$ (**NOTE**: If you are unfamiliar with the square root notation, you can think of √X as the side length of a square with area X.)

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6th Grade – May 17, 2014

Team Multiple Choice Contest

USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS #1-#3: **Slackers are hairy, green, slow-moving animals that live in trees. Different species of slacker are named by the number of toes they have on each foot — 2, 3, or 5. All slackers have four feet.**	
1	What is the smallest number of toes there could be in a group of 10 slackers, given that there are more 3-toed than 2-toed slackers in the group, and at least one 5-toed slacker? A) 96 B) 116 C) 112 D) 124 E) Answer not given.
2	A group of 2-toed slackers and 3-toed slackers (with at least one of each type) has 84 toes altogether. What is the smallest number of slackers there could be in the group? A) 10 B) 9 C) 8 D) 7 E) Answer not given.
3	In a group with at least one 2-toed, one 3-toed, and one 5-toed slacker, Anthony counts the toes on one foot of each animal. He gets a total of 28 toes. How many different numbers of slackers could there be in the group? A) 4 B) 5 C) 6 D) 7 E) Answer not given.
USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS #4-#6: **A cube of edge length 12 inches ("large") is cut into 27 smaller cubes ("medium-large"), nine of which are then cut into 8 cubes ("medium-small"). Then three of these medium-small cubes are each cut into 8 cubes of the smallest size ("small").**	
4	How many medium-small cubes would it take to equal the same volume as 3 cubes of the original large size? A) 108 B) 729 C) 324 D) 216 E) Answer not given.
5	After all of the cutting is finished, how many cubes of any size are there? A) 111 B) 124 C) 44 D) 123 E) Answer not given.
6	Fran stacks and glues a medium-small cube onto a medium-large cube. She then glues a small cube onto that structure. What could be the smallest total surface area in square inches of the final resulting structure? A) 116 B) 82 C) 73 D) 114 E) Answer not given.
USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS #7-#10: **Let A, B, and C represent three different counting numbers such that $\boldsymbol{A + B = C \times C}$, and the sum $\boldsymbol{(A + B)}$ is between 101 and 201.**	
7	How many possible values are there for the sum $(A + B)$? A) 2 B) 3 C) 4 D) 5 E) Answer not given.
8	If the product of A and B is 4959, what is the positive difference between A and B? A) 10 B) 20 C) 26 D) 30 E) Answer not given.
9	If C has the smallest **even** value possible, what is the difference between the largest and the smallest possible value of the product of A and B? A) 729 B) 504 C) 1599 D) 1482 E) Answer not given.
10	If C has the smallest **even** value possible and both A and B are prime numbers, how many possible values are there for the product of A and B? A) 0 B) 1 C) 2 D) 3 E) Answer not given.

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6th Grade – May 17, 2014

Team Contest

1	Norah has 87¢, Millie has 70¢, and Lawrence has 45¢. Each person has only a single type of standard U.S. coin, and no two people have the same type of coin. How many **coins** do they have altogether?
2	Professor Snape needs 250 milliliters of Montane Dewdrops to make his evil potion. If he has a bottle of Montane Dewdrops holding 1.75 liters, what reduced **fraction** of the bottle's contents will he need to use?
3	Alice multiplies $1\times2\times3\times4\times5\times6\times7\times8\times9\times10$. She then divides this product by 2, and gets a quotient with no remainder. Bob now divides Alice's quotient by 2 and gets a new quotient, also with no remainder. This continues, with each member of Alice's Math Club dividing the previous answer by 2, to get a quotient with no remainder, until the last member of the club divides and gets a quotient with remainder 1. How many members are in Alice's Math Club (including Alice and Bob)?
4	Sally wrote the number "856321". She then inserted a decimal point in this number to create a new number whose value is between the value of the fraction $\frac{913}{17}$ and the value of the fraction $\frac{1745}{3}$. What **whole counting number** is closest to the decimal number Sally created?
5	Mr. Johnson's class has 24 students and Mrs. Walker's class has 25 students. Each class will elect two representatives to the student council. How many more ways can this be done in Mrs. Walker's class than in Mr. Johnson's class?
6	I am thinking of a simplified fraction whose value is greater than one-fifth and less than two-thirds. The denominator of my fraction is 4 more than the numerator. What is the **lowest common denominator** of all the different fractions I could be thinking of?
7	A 12-hour digital clock shows hours and minutes, but not seconds. The sum of the digits showing on the clock now is 10. The next time the sum of the digits will be 10 is 32 minutes from now. What time is showing on my clock now? (Don't put AM or PM on your answer.)
8	My special Uneven Calculator subtracts 1 from every odd number entered, and adds 2 to every even number entered. It then correctly calculates with these changed numbers, and correctly displays the answer it gets. I enter and add two counting numbers, and the displayed sum is 10. How many different pairs of numbers could I have entered? (**NOTE**: Zero is not a counting number, and "A + B" is the same pair of numbers as "B + A".)
9	When two different 2-digit counting numbers are added together, the digital root of their sum is 4. What is the largest possible product of these two numbers? [**NOTE**: To find the digital root of a counting number, find the sum of its digits (digital sum). If this sum has 1 digit, it is the digital root. If not, find the digital sum of this sum, and so on, until you get a sum with only 1 digit; this final sum is the digital root.]
10	A perfect square number is the product of a counting number multiplied by itself. A birthday date can be written in the form "month/day", with no leading zeros for single-digit days (eg, September 8th would be 9/8, not 9/08). How many birthdays written in this form would produce a perfect square number if you ignore the slash? (For example, September 8th would produce 98, which is not a perfect square.)

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6th Grade – May 17, 2014

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	When X copies of the counting number X are multiplied together, the product is 27. What is X?	[X=] 3
Person 2	Two interior angles of a quadrilateral measure 89 degrees and 51 degrees. The degree measure of one of the remaining angles is TNYWG times the measure of the other remaining angle. What is the degree measure of the largest angle of this quadrilateral?	165 [degrees]
Person 3	What is the largest number of consecutive square numbers that can be added such that the sum is less than TNYWG? (**Note**: A square number is the product of a counting number multiplied by itself.)	7 [square numbers]
Person 4	One day, a violin street performer in Seattle played for TNYWG hours. In the first hour, he made only TNYWG dollars, but every hour after that, he made 11 more dollars per hour than the previous hour. How many dollars in all had he made after TNYWG hours?	280 [dollars]
	Relay #2	Answer
Person 1	A generous man with a hundred dollars first gives his granddaughter 20 dollars, and then gives 60 percent of what remains to his niece. How many dollars does the man now have left?	32 [dollars]
Person 2	What is the remainder when you divide the product of 117 x 343 by TNYWG?	3
Person 3	Find the total number of faces and edges of TNYWG separate (unattached) square pyramids.	39
Person 4	What is the sum of all distinct (different) factors that TNYWG has in common with 2808?	56

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6th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #1 – SET 1

#	Problem	Answer
1	What is the sum of the largest 3-digit counting number and the largest 4-digit counting number?	10,998
2	The product of the lengths in inches of two legs of a right triangle is thirty-eight. What is the number of square inches in the area of the triangle?	19 [sq inches]
3	Crispin has one hundred twenty-one apples to be put into crates. Every crate has between ten and one hundred apples. How many crates does Crispin need so that he could put the same number of apples into each crate?	11 [crates]
4	If I add three to four times my number, I get ninety-nine. What is my number?	24
5	Three sides of a pentagon have length five, four, and eight inches. The remaining sides are the same length. If the perimeter of the pentagon is twenty-nine inches, what is the length in inches of each remaining side?	6 [inches]
6	Joey rolls two cubical dice. The number showing on one of the dice is five. As a reduced fraction, what is the probability that the sum of the two dice is ten or greater?	1/3
7	A three-gallon bucket is filled with water. It leaks at the rate of one point five fluid ounces every five minutes. As a **mixed number of hours**, how long will it take for the bucket to empty?	twenty-one & one-third [hours]
8	How many stacks of ten pennies each would it take to equal the value of thirty-two stacks of ten quarters each?	800 [stacks]
9	Jackie Chan is counting his enemies. He notices that if they are grouped in threes or in fives, there is one left over. But if they are grouped in sevens, there are four left over. What is the smallest number of enemies Jackie could have?	46 (foes)
10	Today is the seventeenth day of the month, which is an odd-numbered day. On a calendar for a 365-day year, how many of the days-of-the-month are odd-numbered?	186 [days]

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6th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #2 – SET 2

#	Problem	Answer
1	What is the remainder when the product of twenty-four and five is divided by 7?	1
2	Name all of the following shapes that are quadrilaterals: rhombus, cube, circle, trapezoid, decagon	rhombus, trapezoid [in any order]
3	If one-third of my number is twelve, what is three-fourths of my number?	27
4	Jane randomly draws two cards from a standard deck without replacement. Is the probability that she draws one red card and one black card MORE than one-half, LESS than one-half, or EQUAL to one-half?	more than [one-half]
5	If it is now forty-two minutes before noon, what time will it be in seventy-three minutes? Be sure to include "AM" or "PM" with your answer.	12:31 PM
6	A unit fraction is a fraction whose numerator is one. What unit fraction is closest to twenty-nine percent?	1/4
7	Bonnie Baker bakes four cakes, all the same size. Bonnie eats three-fourths of a cake, Connie eats three-eighths of a cake, and Donnie eats nine-eighths of a cake. As a **decimal**, how many cakes are left?	1.75 [cakes]
8	Find the missing term that goes in the blank for the following number pattern: seven, twenty-two, sixty-seven, BLANK, six-hundred seven, and so on	202
9	Subtract the number formed by reversing the digits of five hundred-sixty-four from the number formed by reversing the digits of nine-hundred-twenty-seven.	264
10	When I multiply two different prime numbers together, their product is less than one hundred. The ones-place digit of their product is five. How many different pairs of numbers could I have multiplied? [Count "A times B" and "B times A" as the same pair of numbers.]	6 [pairs]

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6th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	If three skunks are worth the same as one trunk, how many skunks are worth the same as sixty-three trunks?	189 [skunks]
2	What is one-hundred percent **of** two-hundred percent **of** seventeen?	34
3	Convert the decimal "two point five" to a reduced improper fraction.	five-halves OR five over two
4	If this month is May, what month will it be two-thirds of a decade from now?	January
5	John writes one math problem every three minutes, while Karen writes one math problem every minute. After an hour, how many more problems has Karen written than John?	40 [problems]
6	What is the **product** of the least common multiple and the greatest common factor of twenty-four and fifteen?	360
7	Jinglin is thirteen years old, and Kim is twice Jinglin's age. In how many years will the sum of their ages be ninety-five years?	28 [years]
8	Dora makes a cake in a square cake pan that is eight inches on a side. She cuts the cake into square pieces each two inches on a side. If, instead, she had cut the cake into square pieces one inch on a side, how many **more** pieces would she have gotten?	48 [pieces]
9	When a certain counting number "X "is raised to the power of "X plus two", the result is two hundred forty-three. What is X?	[X=] 3
10	How many **seconds** does it take to travel eight miles at ninety miles an hour?	320 [seconds]

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6th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #4 – SET 4

#	Problem	Answer
1	Each of Elaine's pencils is one-twelfth of a **yard** long. If she lays them all end-to-end, the line of pencils would be five **feet** long. How many pencils does Elaine have?	20 [pencils]
2	How many centimeters are there in five hundred ten meters?	51,000 [cm]
3	Find the sum of negative fourteen, negative eight, and twenty-five.	3
4	Jamie's lucky number is a factor of twenty-four and a multiple of four. What is the **SUM** of all the numbers Jamie's lucky number could be?	48
5	There are six gummy bears and some gummy worms in a bag. If I take out one gummy thing at random, the probability that it will be a gummy worm is two-thirds. Altogether, how many gummy things are in the bag?	18 [gummy things]
6	The hour and minute hands of a broken watch move at the correct speed, but backwards (that is, counterclockwise). If the watch is set to the correct time at midnight, what is the actual time when the broken watch first shows a time of 8:30? Include "AM" or "PM" with your answer.	3:30 AM
7	Three-sevenths of the students on Math Team are boys. If there are thirty-five students on Math Team, how many team members are **girls**?	20 [team members]
8	Alice and Bob each picked some cherries. If Alice would pick seventy-three more cherries, she would have one hundred sixteen. If Bob ate seventy-three of his cherries, he would have eighty-four left. What was the total number of cherries Alice and Bob had originally?	200 [cherries]
9	Daisy is picking flowers, which can be classified as monocots or dicots. Monocots have three petals on each flower, and dicots have five petals on each flower. After picking nineteen flowers, Daisy has seventy-nine petals. How many of Daisy's flowers are monocots?	8 (flowers)
10	If six chickens can lay twenty-four eggs in two days, how many chickens would it take to lay seventy-two eggs in one day?	36 [chickens]

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6th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #5 – SET 5

#	Problem	Answer
1	How many seconds are in fifty-nine minutes?	3540 [seconds]
2	All the angles of a certain **right** triangle have degree measures that are whole numbers. What is the largest possible degree measure of the second-largest angle of this triangle?	89 [degrees]
3	A math team has fourteen student members and a **really good** coach, who brought them a bag of cookies. After each team member takes seven cookies, there are eleven cookies left. How many DOZEN cookies were in the bag to start with? Answer as a MIXED NUMBER.	nine and one-twelfth [dozen cookies]
4	Apples cost fifty-eight cents each and bananas cost twenty-seven cents each. How many **CENTS** does it cost to buy six apples and three bananas?	429 [cents]
5	When forty thousand is divided by one-eighth, what is the quotient?	320,000 [three hundred twenty thousand]
6	Colin's favorite number is a prime number. When he multiples his favorite number by itself, how many different factors does the resulting product have?	3 [factors]
7	Put the following three values in order from smallest to greatest. Your answer should be three letters in the correct order. A = the number of minutes in a week B = the number of meters in a mile C = the number of hours in a year	BCA
8	Find the area in square centimeters of the smallest rectangle in which I could draw two congruent circles of radius three centimeters with no overlap.	72 [sq cm]
9	Joel is stacking apples in such a way that every apple sits on top of four other apples. If the top level has one apple, and there are five levels, how many total apples are there?	55 [apples]
10	A hollow cube eight inches on an edge is filled with water to a depth of five inches. In cubic inches, what is the volume of additional water that would be needed to bring the depth of water to six and a half inches?	96 [cubic inches]

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6th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #6 – SET 6

#	Problem	Answer
1	Miya drew a regular polygon with perimeter one-hundred seventy-seven inches. If each side was between fifty and sixty inches long, how many sides did her polygon have?	3 [sides]
2	When Harold arrives at the grizzly bear pen at 12:30 PM, he sees that there are two different bears in the pen. After fifteen minutes, and every fifteen minutes after that, another bear walks into the pen. How many bears did Harold see by the time he left at 1:50 PM?	7 [bears]
3	What is the sum of all the different **odd** factors of sixty?	24
4	The point (negative two COMMA negative four) will be in which quadrant of a coordinate plane?	3 or third
5	It takes Gene five minutes to work a math problem and eight minutes to read three pages of his history book. At these rates, how many minutes would it take him to work three math problems and read fifteen pages of his history book?	55 [minutes]
6	I am thinking of a counting number with two digits, both **even**. The product of the digits is less than ten. What is the largest my number could be?	80
7	What is the degree measure of each interior angle of a regular hexagon?	120 [degrees]
8	How many cups are in three pints plus two quarts plus one gallon?	30 [cups]
9	Biff multiplies four copies of the number seven together, and Eho multiples four copies of the number eight together. They then multiply their two answers. What is the ones-place digit of the product of their two answers?	6
10	If four more than **my** number is 15 less than **your** number, and six more than **your** number is thirty-eight, what is four less than **my** number?	9

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COLLEGE KNOWLEDGE BOWL ROUND – EXTRA

#	Problem	Answer
1	What is the sum of the composite numbers less than ten?	27
2	How many faces does a triangular pyramid have?	4 [faces]
3	What is the sum of all different counting numbers less than twenty that will divide into 2014 with no remainder?	22

Final Score:

KEY

(Out of 8)

"Math is Cool" Masters -- 2013-14

School:_____ Room # _____ Team #_____

Name: _____Proctor: _____

6th Grade **Mental Math** – 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score

You may NOT be seated next to anyone from your school. If you are MOVE NOW to avoid being disqualified! 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.*

	Answer	1 or 0	1 or 0
1	10:54 PM		
2	[$] 46		
3	25 [squares]		
4	3		
5	301		
6	53 [coins]		
7	175		
8	26.5		

"Math is Cool" Masters – 2013-14

6th Grade – May 17, 2014

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	C		
2	C		
3	C		
4	E [648]		
5	A		
6	D		
7	C		
8	D		
9	E [728]		
10	D		

"Math is Cool" Masters – 2013-14

6th Grade – May 17, 2014

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	103 [coins]		
2	1/7		
3	9 [members]		
4	86		
5	24 [ways]		
6	693		
7	7:30 [AM or PM unnecessary, and wrong]		
8	8 [pairs]		
9	9312		
10	15 [birthdays]		

"Math is Cool" Masters -- 2013-14

KEY

6th Grade – May 17, 2014

School:_____Team #_____

Proctor: _____ Room #_____Div _____

RELAY # 1

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
[x=] 3	**165 [deg]**	**7 [square numbers]**	**280 [dollars]**
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
32 [dollars]	**3**	**39**	**56**
1 or 0	1 or 0	1 or 0	2 or 0

Final Score:

(Out of 8)

"Math is Cool" Masters -- 2013-14

School:_____ Room # _____ Team #_____

Name: _____Proctor: _____

6th Grade **Mental Math** – 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score

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

"Math is Cool" Masters – 2013-14

6th Grade – May 17, 2014

School Name____ _____Team #_____

Proctor Name_____Room #_____Division: _____

Final Score:

First Score
(out of 20)

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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 – 2013-14

6th Grade – May 17, 2014

School Name_____Team #_____

Proctor Name_____Room #_____Div: _____

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First Score
(out of 10)

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DO NOT WRITE IN SHADED REGIONS

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