"Math is Cool" Masters – 2013-14

May 17, 2014

Total Correct

KEY

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

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

5th Grade Individual Contest – Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	482		
2	90		
3	333		
4	49		
5	2 [numbers]		
6	11,110		
7	14 [pieces]		
8	$52\frac{1}{2}$		
9	ABCD		
10	1/16		
11	18 [hours]		
12	105		
13	75 [degrees]		
14	11 [tablets]		
15	56 [cm]		
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16	5 [cubes]		
17	33 [bites]		
18	110 [widgets]		
19	54 [ounces]		
20	3 [inches]		
21	16.8 [inches]		
22	189		
23	[X=] 127		
24	[$] 23		
25	419		
26	40 [kiwis]		
27	14 [pieces]		
28	24 [years]		
29	270 [miles]		
30	[$]3,300,000 **or** [$]3,300,000.00		
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31	0.3 or .3 [ounces]		
32	2		
33	$8\frac{7}{16}$ [gal]		
34	2, 6, 10, 14, 18 [dimes] [any **TWO** of these answers needed]		
35	90 [palindromes]		
36	0 [cookies] [or equivalent answer such as "no more" or "same number"]		
37	64		
38	E		
39	143		
40	1/4		
31-40 TOTAL:			

5th Grade

Total Correct

"Math is Cool" Masters – 2013-14

May 17, 2014

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

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

5th 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:			

5th Grade

"Math is Cool" Masters – 2013-14

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May 17, 2014

5th 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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5th 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 three tangerines weigh the same as one apple, how many tangerines will it take to weigh the same as six apples?
2	What is the smallest whole number you could multiply by seven to get a product greater than ninety?
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	Sandy has two dollars and seventy-five cents, all in quarters. Chris has the same amount of money, all in nickels. How many more coins does Chris have than Sandy?
6	If it will be midnight in seventy-six minutes, what time is it now? Be sure to include "AM" or "PM" with your answer.
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	I am thinking of a simplified fraction whose value is between one-fourth and one-half. The denominator of my fraction is 6 more than the numerator. What is my fraction?

“Math is Cool” Masters – 2013-14

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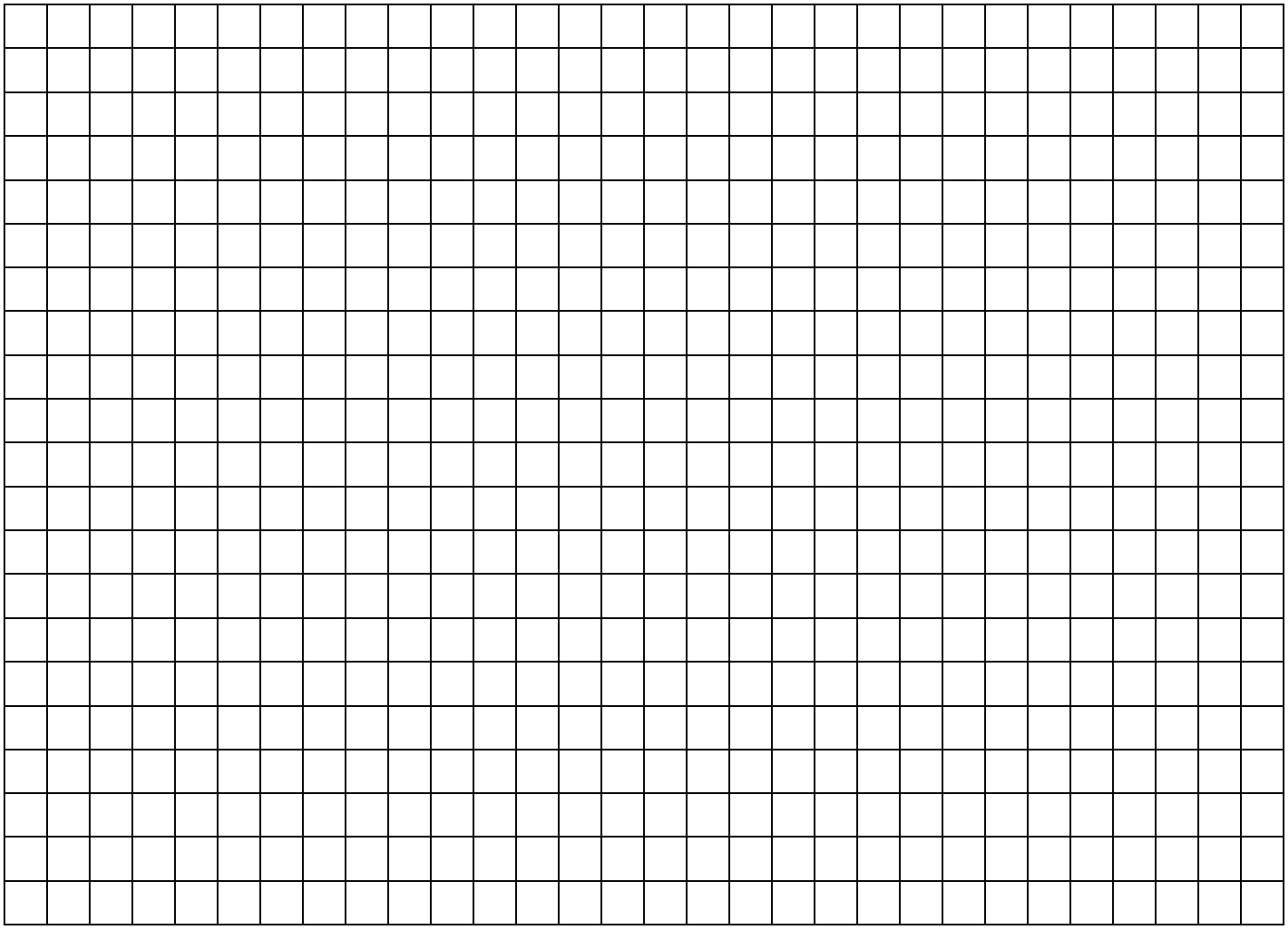
May 17, 2014

Individual Contest – 5th 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.



"Math is Cool" Masters – 2013-14

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5th Grade – May 17, 2014

Individual Contest

Record all answers on the colored cover sheet.

	Questions 1-30: 2 points each
1	What number would you have to add to **half** of 730 to get a sum of 847?
2	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?
3	I'm thinking of a counting number greater than 100. All its digits are the same. When my number is divided by 9, there is no remainder. What is the smallest my number could be? (**NOTE**: A counting number is a whole number greater than zero; that is, 1, 2, 3, and so on.)
4	On a number line, point A is halfway between 4 and 28, and point B is halfway between point A and 52. What number is halfway between point B and 64?
5	How many numbers on the following list are odd counting numbers? 55.5 43 1/3 1970 -7 2,469
6	Find the value of the following sum: 7777 + 2222 + 1111 = ?
7	There were eight pieces of paper in a wastebasket. Marcy took out two of the pieces of paper and tore each of them into four pieces, then threw all these pieces back into the wastebasket. How many pieces of paper were then in the wastebasket?
8	Find the sum of 5.875, 14.375, and 32.25, and express your answer as a **mixed number**.
9	Put the following four values (A through D) in order of increasing size (smallest first). Your answer should consist of four letters in the correct order. A = 78% B = $\frac{4}{5}$ C = 0.888… D = $\frac{9}{10}$
10	What is 50% of one-eighth? Answer as a simplified (reduced) fraction.
11	Over the course of two days, Diane biked a total of 120 miles at 8 miles per hour. The next day, she biked 42 miles at 14 miles per hour. How many hours did she spend biking for the entire trip?
12	What is the sum of the numbers in the arithmetic (addition) sequence 5, 10, 15 and so on, up through 30?
13	The clock on the classroom wall shows 3:30. In degrees, what is the smaller angle between the two hands of the clock?
14	The vet prescribed some medicine for our cat Kippy. The directions on the bottle say, "Give 1/2 tablet every 12 hours for 7 days, and then for days 8 through 14, give 1/2 tablet every 24 hours." If we give the first dose at 8 AM, what is the smallest number of whole tablets there must be in the bottle so we can follow these directions?
15	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?
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 5 units?

17	Bonnie Baker baked several batches of Brownie Bites, with a dozen Brownie Bites in each batch. As soon as the first batch was ready, Bonnie ate eight of them. For each later batch, she ate half as many as she ate from the previous batch, so that for the last batch, she ate only one. How many Brownie Bites did Bonnie have left?
18	Sam worked for an hour, making three widgets every two minutes. Tim joined Sam for the last quarter of the hour, making four widgets every three minutes. How many widgets did they make altogether?
19	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?
20	Last week it rained 3 inches on Monday, 2 inches on Wednesday, 5 inches on Thursday, 0 inches on Friday, and the same total number of inches on Saturday and Sunday as on Monday and Tuesday combined. Tuesday's rainfall was the average (mean) of that on Monday and Thursday. What was the average (mean) number of inches of rainfall per day for last week? If your answer is not a whole number, give it as a mixed number.
21	Kippy the cat jumped from the floor to the top of a stack of books 2.2 feet high, then from there to the back of a sofa 3.6 feet high. What was the height of her second jump? Answer as a **decimal number of INCHES**.
22	When you add the digits of a counting number together, the sum you get is called the "digital sum". What is the smallest 3-digit counting number whose digital sum is greater than seventeen?
23	When the sum of 86 and X is divided by 11, the quotient is 19, and the remainder is 4. What is X?
24	Jake had $3.20 in savings on March 1st. By the end of March, the amount of his savings was five times what it was on March 1st. During April, he added $7 to his savings. What was the value in dollars of Jake's savings at the end of April?
25	Ariana adds "14 + 14 + 14 + …", and so on until she gets a sum greater than 200. Bill adds "13 + 15 + 13 + 15 + …", and so on until he gets a sum greater than 200. What is the sum of Ariana's sum and Bill's sum?
26	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.
27	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"?
28	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?
29	Roger and Susan start on a trip at the same time, driving separately. Roger drives 54 miles per hour, and Susan drives 63 miles per hour. When Susan is 45 miles ahead of Roger, how many miles has Roger driven?
30	Bitcoins are magical internet money. In 2009, a Norwegian student named Kristoffer bought 5000 Bitcoins for a total of $26.60. In October 2013, he sold 1/5 of his Bitcoins. By December 2013, the value of one Bitcoin rose to $1100, and then fell 25%. What was the value in dollars of Kristoffer's remaining Bitcoins after this fall in value?

Challenge Questions: 3 points each	
31	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.
32	Biff and Eho had the same secret number. Biff multiplied their secret number by 5 and then subtracted 4. Eho multiplied their secret number by 8 and then subtracted 10. They both got the same answer! What is their secret number?
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 $3.65. No coin is worth more than 30¢ or less than 3¢. How many dimes could Roger have? (NOTE: There are several possible answers, but you only need to give TWO correct answers.)
35	A palindrome is a counting number that reads the same backwards as it does forwards (like 121). How many 4-digit palindromes are there? (Note: A 4-digit counting number cannot have 0 in the thousands place.)
36	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?
37	Zico added two distinct (different) factors of 124 and wrote the sum. He continued until he had a list of all such sums. When this list is put in numerical order, what is the median value?
38	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
39	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?
40	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?

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5th Grade – May 17, 2014

Team Multiple Choice Contest

USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS #1-#3: **Louisa gives bags of gummy bears to her best friend Eliza. The first bag she gives Eliza has 3 gummy bears, the second bag has 9 gummy bears, and in each later bag there are triple the number in the previous bag.**	
1	How many more gummy bears are there in the third bag than in the second bag? A) 81 B) 54 C) 27 D) 18 E) Answer not given.
2	Eliza just received the first bag that has more than a hundred gummy bears in it. How many gummy bears did it contain? A) 243 B) 300 C) 729 D) 102 E) Answer not given.
3	What is the smallest number of **bags** Eliza could have received if she got more than 1000 gummy bears in all from Louisa? A) 5 B) 6 C) 7 D) 333 E) Answer not given.
USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS #4-#7: **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.**	
4	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 no 5-toed slackers? A) 26 B) 96 C) 100 D) 104 E) Answer not given.
5	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.
6	A group of 2-toed, 3-toed, and 5-toed slackers had 13 heads and 192 toes altogether. If there was exactly one 3-toed slacker in the group, how many 5-toed slackers were there? A) 8 B) 7 C) 6 D) 5 E) Answer not given.
7	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 #8-#10: **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").**	
8	How many medium-small cubes would it take to equal the same volume as one cube of the original large size? A) 27 B) 216 C) 64 D) 36 E) Answer not given.
9	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.
10	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.

"Math is Cool" Masters – 2013-14

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5th Grade – May 17, 2014

Team Contest

1	When Pat measures one side of a rectangle of area 105 square inches, he finds that it is 5 inches. How many inches greater is the total length of the two long sides of the rectangle than the total length of the two short sides?
2	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?
3	Miss Moroney wrote the following equation on the whiteboard: 18 + [] = 44 – [] If the same number goes in each box [], what number should it be?
4	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)?
5	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?
6	Laura writes the following digits in a row: **1 2 3 4 5 6**. She then inserts one multiplication symbol somewhere in the row between two digits, to make a multiplication problem (eg, 12 X 3456 is one problem she could make). What is the largest possible product of any problem she could make?
7	My mystery fraction is fully simplified (reduced), and has a value more than one-fifth but less than one. The sum of its numerator and denominator is 10. The sum of the numerator and denominator of an equivalent, unsimplified fraction is 80. What is the denominator of this unsimplified fraction?
8	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.)
9	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".)
10	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.]

"Math is Cool" Masters – 2013-14

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5th 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	What is 984 minus 791?	193
Person 2	Find the number of **even** counting numbers between TNYWG and 211, and add this number to TNYWG.	202
Person 3	Add TNYWG to the **sum** of the average (mean) and the mode of the following collection of values: (13, 15, 17, 11, 9, 13).	228
Person 4	Find the sum of all prime numbers between 10 and 20, and subtract this sum from TNYWG.	168
	Relay #2	**Answer**
Person 1	Lucy is counting up by 17, starting "320, 337,…", and so on. What is the third **odd** number she will say?	405
Person 2	Find the tenths-place digit when TNYWG is divided by the quotient of (51 ÷ 3).	8
Person 3	When the fraction "TNYWG over 36" is fully reduced, what is the sum of the numerator and the denominator?	11
Person 4	Given that 4 is the 1st (smallest) composite number, what is the (TNYWG)th composite number?	20

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5th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #1 – SET 1

#	Problem	Answer
1	Baby Margaret is two-thirds of a year plus seven months old. How many months old is Baby Margaret?	15 [months]
2	Ian had twelve **dozen** apples. After he ate thirteen apples, how many apples did Ian have left?	131 [apples]
3	What is the sum of the smallest 3-digit counting number and the largest 3-digit counting number?	1099
4	If the students in a class can be divided into groups of two, four, or six students with nobody left over in any case, what is the smallest number of students there could be in the class?	12 [students]
5	If half my number is twenty-two, what is three times my number?	132
6	Four sides of a pentagon have length five, four, nine, and seven inches. If the perimeter of the pentagon is thirty-one inches, what is the length in inches of the fifth side?	6 [inches]
7	Joey rolled three standard cubical dice and added up the numbers showing on the top faces. How many different sums are possible?	16 [sums]
8	Amy left her house at 2:37 PM and returned at 7:12 PM the same day. How many **minutes** was she gone?	275 [minutes]
9	Two **odd** numbers are selected at random from the counting numbers less than twenty. If they are added together, what is the probability that the sum will be odd?	0 [or impossible]
10	How many stacks of ten pennies each would it take to equal the combined value of thirty-two stacks of ten quarters each and six stacks of five nickels each?	815 [stacks]

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5th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #2 – SET 2

#	Problem	Answer
1	What time will it be eighty-eight minutes after noon? Be sure to include "AM" or "PM" with your answer.	1:28 PM
2	What is the remainder when the product of twenty-four and five is divided by 7?	1
3	Name all of the following shapes that are quadrilaterals: decagon, circle, trapezoid, rectangle, octagon	trapezoid, rectangle [in any order]
4	If one-third of my number is twelve, what is one-fourth of my number?	9
5	Sally can read forty-two pages of a book in an hour. At this rate, how many hours would it take her to finish reading a book with five-hundred forty-six pages?	13 [hours]
6	A unit fraction is a fraction whose numerator is one. What unit fraction is closest to twenty-three percent?	1/4
7	An overweight comedian joked that his weight at birth was "seven pounds and eight hundred ounces". What would this weight be in pounds?	57 [pounds]
8	Subtract four-hundred sixty-five from the number formed by reversing the digits of nine-hundred-twenty-seven.	264
9	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 simplified **mixed number**, how many cakes are left?	1 3/4 [cakes]
10	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

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5th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	What day of the week will it be seventy-five days after Saturday?	Thursday
2	For the following number, say the names of the **digits** in order from left to right: "two million eighty thousand, six hundred seventy"	two, zero, eight, zero, six, seven, zero
3	Every year, Leon's family holds a reunion celebration that lasts six days, during which they exchange gifts. At this year's reunion, Leon got at least one gift each day. If he got a total of twelve gifts, what is the largest number of gifts he could have received in one day?	7 [gifts]
4	Convert the decimal "two point five" to a reduced improper fraction.	five-halves OR five over two
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	Find the **sum** of the median and the mode of the following collection of values: two, four, eight, two, six	6
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	When I open the book I am reading, the sum of the two page numbers facing me is one hundred thirty-three. What is the larger of these two page numbers?	[page #] 67
9	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]
10	How many **seconds** does it take to travel five miles at ninety miles per hour?	200 [seconds]

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5th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #4 – SET 4

#	Problem	Answer
1	Each of Elaine's pencils is three inches 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	The sum of twice my number and half my number is thirty. What is my number?	12
3	In describing a cube, which one of the following words means the same as "corner"? EDGE ANGLE VERTEX FACE DIAGONAL	vertex
4	Find the product of the five smallest counting numbers.	120
5	How many centimeters are there in five hundred ten meters?	51,000 [cm]
6	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 one-third. How many gummy worms are in the bag?	3 [gummy worms]
7	Jamie's lucky number is a factor of twenty-four and a multiple of three. What is the largest Jamie's lucky number could be?	24
8	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
9	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]
10	Three-sevenths of the students on the Columbia Math Team are fourth graders, and the rest of the students are equally split between fifth graders and sixth graders. If there are forty-two students on the Columbia Math Team, how many of them are fifth graders?	12 [students]

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5th Grade – May 17, 2014

COLLEGE KNOWLEDGE BOWL ROUND #5 – SET 5

#	Problem	Answer
1	How many seconds are in nine minutes?	540 [seconds]
2	When forty thousand is divided by two hundred, what is the quotient?	200
3	Carol doubles all the digits of the year two thousand fourteen. What is the least number of years after two thousand fourteen in which a year will occur that uses all four of these **new** digits?	34 [years]
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	A palindrome is a counting number that remains the same when its digits are reversed. I'm thinking of a 3-digit palindrome. If the middle digit is the same as the product of all its digits, what is the largest my number could be?	191
6	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 cookies were in the bag to start with?	109 [cookies]
7	Colin's favorite number is an odd prime number. When he doubles his favorite number, how many different factors will this new number have?	4 [factors]
8	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 yards in a mile C = the number of hours in a year	BCA
9	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]
10	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 four levels, how many total apples are there?	30 [apples]

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5th 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	Fifty thousands is equal to how many hundreds?	500 [hundreds]
3	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]
4	What is the largest **odd** counting number that will divide into eighty-four with no remainder?	21
5	A rectangle is twice as long as it is wide, and its area is a whole number of square meters. If one side length of the rectangle is three meters, what is its area, in square meters?	18 [sq meters]
6	It takes Gene eight minutes to read three pages of his history book. At this rate, how many minutes would it take him to read fifteen pages of his history book?	40 [minutes]
7	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
8	How many cups are in three pints plus two quarts plus one gallon?	30 [cups]
9	When four copies of the number seven are multiplied together, what is the ones-place digit of the product?	1
10	If **my** number is 15 less than **your** number, and six more than **your** number is thirty-eight, what is four less than **my** number?	13

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COLLEGE KNOWLEDGE BOWL ROUND – EXTRA

#	Problem	Answer
1	What is HALF of HALF of HALF of seventy-two?	9
2	If Biff's counting number is less than ten but greater than seven, and Eho's counting number is less than eighteen but greater than twelve, what is the least possible product of their numbers?	104
3	What is the sum of the composite numbers less than ten?	27

Final Score:

KEY

(Out of 8)

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School:_____ Room # _____ Team #_____

Name: _____Proctor: _____

5th 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	18 [tangerines]		
2	13		
3	25 [squares]		
4	3		
5	44 [coins]		
6	10:44 PM		
7	175		
8	5/11		

"Math is Cool" Masters – 2013-14

5th 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	D		
2	A		
3	B		
4	D		
5	C		
6	B		
7	C		
8	B		
9	A		
10	D		

"Math is Cool" Masters – 2013-14

5th 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	32 [inches]		
2	103 [coins]		
3	13		
4	9 [members]		
5	86		
6	74070		
7	56		
8	7:30 [AM or PM unnecessary, and wrong]		
9	8 [pairs]		
10	9312		

"Math is Cool" Masters -- 2013-14

KEY

5th 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
193	**202**	**228**	**168**
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
405	**8**	**11**	**20**
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: _____

5th 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			
2			
3			
4			
5			
6			
7			
8			

"Math is Cool" Masters – 2013-14

5th Grade – May 17, 2014

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.***

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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

5th Grade – May 17, 2014

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			