"Math is Cool" Masters – 2016-17

May 20, 2017

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	49		
2	4 [cans]		
3	5 [cookies]		
4	975 [candies]		
5	1/8		
6	25		
7	41		
8	25%		
9	8 [primes]		
10	256 [m^2]		
11	12 [inches]		
12	5/2 [bottles]		
13	52		
14	[$] 30 [dollars]		
15	16 [books]		
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16	424 [minutes]		
17	19		
18	169		
19	21 [years old]		
20	21		
21	5 [miles]		
22	9 [inches]		
23	12 [times]		
24	18 [inches]		
25	64 [in^3]		
26	97 [degrees]		
27	10 [ways]		
28	1/2		
29	7		
30	169π [ft^2]		
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31	12 [donuts]		
32	08/15/17		
33	49 [stamps]		
34	29		
35	60 [options]		
36	5/12		
37	15,840 [minutes]		
38	186 [orders]		
39	208 [$yards^2$]		
40	1500 [children]		
31-40 TOTAL:			

5th Grade

Total Correct

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May 20, 2017

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

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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 <u>all</u> 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.*

<u>Mental Math</u> – 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.*

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5th Grade – May 20, 2017

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	Phil is rolling a standard six-sided die. What is the probability that he rolls a 5?
2	What is the range of the data set, nine [PAUSE], twenty-seven [PAUSE], seventeen [PAUSE], five [PAUSE], nineteen?
3	Mildred buys a bag of thirty candies for herself and her five girlfriends. If each of them gets an equal amount of candy, how many pieces does each girl get?
4	Gary's English homework is to finish twenty percent of a novel. If the book has five hundred pages, how many pages does he need to read?
5	Hex has a big, pretty garden. The dimensions of the rectangular garden are twelve feet by twenty-five feet. What is the perimeter, in feet, of Hex's garden?
6	Grace has divided all her money evenly into two containers. Then, she decides to give 42 of her dollars away to her mom. Now, she only has 8 dollars total left. How many dollars did Grace originally have in one container?
7	As a reduced fraction, what is the sum of one fourth and one sixteenth?
8	Jane has three skirts, five shirts, and seven pairs of socks. If an outfit is comprised of a shirt, a skirt, and a pair of socks, how many distinct outfits does Jane have?

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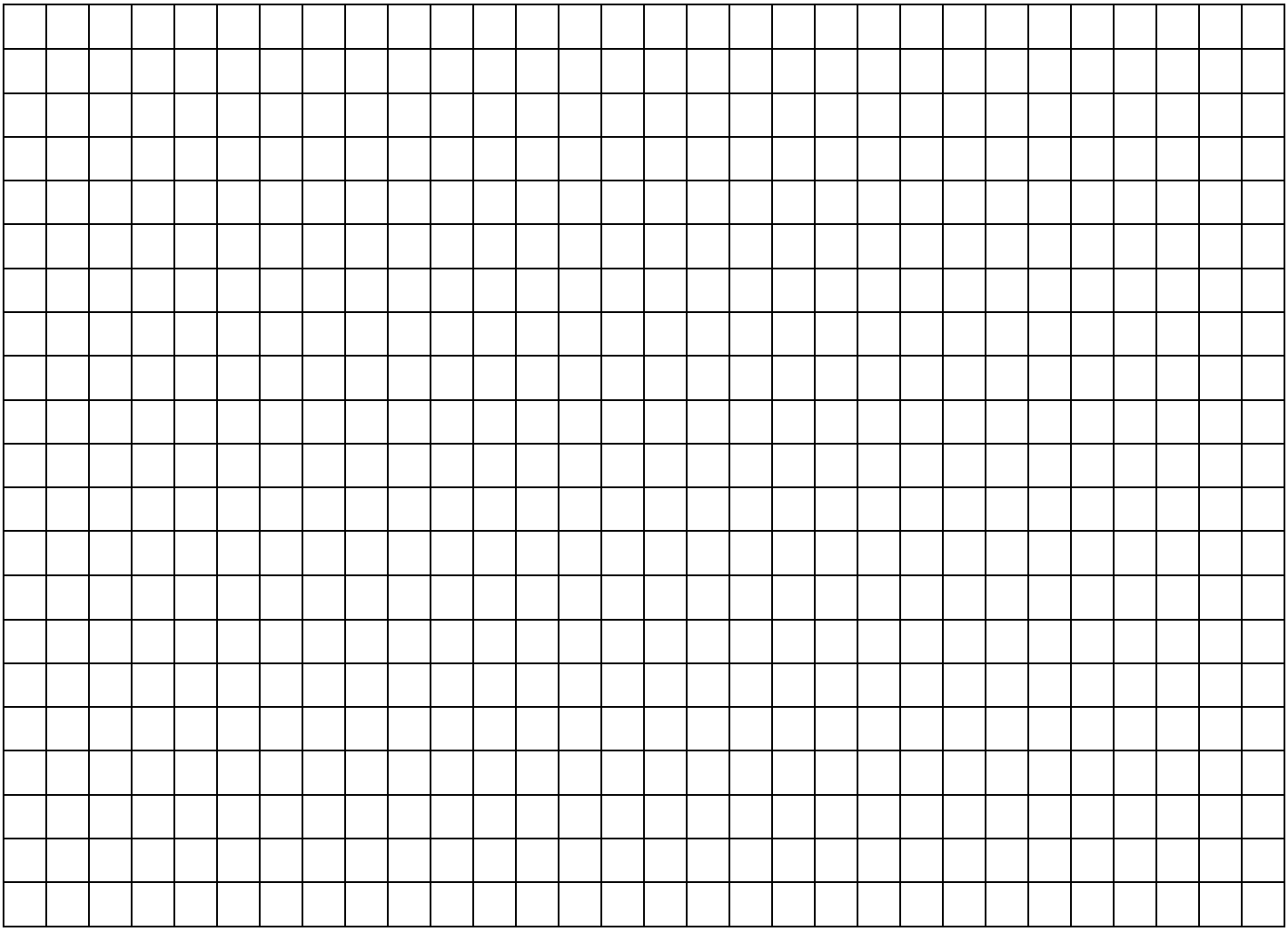
Individual Contest – 5th Grade

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.



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5th Grade – May 20, 2017

Individual Contest

Record all answers on the colored cover sheet.

	Questions 1-30: 2 points each
1	What is the next number in this sequence 1, 4, 9, 16, 25, 36, ...?
2	Amy and Ben want to paint a wall that is 8 ft. tall and 20 ft. long. One can of paint covers an area of 40 square feet. How many cans of paint will be needed to paint the whole wall?
3	Amy has 3 cookies. Michael has 7 cookies. If Michael gives Amy cookies until they both have the same amount, how many cookies will they each have?
4	If a piñata contains 75 candies, how many pieces of candy would you have if you bought 13 piñatas?
5	Lilly has a lucky penny. Whenever she makes a wish and then flips heads on the penny, her wish comes true. What is the probability that her next three wishes will come true?
6	The sum of the digits of a 2-digit number is 7. When the digits are reversed, the number is increased by 27. What is the number?
7	Find the median of the data set {45, 19, 55, 37, 6, 72}.
8	At Karen's school, all kids play exactly one of soccer, basketball, or baseball. If half the kids play soccer and one fourth of the kids play basketball, what percent of the kids play baseball?
9	How many prime numbers are there between 1 and 20?
10	What is the area, in square meters, of a square with a perimeter 64 m?
11	Pete and Chuck are planning to build a fence around their lawn. Before they start building, they are drawing a map of the lawn with a scale of 1 inch = 3 feet. If the actual lawn is 36 feet long, how long is the lawn on the map, in inches?
12	Briana drinks 1 bottle of water in 2 hours during soccer practice. How many bottles does she drink during her 5-hour practice?
13	What's the smallest possible sum of two consecutive odd composite numbers?
14	Peter earned $25 one week for shoveling snow and $50 the next week. Then, he gave ⅖ of his earnings to his sister for helping him. How many dollars did he give her?
15	If you can read a book in 60 minutes, how many books can you read in 24 hours, given that you sleep (and thus cannot read) for 8 hours.
16	Sam gets ready for bed at 12:39 AM, and goes to sleep 32 minutes later. If he gets up at 8:15 AM, how many minutes did he sleep?
17	What is the mode of the following numbers: 19, 8, 7, 23, 17, 19, 23, 19, 24, 23, 7, 19
18	What is the smallest perfect square that is written using three different digits?
19	If the average of Chuck's three sisters' ages is 7, what is their sum?
20	Solve: $\frac{81}{9} \div \frac{9}{21}$

21	Yashvi goes 3 miles up and 4 miles to the right, how many miles is she from her original point?
22	Mr. Scott owned 6 dictionaries, and each of them was $1\frac{1}{2}$ inches thick. If Mr. Scott placed all of them on one stack, how thick would the stack be, in inches?
23	Once in every two hours, Santa Claus accidentally skips a house. When this happens, his loyal elves remind him to go back. If Santa works for 24 hours, how many times do the elves have to remind Santa to go back?
24	You have a pizza that is 36 inches in diameter. What is the pizza's radius, in inches?
25	If a rectangular cake has an 8-inch length, 4-inch width, and a 2-inch height, what is the cakes volume in cubic inches?
26	If two of the angles on a triangle have measures of $56°$ and $27°$, what is the measure, in degrees, of the third angle?
27	Mr. Rigsbee needs to choose 3 of his 5 posters to put on the wall. How many ways can he choose the 3 posters out of 5 to put up (order does not matter)?
28	What is the probability of rolling a prime number on a fair six-sided die?
29	How many yards are in 252 inches?
30	Eric the farmer has a goat named Miles. Eric ties Miles to a stake and lets Miles graze 13 feet out from his stake. What is the area, in square feet, in which Miles can graze? [Express answer in terms of π.]

Challenge Questions: 3 points each	
31	Sandra has 64 donuts. She gives half to Jimmy. Then, she gives 25% of the donuts she has left to Bill. After that, she gives half of her remaining donuts to Ann. How many donuts does Sandra give to Ann?
32	12/20/16 was a date such that the numbers in the date could be the sides of a right triangle. On what date in August 2017 can the numbers in the date equal the sides of another right triangle? (Answer in the form mm/dd/17.)
33	If Reynold has 255 rare stamps and Riley has 157 rare stamps, how many stamps should Reynolds give Riley so that they both have an equal number of stamps?
34	Of the 4 Tuesdays that occur in a 30-day month, 2 of them take place on a square day (e.g. the 4th of the month). What is the sum of the other 2 days that month that are Tuesdays?
35	Billy the spider has three different color socks, five different colored hats, and four different colored scarfs. If an outfit consists of exactly one sock, one hat, and one scarf, how many different options does Billy have for an outfit today?
36	There is a $\frac{1}{3}$ chance that it will rain today. If it does rain, there is a $\frac{3}{4}$ chance that Sarah will stay home. If it does not rain, there is only a $\frac{1}{4}$ chance that she will stay home. What is the probability that Sarah stays home?
37	Julie will buy a new pair of shoes in 11 days. How many minutes must she wait before she can buy her new shoes?
38	In a volleyball team of 6 people, the ball can be hit once, twice, or three times before it must be sent over the net. The same person cannot hit the ball twice in a row, but this person can hit the ball the first and the third time. How many different orders can the 6 players hit the ball before it is sent over the net?
39	Kathy's rectangular yard is 48 feet long and 39 feet wide. What is the area, in square **yards**, of Kathy's yard?

40	Richa and Yashvi are going to Jamaica with their school, They plan on attending a fair where the admission for children is $1.50 and $4.00 for adults. On a specific day, 2200 people enter the fair and $5050 is collected. How many children attended?

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Team Multiple Choice Contest

Use the following information to answer questions 1-3.

In a recent survey of 98 Undertale players, 63 liked Flowey and 56 liked Sans. Of these, 42 liked both Flowey and Sans.

1 How many of the surveyed players liked neither Flowey nor Sans?

A) 7 B) 14 C) 21 D) 22 E) Answer not given.

2 In the Undertale survey above, what fraction of the people who liked Flowey also liked Sans?

A) $\frac{1}{6}$ B) $\frac{1}{3}$ C) $\frac{1}{2}$ D) $\frac{2}{3}$ E) Answer not given.

3 I randomly choose a person from the Undertale survey above and they say they do not like Flowey. What is the probability that they do not like Sans?

A) $\frac{2}{3}$ B) $\frac{3}{5}$ C) $\frac{1}{2}$ D) $\frac{1}{3}$ E) Answer not given.

Use the following information to answer questions 4-6.

A cube of white plastic with edges measuring 15 meters is painted blue on five faces and then cut into cubes with edges measuring 3 meters.

4 What is the total surface area, in square meters, of all the small cubes described above?

A) 13500 B) 6750 C) 3375 D) 2250 E) Answer not given.

5 How many of the small cubes described above are blue on exactly one face?

A) 48 B) 54 C) 57 D) 60 E) Answer not given.

6 What is the volume, in cubic meters, of all the small cubes described above that have at least one blue face?

A) 2160 B) 2403 C) 2646 D) 2889 E) Answer not given.

Use the following information to answer questions 7-10. On Mr. E's last test, students received scores of 54, 33, 87, 43, 76, 76, and 45.	
7	What is the median score? A) 43 B) 45 C) 54 D) 76 E) Answer not given.
8	Mr. E promised a pizza party if the class average was at least 60, so it all rests on the student who was sick and still needs to take the test. What is the lowest score she can get to earn the class the pizza party? A) 63 B) 66 C) 74 D) 79 E) Answer not given.
9	The sick student ended up with a score of 94, and the pizza was delicious! Later, a different student retook the test and achieved a higher score, causing the mode to be greater than the mean, which was greater than the median. What is the lowest possible integer value of the new score? A) 46 B) 48 C) 53 D) 56 E) Answer not given.
10	The same test was given to the five students in Miss Take's class. In that class, the mean was 60, the median was 65, and the mode was 75. What is the largest possible value of the range? A) 54 B) 56 C) 60 D) 62 E) Answer not given.

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Team Contest

1	What is the next term of the sequence 1, 2, 4, 7, 11, 16?
2	How many counting numbers are factors of 112?
3	If (a ⊕ b) equals ab + a + 2b, what does (2 3) equal?
4	Rewrite the expression $\frac{1}{2}+\frac{3}{4}+\frac{1}{8}+\frac{3}{2}+\frac{1}{4}-\frac{1}{2}$ as a reduced, improper fraction.
5	Monika owns a tiny house on a lot shaped like a rectangle with a width that is twice its length. If the perimeter of the lot is 60 feet, what is the length of the lot, in feet?
6	Ralph took 5 different math tests. His scores were 86, 95, 90, 92, and 87. What is the mean of the five scores?
7	Two angles are supplementary. If one angle is 36° less than twice the other angle, what is the measure, in degrees, of the larger angle?
8	The sum of two counting numbers equals twice their product. What is their difference?
9	Erin and Sam have two magical dice. Once a day, Erin and Sam roll their respective dice. If Erin rolls a 5 on his dice and Sam rolls an even number on his dice, there will be thunder that day. What is the probability that there is thunder on any given day?
10	You want to make a long sequence of numbers. You start with the number 15. At each step, if the number is even, you divide it by 2 to get the next number. However, if the number is odd, you multiply it by 5 and add 1 to get the next number. What is the smallest number you will write down?

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Robert Dirks' Relay Contest – Questions & Key

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 the next term in the arithmetic sequence beginning -19, 2, 23, 44?	65
Person 2	What is the smallest number greater than 100 that is divisible by $\frac{TNYWG}{5}$?	104
Person 3	Given that A is the number of vertices on a cube, what is $\frac{A \times TNYWG}{2}$?	416
Person 4	Jimmy's dog runs $TNYWG - 400$ blocks north and 12 blocks east. What is the shortest distance in blocks that Jimmy's bird can travel to find the dog?	20 [blocks]
	Relay #2	**Answer**
Person 1	What is the sum of the five smallest positive even numbers?	30
Person 2	What is the remainder when $22 \times TNYWG$ is divided by 13?	10
Person 3	Mrs. Frizzle wants to REorganize her bookshelf. If she has $\frac{TNYWG}{2}$ books, how many ways can she REorganize the books (not including the current organization)?	119 [ways]
Person 4	One day, Yashvi decides to go to the mall to buy a dress for a party. She notices that the dress she liked is on sale for 20% off of the original price. She then realizes she has an additional 10% discount coupon. If the dress originally cost $TNYW$□ $+ 1$ dollars, how much did Yashvi save, in dollars rounded to the nearest hundredth (cent)?	[$] 33.60 [dollars]

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COLLEGE KNOWLEDGE BOWL ROUND #1 – SET 1

#	Problem	Answer
1	Evaluate six [PAUSE] minus eight times five [PAUSE] plus ten.	-24 (negative 24)
2	What is the range of the following set of data? ten-and-two tenths, [PAUSE] twenty-five-and-seven tenths, [PAUSE] four-and-three tenths, [PAUSE] fourteen-and-five tenths, [PAUSE] twelve-and-nine tenths?	21.4
3	Kate can read five pages of a book in seven minutes. If the book is two-hundred-ten pages long, how many minutes will it take Kate to read the entire book?	294 [minutes]
4	What value of G satisfies three-G-plus-nineteen-equals-seventy?	17
5	What is the smallest positive prime number?	2
6	What is the area, in square meters, of a square with a perimeter of thirty-six meters?	81 [m^2]
7	What's the next term in the sequence beginning [PAUSE BETWEEN NUMBERS] one, four, nine, sixteen, twenty-five?	36
8	What is the remainder when two-hundred-seventy-five-thousand-three-hundred-twenty-nine is divided by three?	1
9	In four years, Barry will be half of Kate's age. If Kate is currently twenty-six years old, how old is Barry currently?	11 [years old]
10	Billy and Cynthia live on a coordinate system. Billy lives at the point seven-COMMA-three and Cynthia lives at the point thirteen-COMMA-eleven. How many units apart are their houses?	10 [units]

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COLLEGE KNOWLEDGE BOWL ROUND #2 – SET 2

#	Problem	Answer
1	What is the area, in square meters, of a right triangle with sides measuring five, three, and four meters?	6 [m^2]
2	Andrew runs seven miles North, then turns East. How many miles should he run East if he wants the shortest distance from his final point to his starting point to be twenty-five miles?	24 [miles]
3	Alex bought ninety pounds of rice for thirty dollars. At this price, how many pounds of rice can he get for six dollars?	18 [pounds]
4	Tanuj plays cricket, and hits a six (a six gives you six runs). If he hits five sixes total, how many runs does he have?	30 [runs]
5	What is the twentieth term of the arithmetic sequence if the first four terms of are three, ten, seventeen, and twenty-four?	136
6	If today is Thursday, what day of the week will it be in seventeen days?	Sunday
7	A new function is defined and it is called A-star-B. A-star-B is defined as four times A plus the quantity 6 times B. What is the value of three-star-the-quantity-five-star-ten?	492
8	What value of X satisfies eleven-plus-three-X-minus-seven-equals-six-X-plus-five-minus-three-X?	No solution (or equivalent)
9	I'm thinking of a number. If I triple the number, then subtract eight, I get one-hundred-three. What is my number?	37
10	Jasmine can run at a speed of six miles per hour for half an hour, then she gets tired and walks at a speed of two miles per hour. How many **minutes** will it take Jasmine to go five miles?	90 [minutes]
	Piper bakes PI pumpkin pies. If each pumpkin pie is cut into PI equal pieces, how many pieces of pie are there? Assume PI-equals-three-and-fourteen hundredths. Express your answer as a decimal.	9.8596 [pieces]

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COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	What is the sum of fourteen, [PAUSE] forty, [PAUSE] and forty-four?	98
2	Yash's father is forty-five years old. He is fifteen years older than twice Yash's age. How old is Yash?	15 [years old]
3	What is the smallest composite number that is a factor of thirty?	6
4	Llamas always form herds with a number of members that is prime. Llama herds also must have at least fifteen llamas to ensure safety. What is the smallest number of llamas that can be found in a herd?	17 [llamas]
5	What is twenty percent of six hundred?	120
6	A square waffle is comprised of sixteen congruent square indentations, and the perimeter of the waffle is sixteen inches. What is the perimeter, in inches, of each indentation?	4 [inches]
7	How many ways are there to arrange the letters in the word ALGEBRA, spelled A-L-G-E-B-R-A?	2520 [ways]
8	What is the sum of the first twelve positive whole numbers?	78
9	What is the mean average of the following set of data? [PAUSE BETWEEN NUMBERS] 4, 10, 12, 14, 25	13
10	Miles lives four miles east and three miles south of a peanut farm. If Miles can walk three miles an hour, how many **minutes** will it take him to walk to the peanut farm if he takes the most direct route?	100 [minutes]

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COLLEGE KNOWLEDGE BOWL ROUND #4 – SET 4

#	Problem	Answer
1	If a large safe is a rectangular prism with a height of fourteen feet, a width of two feet, and a length of one foot, what is the volume, in cubic feet, of the safe?	28 [cubic feet]
2	Kate has ten dollars. She buys three pencils that each cost seventy-five cents and two erasers that cost two dollars each. How much money, in dollars to the nearest hundredth (cent), does Kate have remaining?	[$] 3.75 [dollars]
3	What is the median of the data set [PAUSE BETWEEN NUMBERS] 1, 7, 5, 1, 9, 1, 3, 8, 9?	7
4	What is the perimeter, in meters, of a square with an area of one hundred forty-four square meters?	48 [m]
5	A snowman has a volume of fifty liters at the start of the day, and begins to melt at a rate of two liters per hour during the day and one liter per hour at night. If the day and night are each twelve hours long, how many hours will it take for the snowman to melt?	31 [hours]
6	It costs two dollars to make a pineapple smoothie. If Marie sells thirty smoothies for five dollars each, how much does she profit from selling smoothies?	[$] 90 [dollars]
7	A certain bacteria's population doubles every day. If the original population is one cell, what will the new population be in three days?	8 [cells]
8	Barry has two fair, six-sided dice. He rolls them onto a table. What is the probability that he rolls two sixes?	1/36
9	What is the sum of the counting numbers from one to fifty, inclusive?	1275
10	If the ratio of two supplementary angles is eight-to-one, what is the measure of the smaller angle?	20 [degrees]

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COLLEGE KNOWLEDGE BOWL ROUND #5 – SET 5

#	Problem	Answer
1	When a single card is drawn from a standard fifty-two-card deck, what is the probability it is a diamond?	1/4
2	What is the next number in the sequence beginning 3 hundredths, twelve hundredths, forty-eight hundredths, one and ninety-two hundredths? [Express your answer as a decimal.]	7.68
3	Sanjana buys a circular cake with an area of one hundred eighty square inches. How many people can share the cake if she wants to guarantee that everyone receives at least eight square inches of cake?	22 [people]
4	If the prime numbers between twenty and fifty are considered as a data set, which is largest, the mean, median, mode, or range?	Median
5	Barry can paint three portraits in five hours. If he paints for seventy straight hours, how many portraits can Barry paint in this time?	42 [portraits]
6	If Richie can paint a house in four hours, and Caitlin can paint the same house in six hours, how many **minutes** will it take for them to paint the house together?	144 [minutes]
7	Jane is drinking a twenty-milliliter cup of coffee containing an additional two milliliters of cream to lessen its bitter taste. However, she is still dissatisfied with her coffee, and she adds three milliliters more cream. What percent of her drink is now cream?	20 [%]
8	The radius of a circle is seventeen units. How many units long is the circumference of the circle?	34π [units] (34 PIE)
9	An isosceles triangle has an angle measuring forty degrees. What is the largest possible positive difference, in degrees, of the other two angles?	60 [degrees]
10	Jacob's class has thirty-nine students. On a day off, twenty-five students went to the Art Institute and nineteen went to the Science Museum. If four students went to neither attraction, how many went to both?	9 [students]

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5th Grade – May 20, 2017

COLLEGE KNOWLEDGE BOWL ROUND #6 – SET 6

#	Problem	Answer
1	If Barry charges $5.00 for each hour of yardwork and it takes him 7 hours to complete a job, how many dollars will Barry earn?	[$] 35 [dollars]
2	How many diagonals can be drawn in a regular hexagon?	9
3	Evaluate three-to-the-fifth-power.	243
4	What value of X satisfies seventeen-X-minus-twelve-equals-one-hundred-fourteen-plus-three-X?	9
5	Cameron, an entrepreneur, develops an avant-garde skateboard with five wheels. He receives an order for six-factorial of his new skateboards. How many wheels must be produced for this order?	3600 [wheels]
6	Madi makes four hundred thirty-three cupcakes to share with her two hundred twelve friends. She distributes the cupcakes evenly between her friends, and keeps all the leftovers for herself. How many cupcakes does Madi keep for herself?	9 [cupcakes]
7	A farmer has many chickens and rabbits on his farm. When the chickens and rabbits come together, there are 60 heads and 160 legs. How many rabbits are there?	20 [rabbits]
8	What is the area of a rectangle with perimeter of twenty-four centimeters and a length twice its width?	32 [cm^2]
9	Angles C and F are supplementary. If the measure of Angle C is twenty-five degrees, what is the measure of Angle F?	155 [degrees]
10	Danielle wants ice cream. She can pick one of three flavors (vanilla, chocolate, or strawberry), one of four toppings (caramel, whipped cream, sprinkles, or hot fudge), and one of two cones (waffle or cake). If she chooses randomly, what is the probability that she will pick a waffle cone with vanilla and caramel? Express your answer as a common fraction.	1/24

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COLLEGE KNOWLEDGE BOWL ROUND – EXTRA

#	Problem	Answer
1	Beatrice can run two meters every second. If she runs for three hours at this speed, how many meters will she have run?	21,600 [meters]
2	Beneath a city, a pipeline is four thousand feet long. Another pipeline is parallel to that pipeline, but is seven thousand feet long. How far away from the end of the first pipeline do the pipelines intersect?	They do not intersect. [accept any answer that says something along the lines of "impossible"]
3	When Vladimir boards the Trans-Siberian Railroad, there are 12 people on the train, including him. At the first stop, 3 people get off and 2 more get on. When the train stops again, 4 people get off and 2 get on. At the final stop, all of the passengers get off, including Vladimir. How many passengers get off at the final stop?	9 [passengers]

Extra

Final Score:

KEY

(Out of 8)

"Math is Cool" Masters -- 2016-17

Student Name _____ Team #_____

School Name _____ Proctor Name_____ Room #_____

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	1/6		
2	22		
3	5 [pieces]		
4	100 [pages]		
5	74 [feet]		
6	25 [dollars]		
7	5/16		
8	105 [outfits]		

"Math is Cool" Masters – 2016-17

5th Grade – May 20, 2017

School Name_____Team #_____

Proctor Name _____Room #_____

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

"Math is Cool" Masters – 2016-17

5th Grade – May 20, 2017

School Name_____ Team #_____

Proctor Name_____ Room #_____

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	22		
2	10		
3	14		
4	21/8		
5	10 [feet]		
6	90		
7	108 [degrees]		
8	0		
9	1/12		
10	1		

"Math is Cool" Masters -- 2016-17

5th Grade – May 20, 2017

KEY

RELAY # 1

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
65	**104**	**416**	**20 [blocks]**
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
30	**10**	**119 [ways]**	**[$] 33.60 [dollars]**
1 or 0	1 or 0	1 or 0	2 or 0

Final Score:

(Out of 8)

"Math is Cool" Masters -- 2016-17

Student Name _____ Team #_____

School Name _____ Proctor Name_____ Room #_____

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 – 2016-17

5th Grade – May 20, 2017

Final Score:

School Name_____ Team #_____

First Score
(out of 20)

Proctor Name _____ Room #_____

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 – 2016-17

5th Grade – May 20, 2017

School Name_____Team #_____

Proctor Name_____Room #_____

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			