"Math is Cool" Championships – 2011-12

Sponsored by:

6th Grade – February 3, 2012

GENERAL INSTRUCTIONS/INFORMATION applying to all tests and awards:

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

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Name_____Team #_____ Room #_____

School Name _____ Proctor Name_____

Mental Math Contest

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

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

Question	
1	As a reduced fraction, what is the probability of obtaining a prime number from one roll of a fair 8-sided die?
2	Write nineteen-fourths as a mixed number.
3	What is the difference between 222 and 43?
4	Find the exact area in square inches of a circle with diameter 4 inches.
5	Two congruent triangles are placed next to each other to form a square of side length 6 inches. Find the area in square inches of one of the triangles.
6	A widget with a regular price of thirty dollars is marked down by 20%. When Frank bought this marked-down widget, he also had to pay a 10% sales tax. How much, in dollars, did Frank pay for his widget, including tax?
7	Joe had been traveling for 2 hours at 40 miles per hour when Sally went in pursuit of Joe at 50 miles per hour. How many hours will have Joe been traveling when Sally catches him?
8	In square meters, what is the largest rectangular area that you can enclose with 30 meters of fencing? Express your answer as a fraction or a decimal.

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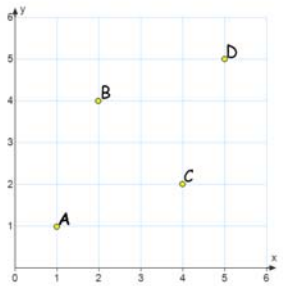
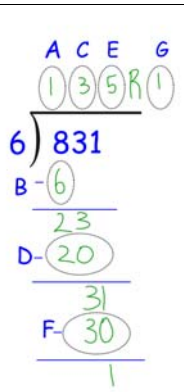
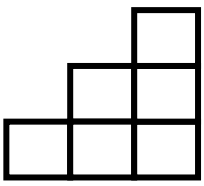
Individual Contest

INDIVIDUAL TEST - 35 minutes – 40 problems

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

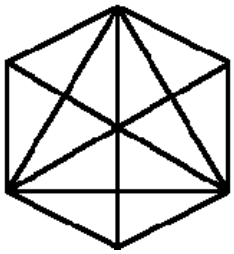
Record all answers on the colored cover sheet.

	Questions 1-30: 2 points each
1	Joe has 43 pieces of candy to give to his 5 friends. He gives equal numbers of whole pieces of candy to each friend. How many pieces will be left over after he has distributed as much of the candy to his friends as he can?
2	Let: A = 0.5 B = 2/3 C = 5/12 Put the values A, B, C in order from smallest to largest
3	Convert $2\frac{2}{3}$ to an improper fraction.
4	Which letter is located nearest to or at the point (2,4)? 
5	Tealah has worked this problem incorrectly. Write the letter that is next to the first wrong number Tealah wrote. 

6	An airplane has 29 rows with 6 passenger seats in each row. How many passengers will be able to ride in the airplane?
7	Sally reads the same number of pages a day from her book. It takes her 14 days to read a 322 page book. How many pages does she read each day?
8	One mile is 4 laps around the track. Bobby wants to run 1 mile in 10 minutes on this track. He runs his first lap in 2 minutes and 25 seconds, his second lap in 2 minutes and 35 seconds, and his third lap in 2 minutes and 40 seconds. What is the longest time, in minutes and seconds, that it could take Bobby to run his fourth lap and still achieve his goal of a 10-minute mile?
9	Every day has 24 hours. Ali sleeps 3/8 of the day. How many hours a day does Ali sleep?
10	Find the value of x in the equation $5x + 3 = 13$
11	Gregg and the nerd herd drive across Texas at an average speed of 55 mph. How long, in hours, will it take them to travel 330 miles?
12	Represent 40% as a reduced fraction.
13	A bag of coins contains 5 quarters, 3 dimes, and 10 pennies. If one coin is drawn at random from the bag, what is the probability that it will be a penny?
14	Evaluate and write as a reduced fraction: $\left(5\frac{2}{3}\right)\times\left(2\frac{1}{4}\right)$
15	If a plane can travel 115 miles in 15 minutes, how fast is the plane traveling in miles per hour?
16	The total area of eight congruent circles is 512π square centimeters. What is the circumference of each circle, in centimeters?
17	Berta started her new job on June 1st. The job pays $68 per day, and Berta works 7 days each week. If she saves one-fourth of her income each day, how many dollars will she have saved by the end of June 15th?
18	Jar A has 2 red marbles, 4 green marbles, and 3 blue marbles. Jar B has 4 pink marbles, 6 purple marbles, and 2 white marbles. Marcy randomly chooses 2 marbles from Jar A, then 2 marbles from Jar B, without replacement in each case. What is the probability that she gets 1 purple marble, 1 pink marble, and 2 green marbles?
19	Suppose a construction worker uses six cubes to build a staircase with three steps as shown in the figure. How many cubes does he need to make a staircase with nineteen steps? 
20	Tickets to a math concert cost $4 for general admission and $6 for reserved seats. If 45 tickets were sold for a total income of $230, how many $6 tickets were sold?
21	What is the sum of the following sequence of numbers: 2, 4, 6, …,50?
22	Stacey is thinking of a certain counting number. She multiplies this number by 1/3 and then divides it by 0.5. Then she takes this result, squares it, and adds 92. The resulting number is 156. What is the number that Stacey started with?
23	The total amount of rainfall in Yorkshire for the month of January was 9.7 feet. If this amount increased by 0.10 feet each month until the end of June, what was the monthly average rainfall in Yorkshire for these 6 months? Express your answer as a DECIMAL number of feet.
24	A town with a starting population of 20,000 people has a 10% decrease in population for each of four successive years. What was its population at the end of the four years?

25	The Math is Cool Math Club members wrote a handbook for their club and numbered all the pages by hand, starting from page 1. The product of the last two page numbers in their book is 7832. How many pages does the handbook have?
26	How many perfect squares are between 50 and 1550?
27	A right circular cylinder has a volume of 252π cubic units and its circular base has an area of 36π square units. What is the number of square units in the lateral surface area of the cylinder?
28	Simplify: $17\left(5x-2\right)+4\left(3x+16\right)-9x+9$
29	The time is currently half past five in the afternoon. What time was it 1300 minutes ago?
30	How many ways can you arrange the letters in the word CALCULUS?

Challenge Questions: 3 points each

31	Starting at the same time, Andy and Barb walk toward each other on a straight track. They begin 1500 feet apart, and meet after $2\frac{1}{2}$ minutes. Andy walks at a steady rate of 350 feet per minute. What is Barb's rate of walking, in feet per minute?
32	How many prime numbers less than 1000 differ by 1 from a power of 2 greater than 1?
33	When I enter an operation into my Boastful Calculator, it adds 1 to the first number I enter, 2 to the second number, and so on. It then calculates correctly with the changed numbers and correctly displays this answer. (For example, if I enter "2 times 3", the answer displayed is 15.) When I enter "M times N", the answer displayed is 221; when I enter "N times M", the answer displayed is 216. Find the numbers that M and N stand for and write your answer as an ordered pair (M, N).
34	Find the area, in square units, of the quadrilateral enclosed by the following points: (5,0), (3,2), (5,4), (7,2).
35	Mitchell is thinking of three different counting numbers that are between 1 and 100. The difference between the middle and smallest numbers is 42, and the greatest common factor of these two numbers is 6. The sum of all three numbers is 180. Give all possible values of the largest of the three numbers.
36	How many triangles are in this picture? 
37	Given the set $\left\{1,-4,2,\frac{1}{3},-2,6,\frac{1}{7}\right\}$, find the largest possible value that could result from the formula $\frac{a-bc}{b}$, where a, b, and c are members of the set.
38	A 6 x 6 x 6 inch cubical box has two blue faces that are opposite one another; the other four faces are red. This box is filled with white cubes that are 1 inch on each edge. How many of the white unit cubes are touching a red face of the box, but not touching a blue face?
39	How many counting numbers less than 100 have an EVEN remainder when divided by 5 and an ODD remainder when divided by 7?
40	I have 75 rings (leg bands) to be distributed somehow among 20 pigeons. When all rings are distributed and attached, I will put the pigeons into pigeonholes labeled 0, 1, 2, 3, and so on, with each pigeon going into the pigeonhole labeled with the number of rings it is wearing. What is the smallest number of pigeons there could be in the most crowded pigeonhole?

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Team Multiple Choice Contest

USE THE FOLLOWING INFORMATION TO SOLVE QUESTIONS #1 THROUGH #3

A hiker has a choice of 3 trails. Each trail gives the hiker a different probability of getting bitten by mosquitoes, but also a different length.

Trail	Probability	Length
A	1/2	2 miles
B	4/5	1 mile
C	3/10	3 miles

1 How long will it take the hiker to complete trail C if he moves at a constant speed of 0.75 miles per hour?

A) 3 hrs B) 4 hrs C) 5 hrs D) 6 hrs E) Answer not given.

2 Suppose the hiker walks trail A, then trail B. What is the probability that he gets bitten on A but not on B?

A) 2/5 B) 3/5 C) 9/10 D) 1/10 E) Answer not given.

3 If a hiker walks trail B at 6 mph and trail C at 2 mph, what is the hiker's overall average speed, in miles per hour, for hiking on the two trails?

A) 1 mile per hour B) 2.4 miles per hour

C) 3.1 miles per hour D) 4 miles per hour E) Answer not given.

4 George has a 5 pint pitcher and a 3 pint pitcher that are both empty. Each move consists of either pouring water into a pitcher, out of a pitcher, or from one pitcher to the other. What is the least number of moves it would take to get 4 pints of water in the 5 pint pitcher? The 3 pint pitcher can have water in it when you are done.

A) 5 moves B) 6 moves C) 7 moves D) 8 moves E) Answer not given.

5 If a car tire has a circumference of 36 inches, how many revolutions must the tire turn in one minute in order for the car to be going 60 miles per hour?

A) 5280 revolutions per minute B) 2540 revolutions per minute

C) 1760 revolutions D) 600 revolutions per minute E) Answer not given.

6 A store was selling so many of their pink boots they decided to raise the price by 20% to make some extra money. Customers kept buying pink boots at the same rate, so the store raised the new price by 20%. What is the overall percent increase in price?

A) 40% B) 41% C) 42% D) 44% E) Answer not given.

7 During the month of June, gas prices increased by 25%. By what percent does gas price need to decrease in the month of July to return to the price originally charged at the beginning of June?

A) 25% B) 20% C) 15% D) 10% E) Answer not given.

Use the following table of information for questions #8 through #10.
Gabby is comparing phone plans.

	Plan A	Plan B	Plan C
Monthly Cost	$40.00	$50.00	$60.00
Basic Allowance	500 texts and 1000 minutes	600 texts and 1200 minutes	Unlimited text and talk
Extra Texting	3¢ per text	2¢ per text	No overage charges
Extra Minutes	4¢ per minute	3¢ per minute	No overage charges

8 Which plan is the cheapest if Gabby talks for 900 minutes and sends or receives 600 texts per month?

A) Plan A B) Plan B C) Plan C D) Cannot be determined

9 Which plan is the cheapest if Gabby talks for 1160 minutes and sends or receives 700 texts per month?

A) Plan A B) Plan B C) Plan C D) Cannot be determined

10 During the month of July, Gabby talked for 1150 minutes. What is the maximum number of texts she can send or receive so that plan A is the cheapest?
A) 133 B) 134 C) 633 D) 634 E) Answer not given.

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Team Contest

1	An elephant can drink 48 cups of water per minute. How many gallons of water can an elephant drink in 3 minutes?
2	In a 6th-grade math class of 21 students, the ratio of boys to girls is 3 to 4. How many boys are there in the class?
3	Amanda read for one and three-quarter hours without stopping. If she finished reading at 2:34 PM, at what time did she start reading?
4	A square number is the product of a counting number times itself. How many square numbers less than 150 have a units (one's place) digit less than 5?
5	Bert threw a ball 12 yards, and Ernie threw a ball 8.4 meters. Assuming one meter is equal to 39 inches, how many <u>feet</u> farther did Bert throw than Ernie? If your answer is not a whole number of feet, give it as a decimal.
6	What is $23\frac{1}{4}$ expressed as a percent?
7	Emeril has two round baking pans: a red one of diameter 8 inches and a green one of diameter 9 inches. He has a blue rectangular pan that is 7 by 11 inches, a black square pan of side length 9 inches, and a white square pan of side length 8 inches. All the pans have the same depth. Give the colors of the two pans that are closest in volume.
8	Determine the smallest counting number that satisfies the following conditions: - Divide 7 into this number and you get a remainder of 4. - Divide 8 into this number and you get a remainder of 5. - Divide 9 into this number and you get a remainder of 6.
9	I have one quarter, two dimes, three nickels, and two pennies. If I take out two of these coins at random, what is the probability that their total value will be six cents? Answer as a reduced fraction.
10	Laura used all the digits except 0 to write a 9-digit counting number such that no two consecutive digits form a 2-digit prime number. (That is, for the number abc,def,ghi, where letters stand for unique digits, none of the following 2-digit numbers are prime: ab, bc, cd, de, ef, fg, gh, hi.) What is the positive difference between the largest and smallest such numbers that Laura could write?

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Relay Contest

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

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

	Practice Relay	Answer
Question 1	How many minutes are in an hour?	60 [min]
Question 2	Divide TNYWG by 15.	4
Question 3	What do you get when you cube TNYWG?	64
Question 4	What is the square root of TNYWG?	8
	Relay #1	
Question 1	What is the mean of this set of numbers: {5, 4, 8, 10, 2, 1, 5}	5
Question 2	How many factors, including itself, does TNYWG have?	2
Question 3	What is 73658 times TNYWG?	147316
Question 4	What is the sum of the digits of TNYWG?	22
	Relay #2	
Question 1	What is the probability of getting only heads when you flip a fair coin two times?	1/4
Question 2	What is # $\left(1+\frac{0.5}{\text{TNYWG}}\right)\times 3$?	9
Question 3	How many days are in TNYWG weeks?	63 [days]
Question 4	What is the least common multiple of TNYWG and eight?	504

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COLLEGE KNOWLEDGE BOWL ROUND #1 - SET 1

#	Problem	Answer
1	Find the sum of two-thousand twelve and four-hundred eighty-seven.	2499
2	How many diagonals can be drawn in a regular pentagon?	5 [diagonals]
3	Allen has three-hundred sixty coins. If he divides the whole coins equally among his seven friends as far as possible, how many coins does he have left for himself?	3 [coins]
4	Find the area in square FEET of a square with a perimeter of 48 INCHES.	1 [ft^2]
5	How many feet are equal to three-hundred twenty-four inches?	27 [feet]
6	Five students took a math test. Their scores were ninety-six, eighty-six, forty-eight, fifty-five, and eighty-eight. What is the range of their scores?	48
7	Michelle has one-third of a cake remaining, and she eats half of it. What fraction of the cake remains?	1/6
8	What is the sum of the first ten ODD counting numbers?	100
9	Find the midpoint between the points "one comma three" and "three comma seven". Answer as an ordered pair, "x comma y".	two comma five (2, 5)
10	What fraction of the letters in the word "Mississippi" are vowels? "Mississippi" is spelled M-I-S-S-I-S-S-I-P-P-I.	4/11

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COLLEGE KNOWLEDGE BOWL ROUND #2 - SET 2

#	Problem	Answer
1	Evaluate twelve times twenty-one.	252
2	A quadrilateral has angles of ninety, eighty-nine, and eighty-eight degrees. What is the degree measure of the fourth angle?	93 [degrees]
3	A rectangle has side lengths of 5 and 4 units. Without regard to units, what is the product of the area and the perimeter of this rectangle?	360
4	If Jane can read 12 pages in 15minutes, how many minutes and seconds does it take her to read 1 page?	1 minute and 15 seconds
5	What is the probability of drawing either a king or an ace from a standard deck of cards? Give your answer as a reduced fraction.	2/13
6	How many distinct ways can you arrange the letters in the word "bottle", spelled B-O-T-T-L-E?	360 [ways]
7	What is the greatest common factor of fifty-two and seventy-eight?	26
8	What is fifteen squared minus thirteen squared?	56
9	Two chomps are worth five chimps. Three chimps are worth one chump. Eight chumps are worth seven champs. How many champs are worth 96 chomps?	70 [champs]
10	The books in Pythagoras's library for mathematicians are numbered in order, starting with 1. Einstein checked out all books numbered 8 through 55. How many books did he check out?	48 [books]

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COLLEGE KNOWLEDGE BOWL ROUND #3 - SET 3

#	Problem	Answer
1	When the fraction "forty-eight over thirty-six" is reduced, what will be the sum of the numerator and denominator?	7
2	Find the average of the following five numbers: twelve, twelve, twelve, twelve, five-hundred. Give your answer as a decimal number.	109.6
3	Thirty five is forty percent of what number? Give your answer as a decimal number.	87.5
4	Dr. Calculus was driving home from school one day. One-third of the way home, he realized that he forgot his math book at school. So he turned around and went back to school, then drove home. If he traveled a total of fifteen miles, how many miles is it from school to his home?	9 [miles]
5	If Gregg and Tealah walk two miles in thirty minutes, how many miles can they walk in four hours and forty minutes? Give your answer as a mixed number.	$18\frac{2}{3}$ [miles]
6	Rich has a right rectangular prism with side lengths of two, four, and six inches. What is the surface area of the prism, in square inches?	88 [square inches]
7	How many of the counting numbers one through seven, including one and seven, are factors of the number one-thousand one?	2 [numbers]
8	Harold is driving a bus with ten passengers. At the first stop, he picks up two passengers. At the second stop, half of the passengers get off. At the third stop, he picks up fifty-five passengers. How many passengers were on the bus after the third stop?	61 [passengers]
9	Sarah is fifteen years older than Adam. Three years ago, Sarah was twice as old as Adam. How many years old is Sarah currently?	33 [years]
10	The digit "7" occurs in what percent of the first 100 counting numbers?	19 [percent]

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COLLEGE KNOWLEDGE BOWL ROUND #4 - SET 4

#	Problem	Answer
1	Gerald wants to cut a piece of paper into one-hundred forty eight pieces, making only vertical cuts. How many cuts will he need to make?	147 [cuts]
2	A fast clock that gains four minutes every hour is set to the correct time at 1 PM. What is the actual time when the clock next displays "six twenty"?	6 PM. or 6 o'clock PM.
3	What is one thousand fifteen divided by seven?	145
4	The product of two numbers is one-hundred ninety-eight. The difference between these two numbers is seven. What is the sum of these two numbers?	29
5	A twenty-five foot board is leaning against a house. If the board touches the wall at a height of twenty feet, how many feet is the base of the board from the base of the house?	15 [feet]
6	It takes Sheila twenty seconds to count to thirty. How long, in minutes and seconds, would it take her to count to six hundred?	6 minutes 40 seconds or 6:40
7	Darrell has sugar cubes that have sides with a length of one inch. How many sugar cubes would Darrell need to make a giant sugar cube that has a side length of 4 inches?	64 [sugar cubes]
8	What is the prime factorization of two-thousand three-hundred ten? Order factors from smallest to biggest.	$2 \times 3 \times 5 \times 7 \times 11$
9	Dorothy is saving her pennies. The first day, she saved two cents. The second day, she saved four cents, and the third day, she saved eight cents. If this pattern continues, how many days will it take Dorothy to save at least two and a half dollars in all?	7 [days]
10	What is the probability of drawing a card with an even number out of a standard deck of cards? Face cards for this question are not considered to be odd or even.	5/13

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COLLEGE KNOWLEDGE BOWL ROUND #5 - SET 5

#	Problem	Answer
1	A right triangle has legs with length 6 inches and 8 inches. Find the number of inches in the perimeter of this triangle.	24 [inches]
2	Which is greater, two to the fifth power, or five squared?	2 to the 5^{th} [or] 32 [or] 1^{st} option
3	Sandra lives 20 miles away from work. In order to get from home to work in 20 minutes, how fast would she have to drive, in miles per hour?	60 [mph]
4	Find the sum of eleven-thousand eleven and five-hundred nine.	11,520
5	If there are five-thousand two-hundred eighty feet in a mile, and 3 feet in a yard, how many yards are in one-half of a mile?	880 [yards]
6	What is the remainder when "two-thousand three-hundred ninety-eight" is divided by 7?	4
7	To get my favorite number, subtract fifty percent of four from fifty percent of forty, then take fifty percent of that answer. What is my favorite number?	9
8	As a reduced fraction, what is three-fifths minus one-half, plus two-thirds?	23/30
9	At Taco Bell, Paige spent 2 dollars on a giant burrito, 3 dollars and fifty cents on a crunchwrap supreme, and eight dollars on a gallon of soda. Ten percent tax is charged on the purchase. If she paid with a 20 dollar bill, how much, in dollars and cents, will she receive in change?	5 dollars and 15 cents
10	What day of the week is it three thousand minutes after noon on Monday?	Wednesday

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COLLEGE KNOWLEDGE BOWL ROUND #6 - SET 6

#	Problem	Answer
1	James makes an average of 75% of all of his free throws in a basketball game. If he shoots 12 times in a game, how many free throws would you expect James to miss?	3 [free throws]
2	The ratio of boys to girls at the park was 5 to 3. If there were 24 boys and girls at the campfire, how many were girls?	9 [girls]
3	When Tom roasts marshmallows, he turns his stick at a constant rate of 4 rotations per minute. If it takes 25 full rotations to toast a marshmallow to perfection, how many minutes and seconds does it take?	6 minutes and 15 seconds
4	When a coin is flipped three times, what is the probability that it will land on the same side all three times? Give your answer as a reduced fraction	1/4
5	What is the least common multiple of 15 and 20?	60
6	Which has more area, A or B? A) a circle with a radius of 8, OR B) a semicircle with a diameter of 22	A [or] "a circle with radius 8" [or] "the first choice"
7	Professor Graham has a math book, a physics book, a chemistry book, and a literature book. If the physics and chemistry books have to be next to each other, in how many different orders can she arrange these books in a row?	12 [orders]
8	Jessica has a phone texting plan that requires her to pay twelve dollars a month, with an additional 6 cents per text. If she has fifty dollars to spend, how many texts can she send this month?	633 [texts]
9	The Hiking Club hiked 150 miles in the month of April. If they hiked the same numbers of miles each day, how many miles did they hike each day?	5 [miles]
10	Find the sum of all the counting numbers between thirty and fifty, including thirty and fifty.	840

"Math is Cool" Championships – 1010-11

Sponsored by:

6th Grade – February 3, 2012

COLLEGE KNOWLEDGE BOWL ROUND - EXTRA

#	Problem	Answer
1	Find the product of seven-sixths multiplied by ten-sevenths.	5/3
2	What is the probability of drawing a red 2 or a black 5 in one random draw from a standard 52-card deck?	1/13
3	How many seconds are in two weeks?	1,209,600 [seconds]

Final Score:

KEY

First Score

(out of 8)

"Math is Cool" Championships – 2011-12

Sponsored by:

6th Grade – February 3, 2012

Name_____Team #_____ Room #_____

School Name _____ Proctor Name_____

Mental Math Contest

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

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

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	1/2		
2	$4\frac{3}{4}$		
3	179		
4	4π [in^2]		
5	18 [in^2]		
6	[$] 26.40		
7	10 [hours]		
8	225/4 or 56.25 [m^2]		

"Math is Cool" Championships – 2011-12

6th Grade – February 3, 2012

School Name_____Team #_____

Proctor Name_____Room #_____

Final Score:

KEY

First Score

(out of 20)

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

This test is the only test where you will be penalized for incorrect responses. You will receive 2 points for a correct letter response, 0 points for leaving it blank and -1 point for an incorrect response. It is not necessary to write your personal name on the test, but you may put it at the bottom of the test so your coach will be able to give you back the correct test. This test is taken individually, but it is part of your team score, including zeros for missing team members. Your team score will be calculated by taking the mean of your four team members' scores. When you are prompted to begin, tear off the colored sheet and begin testing. ***Since this is a multiple choice test, ONLY a letter response should be indicated as an answer on the answer sheet.*** *No talking during the test.*

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

"Math is Cool" Championships – 2011-12

6th Grade – February 3, 2012

School Name_____Team #_____

Proctor Name_____Room #_____

Final Score: KEY
First Score (out of 10)

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

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

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	9 [gallons]		
2	9 [boys]		
3	12:49 PM		
4	7 [square numbers]		
5	8.7 [feet]		
6	2325 [%]		
7	green, white [either order]		
8	501		
9	3/14		
10	863,071,434		

"Math is Cool" Championships -- 2011-12

KEY

6th Grade – February 3, 2012

School:_____Team #_____

Proctor: _____ Room #_____

PRACTICE RELAY

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
60 [min]	**4**	**64**	**8**
1 or 0	1 or 0	1 or 0	2 or 0

RELAY # 1

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
5	**2**	**147316**	**22**
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
1/4	**9**	**63 [days]**	**504**
1 or 0	1 or 0	1 or 0	2 or 0

Final Score:

First Score
(out of 8)

"Math is Cool" Championships – 2011-12

Sponsored by:

6th Grade – February 3, 2012

Name_____Team #_____ Room #_____

School Name _____ Proctor Name_____

Mental Math Contest

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

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4			
5			
6			
7			
8			

"Math is Cool" Championships – 2011-12

6th Grade – February 3, 2012

School Name_____Team #_____

Proctor Name_____Room #_____

Final Score:

First Score
(out of 20)

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"Math is Cool" Championships – 2011-12

6th Grade – February 3, 2012

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