"Math is Cool" Championships – 2015-16

October 21, 2015

Total Correct: KEY

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

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

High School Individual Contest – Score Sheet
DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	[x=] 0		
2	[$] 3040		
3	2		
4	108 [sq in]		
5	81		
6	[x=] 1		
7	8075		
8	11		
9	5		
10	[$] 33		
11	4 [π][sq un]		
12	6		
13	-1		
14	36		
15	12		
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16	41		
17	[x=] 3		
18	-1080		
19	5 [mm]		
20	20 [cm]		
21	12 [ways]		
22	4		
23	22 [ways]		
24	8 [deg]		
25	35		
26	$749_{[10]}$		
27	8		
28	249		
29	155		
30	78 [ties]		
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31	64		
32	4[π][sq un]		
33	15		
34	2		
35	76		
36	15		
37	9 and 1/9 (both)		
38	3		
39	8		
40	18 [%]		
31-40 TOTAL:			

Note: #11 & 32, the pi is optional since it asks for a multiple of pi.

Total Correct:

"Math is Cool" Championships – 2015-16

October 21, 2015

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

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

High School 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:			

"Math is Cool" Championships – 2015-16

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High School 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, 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).*
- *All radicals must be simplified and all denominators must be rationalized.*
- *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.*

Mental Math – 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 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.*

"Math is Cool" Championships – 2015-16

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High School – October 21, 2015

Mental Math Contest

Mental Math – 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 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.*

#	Problem
1	What is ten times the slope of the line with equation seven x minus five y equals eight?
2	Evaluate twenty-one squared minus twenty squared.
3	How many distinct ways can you arrange the letters in the word START, S-T-A-R-T?
4	What is the name of the point in a triangle where the three angle bisectors meet? (orthocenter, circumcenter, incenter or centroid)
5	What is the measure in degrees of an interior angle of a regular octagon?
6	What is twelve times the probability that the digits of a randomly chosen three-digit number have an even sum?
7	The numbers one through sixteen can be placed in a four by four grid such that all rows and columns add up to the same value. What is that value?
8	The sum of the interior angles of a triangle drawn on the surface of a quarter-sphere has a least upper bound of how many degrees?

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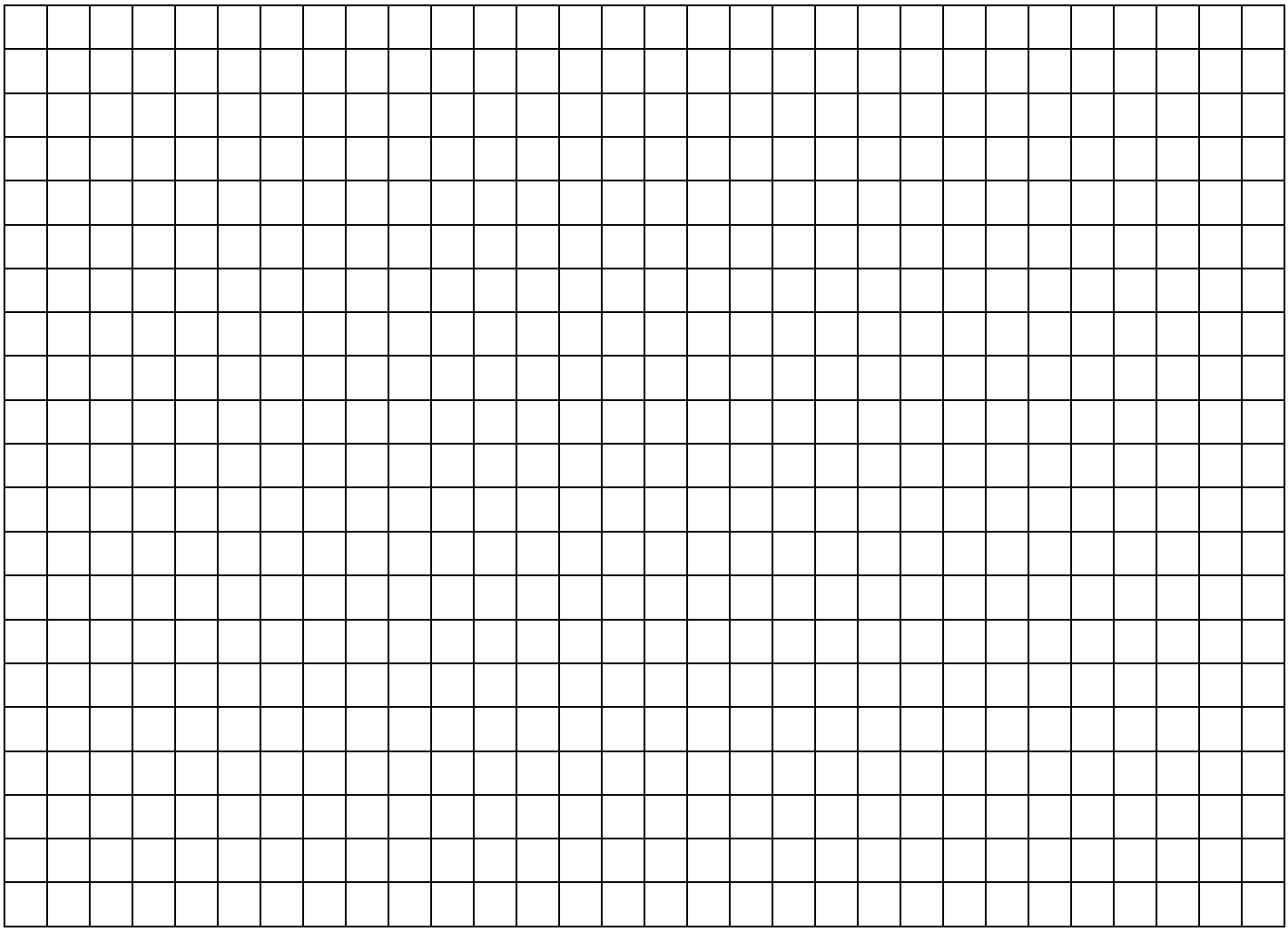
High School Individual Contest

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 – High School - 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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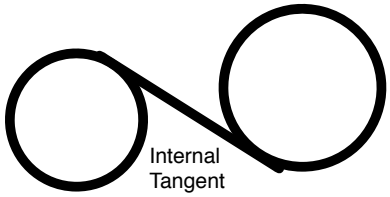
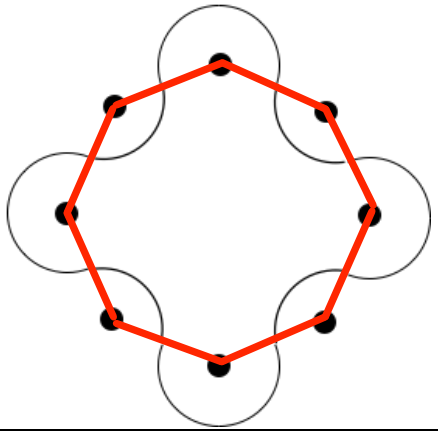
High School Individual Contest

	Questions 1-30: 2 points each
1	Solve for *x*: $(x+2)^2 - 4(x+2) + 4 = 0$.
2	Smith Elementary is taking the school students to the zoo. There are 328 people (students and chaperones) going to the zoo. Each bus holds 45 passengers besides the driver. There is a charge of $175 per bus and $5 per person for zoo admission. How much will the trip cost?
3	The equation of the line going through the points $(1,2)$ and $(3,-6)$ is written in the form $y = mx + b$. What is $m + b$?
4	A triangle has side lengths of 15, 15, and 24 inches. What is its area in square inches?
5	A class of nine students had an average test score of 87. Two students scored a perfect score of 100 and another received a 97. What was the average of the other 6 students?
6	Solve for *x*: $3(2x-1) - 2(x-2) = 5$.
7	Calculate: 95×85.
8	When all diagonals are drawn in a regular pentagon, how many separate regions are created? (The diagonals in a square divide it into 4 regions).
9	Evaluate: $(7 - (4 - 3^2) + 8)/4$.
10	A sweater costs $32. The store subsequently raises the cost by 25% and then reduces it by 25% and finally raises it again by 10%. What is the final cost?
11	What is the area of a circle that circumscribes a regular hexagon of side length 2. Express your answer as a multiple of π?
12	What is the remainder when the quantity: $1 + 2 + 4 + 8 + \cdots + 512$ is divided by 9?
13	If $f(x) = \frac{x^2+x-1}{x+1}$. What is $f(-2)$?
14	How many ways are there to rearrange the letters in "RAINIER" if all the vowels must come before any of the consonants?
15	A rhombus has side lengths of 2cm and an interior angle of 60 degrees. Let A be the area of the rhombus in square centimeters. What is A^2?
16	What is the largest prime factor of $3^8 - 1$?
17	Solve for *x*: $4^x - 2^{x+2} = 32$.
18	What is the coefficient of x^2y^3 in the expansion of $(2x-3y)^5$?
19	A circle with a diameter of 26 mm has a chord of length 24 mm. What is the length of the perpendicular line segment from the center to the chord?

20	Two circles whose centers are 25cm apart have radii of 9cm and 6cm. What is the length of the internal tangent in cm? 
21	Three girls and three boys are seated around a circular table. In how many ways can this be done such that no girl sits next to another?
22	Solve for x: $$1 = \cfrac{5}{x + \cfrac{5}{x + \cfrac{5}{x + \cdots}}}$$
23	The letters WINWIN are rearranged. In how many of these ways does the word WIN (letters in that order) appear exactly once?
24	A polygon has twenty-one times as many diagonals as sides. What is the measure in degrees of one of its external angles?
25	What is the next term in the sequence 1, 4, 10, 20, …
26	Evaluate $345_6 + 456_7 + 567_8$ represented as a base 10 number
27	Find the area of a hexagon with side lengths of 1, represented in simplest form as $\frac{a\sqrt{b}}{c}$. What is $a + b + c$?
28	How many 0's are at the end of $\left(\frac{1000!}{999!}\right)!$?
29	The product of three consecutive odd positive integers is 15 times their sum. What is the sum of their squares?
30	There are 20 teams in major league soccer divided into two divisions of 10. Teams play every other team in their division twice. The winner of a game is awarded 3 points and the loser gets none while each team get 1 point if the game ends in a tie. A total of 462 points were awarded during the season. How many games ended in a tie?

Challenge Questions: 3 pts each

31	A number when divided by 7 becomes 77777...7, a number with k digits. The original number's digits sum to 265. What is k?
32	The continuous closed curve below is made up of circular arcs, such that the centers of the corresponding congruent circles are the vertices of a regular octagon of side length 4. Find the area enclosed by the arcs minus the area of the octagon formed by connecting the centers of the circles. Express your answer as a multiple of π. 
33	Consider the equation of the plane that passes through the points $(1,1,1), (4,3,3)$and $(-2,1,2)$ in the form $Ax + By + Cz + D = 0$ where the greatest common divisor of the coefficients *A, B, C* and *D* is 1. What is the value of the maximum coefficient minus the minimum coefficient?
34	If $\sqrt{10+\sqrt{84}} = \sqrt{a} + \sqrt{b}$ and $a > b$, for positive integers a and b. What is the value of $\sqrt{a-b}$?
35	Five different numbers are chosen from the set $\{1, 2, 3, 4, \ldots, 20\}$ and added together. How many distinct values for this sum are possible?
36	Square ABCD has side length 2 and equilateral triangle AEB is adjacent to the square with point E outside the square. The square of the length of the line segment ED is written simplified as $\underline{a + b\sqrt{c}}$. Find $a + b + c$.
37	Find x such that $\log_x 3 = \log_{81} x$
38	What is the 10s digit of 6^{12}?
39	The foci of an ellipse are the origin and the point $(8, -8)$ and the point $(3, 4)$ lies on the ellipse. Let the two *y*-intercepts of the ellipse be y_1 and y_2. Let $\frac{m}{n} = \frac{y_1}{y_2}$ be a reduced fraction, what is $\lvert m + n \rvert$?
40	Consider the rectangular region with vertices at (0,1), (0,6), (5,1) and (5,6). If a point is randomly chosen from this region, what is the probability as a percent that it is closer to the origin than the point (4,4)?

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11th & 12th Grade – October 21, 2015

Individual Multiple Choice Contest

1	What is the sum of the prime numbers between 30 and 50? A) 156 B) 199 C) 238 D) 248 E) Answer not given.
2	Find $13\ (33 - 16)$. A) 182 B) 209 C) 221 D) 413 E) Answer not given.
3	Find the angle in degrees between the hour and minute hands of an analog clock at 2:30. A) 105 B) 110 C) 115 D) 120 E) Answer not given.
4	What is the period multiplied by the amplitude of the function $f(x) = 3\cos(3x)$? A) 2 B) 3 C) 2π D) 9 E) Answer not given.
5	Define $A\%B \equiv \frac{A^B}{B^A}$. Given that $3\%2 - 2\%3 = \frac{a}{b}$, find $a + b$. A) 64 B) 72 C) 89 D) 217 E) Answer not given.
6	How many distinct rectangles with integer side lengths have an area of 48? A) 5 B) 6 C) 9 D) 10 E) Answer not given.
7	Solve for all x such that $x^4 - 256 = 0$. A) $\{\pm 16\}$ B) $\{\pm 4\}$ C) $\{\pm 16i\}$ D) $\{\pm 4, \pm 4i\}$ E) Answer not given.
8	What is the largest number that evenly divides the product $(n+3)(n+5)(n+7)(n+9)(n+11)$ for **all** odd positive integers, *n*? A) 384 B) 768 C) 1920 D) 3840 E) Answer not given.
9	What is the x^2 term when expanding $(x^2+1)^3(2x+1)^3$? A) 12 B) 15 C) 18 D) 24 E) Answer not given.
10	Considering the polynomial defined by: $P(x) = \prod_{k=0}^{10} \left(x^{2^k} + 2^k\right) = (x+1)(x^2+2)\ldots(x^{1024}+1024)$ Find the log base two of the coefficient of the x^{2015} term. A) 5 B) 11 C) 15 D) 32 E) Answer not given.

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Team Contest

1	An obtuse triangle has integer side lengths of 12, 17, and x. What is the range of the set of possible values of x?
2	What is the volume of the parallelepiped formed by the vectors: $< 2,7,5 >, < 5,3,2 >, \text{and} < 1,7,0 >$?
3	After flipping to a random page in a book the product of the two page numbers you see equals 5256. What is the smaller of the page numbers?
4	Find the positive difference between the sums of the perfect squares between 99 and 199 and the perfect squares between 200 and 299.
5	The distance from the point $(5,4)$ to the line $4x + 3y = 0$ is the reduced common fraction *m/n*. What is $m + n$?
6	A shipping truck, unfortunately had vandalized shipping labels. As a result, there are 5 indistinguishable packages (with identical contents) and 3 distinguishable ones, none of which have a known destination. Each package is delivered randomly to one of the three possible recipients; in how many distinguishable ways can this happen?
7	A wood turtle sitting in a corner noticed a sun patch and began ambling toward it at a rate of a quarter foot per second. After two feet, he noticed that another turtle would reach the optimal position three seconds before him. In response, he doubled his speed and reached the sun patch one second before the other turtle, who moved at constant speed. How many feet from the corner is the sun patch?
8	Let a number, *n*, be divided by 1000 giving a quotient of *q* and remainder *r*. For how many 6-digit numbers, n, is $q + r$ divisible by 37.
9	All spades are removed from a standard 52-card deck and set aside in a second stack. Both stacks are shuffled. One spade and two cards from the other stack are drawn. The probability that the spade matches (except suit) at least one of the other two cards is the reduced fraction *m/n*. Find $m + n$.
10	Let $C = m/n$ be the coefficient of x^2 in the expansion of the infinite product $(1-x)\left(1+\frac{1}{2}x\right)\left(1-\frac{1}{4}x\right)\left(1+\frac{1}{8}x\right)\ldots$ Find $\lvert m\rvert+\lvert n\rvert$.

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Pressure Round Contest

1	Let (a,b) be the point on the parabola given by $y = x^2 - x + 3$ that is closest to the point $(5,4)$. What is $a + b$?
2	Evaluate $\log_{73} 2073071593$
3	The sums of four integers taken three at a time are 6, 9, 14, and 19; i.e. $a + b + c = 6,\ etc$. What is the sum of the squares of the four integers?
4	Evaluate $$\left(\frac{\csc\frac{13\pi}{4}}{\cot\frac{\pi}{3}}\right)^2$$
5	How many of the first 100 (base 10) positive hexadecimal integers have the digit A in them?

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COLLEGE KNOWLEDGE BOWL ROUND #1 – SET 1

#	Problem	Answer
1	What is the least common multiple of 26 and 15?	390
2	Find forty-seven squared minus thirty-three squared.	1120
3	In the expansion of the quantity x plus one to the twelfth power, what is the sum of the coefficients of all terms?	4096
4	Calculate the sum of the first 17 even numbers.	306
5	What is the fifth pentagonal number?	35
6	How many zeroes does the quantity one hundred thirty factorial end in?	32
7	What is the third prime number whose digits add to 7?	61
8	The 12^{th} through 15^{th} terms of an arithmetic sequence are fifteen halves comma x comma y comma twenty-five halves. What is the sum: x plus y?	20
9	Evaluate nine to the log base three of five.	25
10	What is the remainder when 3^8 is divided by 7?	2

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COLLEGE KNOWLEDGE BOWL ROUND #2 – SET 2

#	Problem	Answer
1	What is the product of the prime factors of 210?	210
2	Eighteen people in a tour group receive a gold star; this represents sixty percent of the group. How many people are in the group?	30
3	Find the log base four of thirty-two root two.	11/4 or eleven fourths
4	What is the sum of the positive multiples of 5 that are less than 100?	950
5	What is the sum of the distinct prime factors of 1432?	181
6	How many three-digit numbers have neither their hundreds and tens digit the same, nor their hundreds and unit digits the same?	729
7	What is the smallest positive integer that when multiplied by sixty yields a perfect square?	15
8	What is the twelfth number in the Fibonacci sequence whose first two elements are one comma one?	144
9	Find in base eight the difference of one four bee base sixteen and the number one zero zero zero one one zero one one base two.	6 0 [base 8] or six zero [base 8]
10	The first term of an arithmetic sequence is negative three and the sum of the first nine terms is 45. What is the sum of the first 20 terms?	320

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COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	What is the average of the numbers: 46, 47, 53, and 58?	51
2	How many ways can the letters in the word PROBLEM, P-R-O-B-L-E-M be arranged?	5040
3	For a randomly chosen angle, x, from 0 to 2 pi, what is the probability that the sine [pronounced sign] of x times the cosine [pronounced co-sign] of x is less than 0?	1 / 2
4	How many three-digit palindromes are even?	40
5	Let X be the set consisting of one, two, three and let Y be the set with four, five, six. If we randomly pick a function from X to Y, what is the probability that it will be one to one?	2 / 9
6	A bag contains six red marbles and seven blue marbles. What is the probability of drawing two red marbles in a row without replacement?	5/26
7	How many factors do 176 and 132 have in common?	6 [factors]
8	In how many distinct ways can two letters from the word GREEN, G-R-E-E-N be ordered?	13
9	The probability density function for a random variable D is given by x over 2 on the interval from 0 to 2. What is the probability that D is less than one?	1 / 4
10	If you rearrange the letters in the name Marcy (M-A-R-C-Y) and put the permutated words in alphabetical order, what would be the thirty-seventh one in the list?	C-M-A-R-Y

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COLLEGE KNOWLEDGE BOWL ROUND #4 – SET 4

#	Problem	Answer
1	The average of the four numbers [45, 32, 16, x] is 40, what is x?	67
2	How many different combinations can you make choosing three flavors from a possible seven flavors?	35 (combinations)
3	Consider the six functions, sine (sign), cosine (co-sign), tangent, cotangent, secant and cosecant. What is the probability that a randomly chosen function is positive for an angle in the third quadrant?	1 / 3
4	What is the positive difference between the median and the mean of the numbers: 15, 20, 13, 19 and 23?	1
5	Let the random variables R and S be independent with standard deviations of 8 and 6 respectively. What is the standard deviation of R minus S?	10
6	A coin is flipped four times, what is the probability of getting the same number of heads as tails?	$\frac{3}{8}$ or three-eighths.
7	Three fair 12-sided dice are rolled. The probability that exactly two dice show the same number can be expressed as the reduced fractions m over n. Find m plus n.	59
8	Six identical balloons are divided among three children. If each child gets at least one balloon, in how many ways can they be divided?	10
9	The probability that event M occurs given than event N has occurred is four-fifths and the probability that both events occur is one-half. What is the probability that event N does NOT occur?	3 / 8
10	Let G be a uniform random variable over the interval from 2 to 8. What is the probability that G is greater than 7?	1 / 6

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COLLEGE KNOWLEDGE BOWL ROUND #5 – SET 5

#	Problem	Answer
1	How many distinct triangles with integer side lengths have a perimeter of 9?	3 [triangles]
2	A circle centered at negative 1 comma negative 1 has radius k, and a circle centered at 2 comma 3 has radius 2 k. Find k such that the circles touch once.	$\frac{5}{3}$
3	What is the period of 4 cosine of the quantity 12 x plus 2?	$\frac{\pi}{6}$ or pi over 6.
4	A circle of circumference 6 pi is inscribed in a square. What is the area of the circle that circumscribes that square?	18 pi
5	Find the measure, in radians, of the smaller angle between the vectors 1 comma 2 and negative 1 comma 3.	$\frac{\pi}{4}$ or pi over 4.
6	What is the radius of the circle if the arc defined by a central angle of 18 degrees has length five pi?	50 [un]
7	What is the length of the altitude to the hypotenuse of a right triangle with side lengths of 5, 12 and 13?	60/13 [un]
8	The bases of an isosceles trapezoid are diameters of two externally tangent circles whose centers are 12 units apart. What is the area of the trapezoid?	144 [sq un]
9	How many distinct enclosed areas are formed by the polar function r equals sine three theta minus sine theta?	3 [areas]
10	What is the volume of a hexagonal prism with side length 4 and height of the square root of 3?	72

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COLLEGE KNOWLEDGE BOWL ROUND #6 – SET 6

#	Problem	Answer
1	A right triangle with integer side lengths has two sides with lengths 16 and 34. What is the length of the final side?	30 [un]
2	How many vertices does a hexahedron constructed of equilateral triangles have?	5 [vertices]
3	What is the magnitude of the vector 8 comma 4 comma 12?	$4\sqrt{14}$ or 4 root 14.
4	How many diagonals can be drawn inside a 32-gon?	464
5	Find the area of the triangle defined by the point 1 comma 4, the point 3 comma 0 and the point negative 1 comma 3.	5
6	What are the coordinates of the centroid of the triangle with vertices at the point two comma three, the point four comma one and the point nine comma negative one?	(5, 1) or five comma one.
7	A square is inscribed in a circle of radius 2. What is the area of the square?	8 [sq un]
8	What is the shortest distance from the origin to the line 3 x plus 4 y equals 12?	12 / 5
9	A line is tangent to the circle x-squared plus y-squared equals 5 going through the point two comma one. What is the y-coordinate of the y-intercept of the line?	5
10	A 30-60-90 triangle has a perimeter of 60, what is the length of the hypotenuse?	$60 - 20\sqrt{3}$ or 60 minus 20 root 3.

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High School – October 21, 2015

COLLEGE KNOWLEDGE BOWL ROUND – EXTRA

#	Problem	Answer
1	What is the discriminant of the equation thirteen x-squared plus three-x plus 5?	-251
2	Find the product of the least common multiple and greatest common factor of 21 and 35.	735
3	Two fair 8-sided dice are rolled. The probability that their sum is 9 can be expressed as the reduced fraction x over y. Find x plus y.	9
4	An irregular fair six-sided die has the numbers 7,8,9,10,11,12 instead of the traditional values. If you roll the die twice what number is the sum most likely to be?	19
5	A two by two matrix has in order first row entries six and three and second row entries n and negative seven. Find n such that the matrix is singular.	-14
6	Five interior angles of a hexagon are as follows, 105, 115, 125, 135 and 145 degrees, what is the final interior angle?	95 [degrees]
7	Find the interquartile range of the following data: -1, 3, 7, 4, -2.	5

Final Score:

KEY

(Out of 8)

"Math is Cool" Championships -- 2015-16

School:_____ Room # _____ Team #_____

Name: _____Proctor: _____

11th & 12th Grade **Mental Math** – 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 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.*

	Answer	1 or 0	1 or 0
1	14		
2	41		
3	60 [ways]		
4	Incenter		
5	135 [degrees]		
6	6		
7	34		
8	360 [degrees]		

Math is Cool" Championships – 2015-16

11th & 12th Grade – October 21, 2015

Final Score:

KEY

Student Name _____

Proctor Name _____ Room # _____

First Score

(out of 20)

SCHOOL NAME _____ **Team #** _____

INDIVIDUAL 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.*

DO NOT WRITE IN SHADED REGIONS

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

"Math is Cool" Championships – 2015-16

11th & 12th Grade – October 21, 2015

Final Score: KEY

SCHOOL NAME _____ Team # _____

First Score (out of 10)

Proctor Name _____ Room # _____

Team Contest – Score Sheet

TEAM TEST - 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 **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	146 [cu un]		
3	72		
4	40		
5	37		
6	567		
7	4 [feet]		
8	24325		
9	284		
10	13		

"Math is Cool" Championships – 2015-16

11th & 12th Grade – October 21, 2015

Final Score:
KEY
First Score

Proctor Name _____ Room # _____

SCHOOL NAME _____ **Team #** _____

PRESSURE ROUND - 10 minutes – 5 problems - 5 rounds – 15% of team score

When it is time to begin, you will be handed a packet of five problems. There is a copy of the problems for each team member. Two minutes after the start of the test you are expected to submit an answer for one of the problems (it can simply be a guess). The maximum value of this answer is 1 point. In another two minutes you are expected to submit another answer to one of the four remaining problems; its maximum value is two points. This process will continue until all the problems are answered and each consecutive problem's worth will go up by one point. You must submit your answers on the colored sheets given to you. If you do not have an answer at the end of a two minute period, you must still submit an answer sheet with an identified problem number on it. Failure to do so will result in loss of points. This event is timed, and you will be given a verbal 5 second warning and told to hold your answer sheet up in the air. You may keep working as the sheets are collected. If a team answers the same question more than once, only the first answer will be scored and the other attempts will be ignored.

Pressure Round Answers

	Answer
1	7
2	5
3	162
4	6
5	6

Final Score:

(Out of 8)

"Math is Cool" Championships -- 2015-16

School:_____ Room # _____ Team #_____

Name: _____Proctor: _____

11th & 12th Grade **Mental Math** – 30 sec per question

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

Math is Cool" Championships – 2015-16

11th & 12th Grade – October 21, 2015

Final Score:

Student Name _____

Proctor Name _____ Room # _____

First Score
(out of 20)

SCHOOL NAME _____ **Team #** _____

INDIVIDUAL 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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1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

"Math is Cool" Championships – 2015-16

11th & 12th Grade – October 21, 2015

Final Score:

SCHOOL NAME _____ Team # _____

Proctor Name _____ Room # _____

First Score
(out of 10)

Team Contest – Score Sheet

TEAM TEST - 15 minutes – 30% of team score

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DO NOT WRITE IN SHADED REGIONS

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