

"Math is Cool" Championships – 2013-14

October 18, 2013

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	10 [cm]		
2	[y=] -3, 5 [either order]		
3	42		
4	[x=] 3		
5	A C B [in that order]		
6	$\sqrt{3}$ [inches]		
7	36 [pencils]		
8	72 [sq cm]		
9	0		
10	144 [degrees]		
11	22		
12	1/9		
13	264 [cubic inches]		
14	Average [income]		
15	1/2		
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16	1/13		
17	186		
18	8 [pairs]		
19	11		
20	$m + 16$		
21	5/9		
22	76		
23	7 [mm]		
24	[x=] -2		
25	28		
26	92		
27	$400/\pi$ [sq meters]		
28	4096		
29	1/2		
30	11		
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31	1 [point]		
32	4		
33	$\frac{169}{24}$ [cm]		
34	$\frac{37}{180}$		
35	7		
36	33		
37	-2		
38	16		
39	$\frac{\sqrt{3} + 3}{6}$		
40	1		
31-40 TOTAL:			

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October 18, 2013

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 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.*

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High School – October 18, 2013

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	How many positive prime numbers are less than 30?
2	Evaluate 5 factorial minus 4 factorial.
3	What is the probability of getting a sum that is less than seven from rolling two fair six-sided dice?
4	What is the sum of the first 13 positive odd numbers?
5	How many ways can you uniquely rearrange the letters in the word MENTAL, M-E-N-T-A-L?
6	What is the surface area, in square inches, of a sphere with a volume of 36π cubic inches?
7	How many palindromes are there between 200 and 400?
8	How many integers, x , satisfy the inequality: the absolute value of the quantity $4x$ minus 2 is less than 20?

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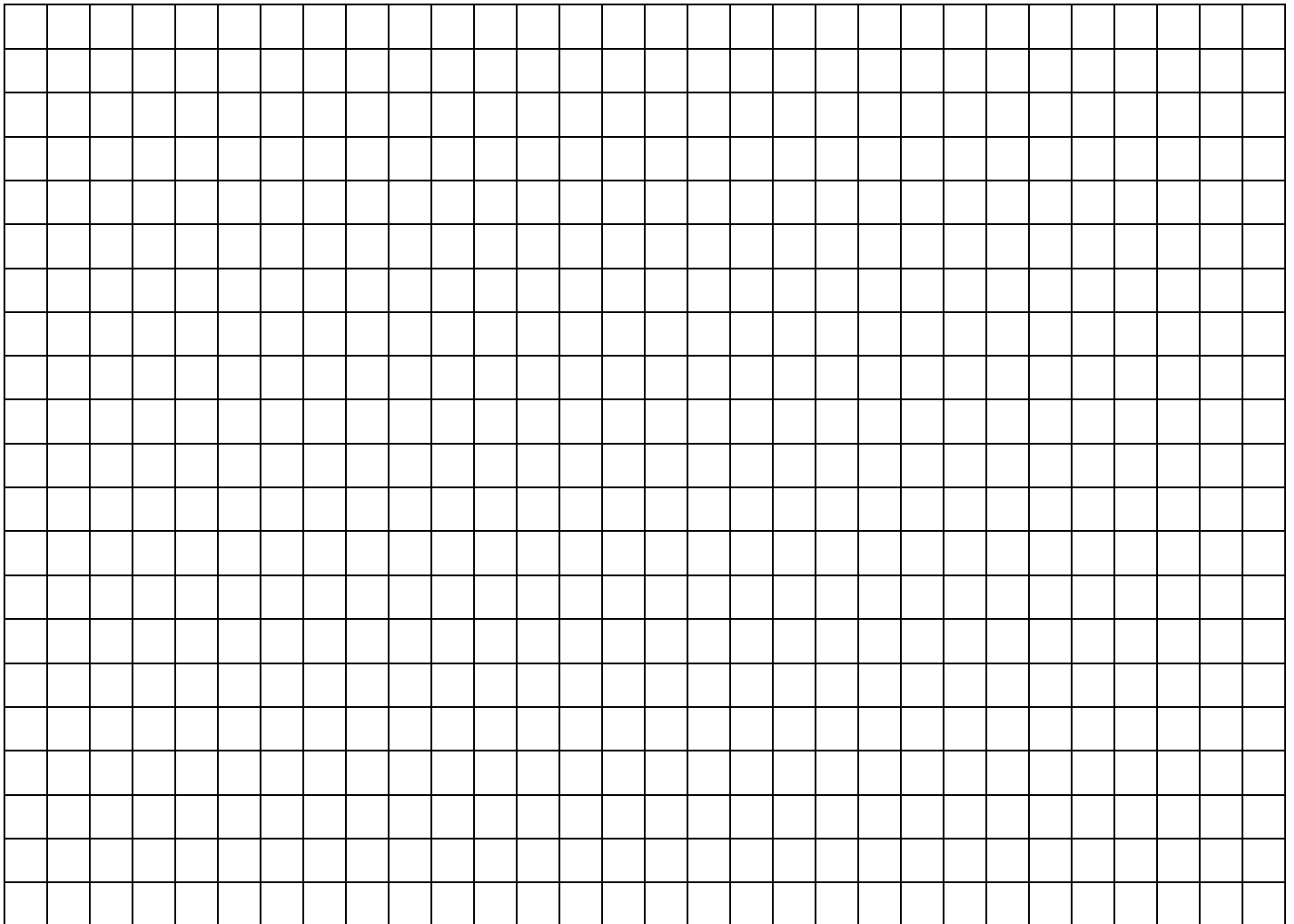
High School Individual - October 18, 2013

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 - 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	The area of a right triangle is 24 sq cm and the length of one of the legs is 6 cm. What is the length of the hypotenuse in cm?
2	Solve for y : $4y^2 - 8y - 60 = 0$
3	What is the sum of the missing numbers in the arithmetic sequence: 12, ____, ____, 30?
4	Solve for x : $4(2x - 1) - (x - 3) = 3x + 11$
5	Let: $A = 2^{20}$ $B = 5^{10}$ $C = 17^5$ Put the values A, B, C in order from smallest to largest.
6	What is the length, in inches, of the altitude of an equilateral triangle with side length 2 inches?
7	Pencils cost 12 cents each while erasers cost 20 cents. I have \$5.00 and I need 3 erasers and as many pencils as I can buy. How many pencils can I buy?
8	What is the area, in square centimeters, of a square with a diagonal of 12 cm?
9	Evaluate: $(4 - 5)^3 + 2 - 1$.
10	What is the measure, in degrees, of an interior angle in a regular decagon?
11	If $g(x) = 3x^2 - 2x + 1$. What is $g(3)$?
12	Simplify and write as a reduced fraction: $3^4 \cdot 9^{-3}$.
13	Three faces of a rectangular parallelepiped (box) have areas of 33, 44, and 48 square inches. What is the volume of the box? Express your answer in cubic inches.
14	Suppose that incomes in the United States are “right-skewed”, which is bigger: the average income or the median income?
15	What is the slope of the line perpendicular to the line $4x + 2y = 5$?
16	Let $i = \sqrt{-1}$ and a and b be real numbers. If $(a + bi)(3 + 2i) = 1$, what is $(a + b)$?
17	The sum of two numbers is 31 and their positive difference is 6, what is the positive difference of their squares?
18	How many ordered pairs of positive integers (x,y) satisfy the equation $20x + 13y = 2013$?
19	Let $f(x) = mx + b$ be a linear function. If $f(2) = 8$ and $f(5) = -1$, what is the sum $m + b$?
20	The sum of 4 consecutive numbers is m . What is the sum of the next 4 consecutive numbers in terms of m ?

21	A six-sided die, numbered 1 through 6, is made so that prime numbers are twice as likely as non-prime numbers to turn up. What is the probability of rolling an odd number?
22	A square 3 by 3 grid of points is formed. How many triangles can be made by connecting three of the points?
23	The three altitudes in a right triangle are: $\frac{10\sqrt{6}}{7}$, $2\sqrt{6}$, and 5 mm. What is the length of the hypotenuse?
24	For what value(s) of x are the points: $(x, 2x + 1)$, $(1,2)$, and $(7,12)$ collinear?
25	In how many zeroes does $123!$ end when expressed in base 10?
26	In how many different ways can Richard pay for a \$1.95 Americano if he only has quarters, dimes, and nickels?
27	In square meters, what is the largest area you can enclose with 40 meters of fencing?
28	Solve for x : $\log_2 \log_4 \log_8 x = 0$
29	What is the probability that a randomly selected factor of 63,946 is even?
30	Let $lcm(a, b)$ be the least common multiple of a and b . What is: $\frac{lcm(1,2,3, \dots, 20)}{lcm(12,13,14, \dots, 20)}$?

Challenge Questions: 3 pts each

31	At how many points does the graph of $y = (x + 3)(x - 2)^2(x - 3)^2 + 2$ intersect the x-axis?
32	The base 6 number 4232x23 is divisible by 5, what is the value of the digit 'x'?
33	A triangle with side lengths of 13 cm, 13 cm, and 10 cm is inscribed in a circle. What is the radius, in cm, of the circle?
34	Evaluate: $\sum_{x=1}^{\infty} \frac{1}{x^2 + 9x + 18}$
35	Fifteen factorial equals 1,307,6y4,368,000, where y represents a digit 0 through 9. What is y?
36	What is the largest integer n for which $\frac{4n^2 - 13n + 17}{n - 4}$ is also an integer?
37	If a point reflected across the line $y = x - 1$, becomes $(-6, 4)$, what is the sum of the coordinates of that point?
38	Let $f(x) = 2x^2 + 5x - 3$ and $g(x) = 2x + 5$. What is the sum of the coefficients of: $(f(g(-1 - x)))^2$?
39	A solid regular octahedron is sliced in half, creating two square pyramids. What is the ratio of the surface area of one of the pyramids to the surface area of the original octahedron? Express your answer as a single fraction with an integer denominator.
40	Evaluate: $\frac{1}{3} + \frac{3}{9} + \frac{5}{27} + \frac{7}{81} + \dots$

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9th & 10th Grade – October 18, 2013

Individual Multiple Choice Contest

1	Find the units digit of $3^{24} \times 5^{27} \times 7^{12} \times 11^{13}$. A) 1 B) 3 C) 5 D) 7 E) Answer not given.
2	Which of the following is equivalent to $2^x + 2^x + 2^x + 2^x$? A) 2^{2x} B) 2^{4x} C) 4^x D) $8^{\frac{x+2}{3}}$ E) Answer not given.
3	How many distinct triangles exist with sides of integer length and perimeter equal to 10? A) 2 B) 3 C) 4 D) 6 E) Answer not given.
4	Let T be a set of positive integers. What is the maximum number of elements of T if no subset of three numbers has a sum that is a multiple of 3? A) 3 B) 4 C) 5 D) 6 E) Answer not given.
5	My Physics teacher is giving us three tests and so far I have scored an 82 and a 90. The lowest score counts for only 20% of my grade while the others are weighted by 40%. What must I score on the third test to have a weighted average of 80? A) 56 B) 60 C) 62 D) 69 E) Answer not given.
6	A cube with a side length of 7 units is painted purple and then cut up into 343 one-unit cubes. What is the number of one-unit cubes with two faces painted? A) 8 B) 60 C) 125 D) 150 E) Answer not given.
7	If $a@b$ is defined to equal $\frac{\binom{b}{a} - \binom{8a}{b}}{a-b}$, evaluate $1@4$. A) -66 B) -50 C) $-\frac{31}{2}$ D) 0 E) Answer not given.
8	Which triangle with side lengths given below has the largest area? A) 8, 15, 12 B) 8, 15, 15 C) 8, 15, 17 D) 8, 15, 19
9	Let $P(x)$ be a polynomial with integer coefficients that has roots of 3 and 7. Which of these values could be equal to $P(5)$? A) 7 B) -16 C) 15 D) 9 E) Answer not given.
10	A game is played where sixty fair six-sided dice are rolled, and all the dice showing a '1' are taken away. The remaining dice are rolled again and again the '1's are taken away. Let e_n be the expected number of dice remaining after n rolls. What is an expression for e_n ? A) $60 \left(\frac{1}{6}\right)^n$ B) $60 - 3n$ C) $60 - 10n$ D) $60 \left(\frac{5}{6}\right)^n$ E) Answer not given.

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Team Contest

1	What is the ratio of the area of an equilateral triangle to that of a regular hexagon with the same perimeter? (use reduced a:b notation)
2	The smallest positive prime factor of p is 5 and the smallest positive prime factor of q is 3. What is the smallest positive prime factor of $p+q$?
3	Find the area of a triangle with side lengths 11 cm, 13 cm, and 20 cm. Express your answer in square centimeters.
4	Evaluate: $\frac{1 \times 2 \times 4 + 2 \times 4 \times 8 + 3 \times 6 \times 12 + \dots + 6 \times 12 \times 24}{1 \times 4 \times 16 + 2 \times 8 \times 32 + 3 \times 12 \times 48 + \dots + 6 \times 24 \times 96}$
5	The sequence of triangular numbers begins: 1, 3, 6, 10, 15, and continues in like manner. Of the first 100 numbers in the sequence, how many are divisible by 11?
6	Two flagpoles, m and n feet tall respectively, are placed d feet apart. Cables are attached from the top of each pole to the bottom of the other. How high, in feet, is the intersection of the cables off the ground, in terms of the given parameters?
7	The average score on the algebra test taken by the 35 students in the class was 84. The boys averaged 80 and the girls averaged 87. How many boys are in the class?
8	Stacey has access to as many 37 and 19-cent stamps as she needs. What is the largest postage amount, in cents, that she cannot obtain exactly?
9	In how many ways can the letters of the word PSIONIC be uniquely rearranged such that no vowel is in an odd-numbered place?
10	Express the sum $271_8 + 3A_{16}$ as a base 2 number.

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Pressure Round Contest

1	Evaluate: $e^{\left(\frac{2}{\log_4 e}\right)}$
2	Find the coefficient of the x^4 term in the binomial expansion of $3x^3(3x + 4)^4$.
3	At 3:00pm the hour and minute hands of an analog clock are perpendicular. In how many minutes will they next be perpendicular? Express your answer as a mixed number.
4	If $r + s = 6$ and $rs = -2$, what is $r^3 + s^3$?
5	An ant is crawling on the surface of a regular tetrahedron ABCD with edges measuring 12 units. If the ant is currently at point X on edge AB such that AX=3. What is the shortest distance the ant can crawl to reach the midpoint of edge CD, named Y?

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COLLEGE KNOWLEDGE BOWL ROUND #1 – SET 1

#	Problem	Answer
1	What is 85 squared?	7225
2	How many faces does an icosahedron have?	20
3	How many positive factors does one thousand one have?	8
4	Find the slope of a line perpendicular to the line y equals negative $13x$ over 7 plus 14 .	$7/13$
5	How many seconds are in a day?	86,400 [seconds]
6	How many real roots does the polynomial $6x^2 - 4x + 3$ have?	0
7	What is $30 \pmod{7}$?	2
8	What is the number of ways of choosing 5 students out of a class of 14 students if the order does not matter?	2002
9	What is the expected value of the total of the numbers showing on the roll of four fair dice, two with six sides, one with eight, and one with twelve?	18
10	Six sleek swans swam swiftly southwards at 40 miles per hour. Then the six sleek swans swam swiftly back northwards the same exact distance at 60 miles per hour. What was their average speed in miles per hour?	48[mph]

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COLLEGE KNOWLEDGE BOWL ROUND #2 – SET 2

#	Problem	Answer
1	What is 67 times 73?	4891
2	In degrees, what is the measure of an interior angle of a regular octagon?	135 [degrees]
3	Find the least common multiple of 24 and 124.	744
4	What is the slope of the line going through the point one comma two and the point eight comma negative ten?	$-\frac{12}{7}$
5	How many inches are in a mile?	63,360 [inches]
6	What is the value of the smaller root of the polynomial $x^2 + x - 12$?	-4
7	What is the remainder when two thousand three hundred forty-five is divided by eleven?	2
8	Evaluate $7 \text{ choose } 3$.	35
9	A family of six goes to the movies. This family consists of two parents and four children. If they all sit in one row, how many different ways can the family be seated such that the parents are sitting next to each other?	240
10	It takes 11 benevolent elephants 5 hours to destroy 55 elevators. How many elevators can 77 benevolent elephants destroy in 2 hours?	154 [elevators]

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COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	What is the area of a circle circumscribed by a square with a side length of 10?	25π
2	What is the sixth Fibonacci number?	8
3	Evaluate two to the eleventh power.	2048
4	What is the product of the greatest common factor and least common multiple of twenty-two and twenty-eight?	616
5	How many three-digit positive palindromes are there?	90
6	Find the sum of the number of sides and number of diagonals of a regular heptagon.	21
7	Evaluate the sum of the four greatest prime numbers less than 100.	348
8	What is the area, in square units, of the circle inscribed in a right triangle with legs of 5 and 12 units?	4π
9	What is the sum of the numbers of edges, faces, and vertices of a hexahedron constructed with six triangles?	20
10	Captain Hook chained up his crocodile to one corner of a rectangular barn whose base is 15 feet by 20 feet. The crocodile’s chain is 17 feet long. What is the area, in square feet, the crocodile may graze on the Pirate Private Property?	$871\pi/4$ [sq ft]

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COLLEGE KNOWLEDGE BOWL ROUND #4 – SET 4

#	Problem	Answer
1	What is the volume of a pyramid whose base has an area of 37 and a height of 18 units?	222 [cubic units]
2	What is 15% of 2540?	381
3	Find the sum of the first 7 positive cubes.	784
4	What is the 15 th triangular number?	120
5	Evaluate 9 factorial.	362,880
6	Find the units digit of 13 to the nineteenth power.	7
7	Find the positive difference between the second smallest positive perfect number and the twelfth smallest positive prime number.	9
8	A triangle has two sides of lengths 4 and 17. What is the positive difference between the largest and smallest possible integer lengths of the third side?	6
9	Find the geometric mean of the two smallest two-digit numbers with three positive factors.	35
10	Dissatisfied with his computer's estimate that a download will take 4 hours to complete using only a wired internet connection, James also engages a wireless connection. The computer now estimates that the download will take 3 hours. How many hours would the wireless connection take to complete the entire download itself?	12 [hours]

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COLLEGE KNOWLEDGE BOWL ROUND #5 – SET 5

#	Problem	Answer
1	Evaluate three plus four times the quantity five minus three.	11
2	What is the length of the space diagonal of a rectangular prism with sides of length 5, 9, and 11?	$\sqrt{227}$ The square root of 227.
3	Find the sum of the x and y coordinates of where the line 4x plus 3y equals 20 intersects the y-axis.	20/3
4	What is the sum of all the positive factors of 28?	56
5	What is the area of a triangle with side lengths of 10, 24, and 26 units?	120 [square units]
6	What is the probability of drawing three kings in a row, out of a standard 52-card deck, without replacement?	1/5525
7	For an icosahedron, what do you get when you take the number of vertices, subtract the number of edges, and add the number of faces?	2
8	What is the product of the roots of the polynomial 5 x-cubed minus 37 x-squared plus 22x plus 225?	-45
9	Find the sum of the infinite geometric series: 9 plus 3 plus 1 plus one-third and so on.	27/2
10	Solve for x, if 4 to the power of the quantity 2x minus 1 equals 8 to the power x.	[x=] 2

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COLLEGE KNOWLEDGE BOWL ROUND #6 – SET 6

#	Problem	Answer
1	What is four divided by eight plus five divided by the quantity seven plus three?	1
2	Calculate the digital root of product of twenty-one and fifty-one.	9
3	Find the sum of the roots of $4x^2 + 32x - 2$.	-8
4	Calculate the reciprocal of the sum of the reciprocals of three and six.	2
5	Find the total surface area of a cylinder with a radius of 5 and a height of 7 units.	120π [sq units]
6	The probability that it rains on any given day in Seattle is 70 percent, independent of other days. What is the probability that it rains exactly 3 days out of the next 4? Answer as a decimal.	0.4116
7	Find the volume of the frustum of a cone with base radii of 5 and 10 and a height of 6 units.	350π [cubic units]
8	The polynomial $x^3 + kx^2 + x + 1$ is divisible by the quantity $x - 1$. What is the value of k ?	-3
9	The house numbers on my side of the street are 101, 105, 109 and so on until 197. What is the total of these numbers?	3725
10	What is the value of x if the square root of x equals the cube root of 8 squared?	16

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COLLEGE KNOWLEDGE BOWL ROUND – EXTRA

#	Problem	Answer
1	As a decimal, find the arithmetic mean of the first 8 digits in the decimal representation of pi.	3.875
2	Find the area of the region from y equals the absolute value of the quantity x minus 2 to the x -axis between x equals negative 4 and x equals 4.	20
3	What is the geometric mean of 8 and 9? Answer in simplest radical form.	$6\sqrt{2}$
4	What is the positive difference between the number nineteen and its additive inverse?	38
5	What is the area of a triangle with side lengths of 6, 7, and 11?	$6\sqrt{10}$
6	If i represents the square root of negative 1, what is the quantity 1 plus i times the quantity 1 minus i ?	2

Extra

Final Score:

KEY

(Out of 8)

“Math is Cool” Championships -- 2013-14

School: _____ Room # _____ Team # _____

Name: _____ Proctor: _____

High School

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	10 [primes]		
2	96		
3	5/12		
4	169		
5	720		
6	36π [sq in]		
7	20 [palindromes]		
8	10 [integers]		

Math is Cool” Championships – 2013-14

9th & 10th Grade – October 18, 2013

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

"Math is Cool" Championships – 2013-14
9th & 10th Grade – October 18, 2013

Final Score: KEY

First Score (out of 10)

SCHOOL NAME _____ Team # _____

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	2 : 3		
2	2		
3	66 [sq cm]		
4	1/8		
5	18 [numbers]		
6	$\frac{mn}{m+n}$ [feet]		
7	15 [boys]		
8	647 [cents]		
9	72		
10	11110011 _[2]		

“Math is Cool” Championships – 2013-14
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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	16
2	2304
3	32 $\frac{8}{11}$ [min]
4	252
5	$3\sqrt{13}$ [units]

Final Score:

(Out of 8)

“Math is Cool” Championships -- 2013-14

School: _____ Room # _____ Team # _____

Name: _____ Proctor: _____

High School

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			
2			
3			
4			
5			
6			
7			
8			

Math is Cool” Championships – 2013-14

9th & 10th Grade – October 18, 2013

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.***

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” Championships – 2013-14
 9th & 10th Grade – October 18, 2013

Final Score:

First Score
(out of 10)

SCHOOL NAME _____ **Team #** _____

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			
2			
3			
4			
5			
6			
7			
8			
9			
10			

"Math is Cool" Championships – 2013-14

October 18, 2013

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:			