

"Math is Cool" Masters - 2011-12

Sponsored by: EKA Chemicals

December 3, 2011

PreCalculus & Calculus 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.*

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Mental Math Contest

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#	Problem
1	Evaluate twelve [PAUSE] plus three times nine.
2	How many hours will it take Joseph to cross-country-ski twenty kilometers if he skis at a speed of eight kilometers per hour?
3	How many diagonals can be drawn in a convex fifteen-gon?
4	How many positive integers are factors of twenty-eight?
5	What is the period of the function "A" of "Z" equals two times the sine of three "Z"?
6	If you can buy eight kilograms of flour for D dollars, how many dollars would it cost to buy K kilograms of flour, in terms of K and D?
7	Evaluate nine-fourths-raised-to-the-negative-three-halves-power.
8	What is the shortest distance from the point seven, COMMA, two to the line "X" minus "Y" equals two?

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Pre-Calculus & Calculus High School Individual Contest

Tear this sheet off and fill out top of answer sheet on following page prior to the start of the test.

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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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Pre-Calculus & Calculus High School Individual Contest

Questions 1-30: 2 points each	
1	What is the remainder when 435 is divided by 13?
2	What is the missing term of the sequence 1, 2, 7, 16, 29, __, 67, 92, ...
3	What is the maximum number of points at which a square and a triangle can intersect if none of their sides are collinear?
4	Evaluate in radians: $\text{Arcsin}\left(-\frac{1}{2}\right)$
5	Evaluate: $\frac{3}{16} + \frac{5}{24}$
6	A bag of marbles contains nine red marbles, eleven white marbles, and 24 blue marbles. If a single marble is chosen, what is the probability that it is not blue?
7	What value(s) of c satisfy $4c - 1 = c + 17$?
8	What is the circumference, in meters, of a circle with an area of $169\pi \text{ m}^2$.
9	What is the slope of a line perpendicular to the line $y + 3x = 7$?
10	What is the sum of the positive integer factors of 36?
11	What is the name of a triangle with three non-congruent sides?
12	Express the number .005732 in scientific notation rounded to three significant digits.
13	What is the coefficient of the k^2 term when $(3k^2 + 2k + 1)(2k^2 - 7k + 3)$ is expanded and like terms are combined?
14	What is the area, in square meters, of a triangle with sides measuring 4, 5, and 7 meters?
15	What is the sum of the odd numbers between 30 and 68?
16	Convert $6^\circ 45'$ to radians.
17	In how many ways can eight people sit around a round table, if Fred and George must sit next to one another?

18	What is the coefficient of the b^5 term when $(2b - 1)^8$ is expanded and like terms are combined?
19	Express the base-12 number 1212_{12} as a base-10 number.
20	Evaluate, where $i = \sqrt{-1}$: $2i^3 - (4i)^5 i^6 + ((2i)^4 i)^3$
21	When a coin is flipped six times, what is the probability that the third flip is heads and there are more tails than heads?
22	Evaluate the determinant: $\begin{vmatrix} 4 & -1 & 3 \\ 2 & 2 & 1 \\ -3 & 0 & 7 \end{vmatrix}$
23	What is the product of the first four terms of a geometric sequence with first term 3 and common ratio 2?
24	Boxes B and C each contain a standard six-sided die. The boxes are shaken (rolling the dice) and set on the table, after which a trusted friend opens Box C and tells you that the die inside is not showing a five. What is the probability that the sum of the numbers shown on the two dice is six?
25	Simplify by dividing: $\frac{6j^4 + 3j^3 - 2j^2 + 7j + 4}{2j + 1}$
26	What is the sum of the nine smallest positive perfect squares?
27	Harold and Isolde plan to meet for lunch, agreeing that each of them will arrive sometime between 11 AM and 1 PM and wait for one hour before leaving in disgust. Unfortunately, Harold forgot to adjust his watch for Daylight Savings Time, so he actually arrives sometime between noon and 2 PM. What is the probability that they do NOT meet each other?
28	Evaluate: $9 + \frac{9 + \frac{9 + \dots}{3}}{3}$
29	The point $(-9, -4)$ is reflected across the line $y = 1$ to point K, which is then rotated 450° counter-clockwise about the point $(-1, 5)$ to point L. What are the coordinates, in the form (x, y) , of point L?
30	A sequence begins with 1 and continues, including each successive integer so long as that number does not share a factor greater than one with two or more prior terms of the sequence. The sequence begins 1, 2, 3, 4, 5, 7, ... because 6 shares a factor of 2 with both 2 and 4. What is the 40 th term of this sequence?

Challenge Questions: 3 pts each

31	The digits of a four-digit number sum to 19 and when the digits are reversed, the new number is 3726 greater than the original number. What is the largest possible value of the original number?
32	When six fair coins are flipped, what is the probability that exactly one series of exactly three flips in a row are identical?
33	If $AB_q + 100_{10} = ABC_q$, where A , B , and C are not necessarily different digits, what is the smallest possible value of q ?
34	What is the largest number of non-overlapping (tangent is okay) circles with radii of 1 m that can fit inside a rectangle measuring 21 m by 13 m?
35	What is the positive difference between the squares of the roots of $4a^2 - 7a - 9 = 0$?
36	The numbers one to one- million are written in a row. Karen circles 3158 and circles every 126th number thereafter, while Loren circles 5831 and every 612th number thereafter. What is the smallest difference between two circled numbers?
37	Bag A contains three blue marbles and one white marble. Bag B contains three blue marbles and two white marbles. Two marbles are drawn randomly from bag A and put in bag B. What is the probability that a marble then drawn from bag B is blue?
38	A collection of integers has distinct elements with the exception of two equal elements. If the median is less than the mode, which is less than the mean, what is the minimum possible value of the range?
39	When 81 people were surveyed, 64 liked chocolate, 49 liked vanilla, and 36 liked strawberry. If 4 people liked both chocolate and vanilla but not strawberry, what is the minimum number of people who could have liked all three flavors?
40	What is the tens digit of 27^{27} ?

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11th & 12th Grade - December 3, 2011

Individual Multiple Choice Contest

1	Evaluate: 3^7 A) 1237 B) 1839 C) 2187 D) 2879 E) Answer not given.
2	What are the coordinates, in the form (x,y) , of the point of intersection of the lines $2x + y = 7$ and $x - y = 8$? A) (5,-3) B) (10,2) C) (-3,13) D) (1,5) E) Answer not given.
3	What is the cotangent of the smallest angle in a right triangle with a hypotenuse measuring 8 cm and a leg measuring 1 cm? A) $3\sqrt{7}$ B) $\frac{1}{8}$ C) $\frac{4\sqrt{3}}{3}$ D) 2 E) Answer not given.
4	What is the sum of the twenty smallest positive even numbers? A) 210 B) 320 C) 420 D) 640 E) Answer not given.
5	What is the measure, in degrees, of the smaller angle between the hour and minute hands of a standard twelve-hour clock at 7:18? A) 111 B) $\frac{229}{2}$ C) 117 D) $\frac{243}{2}$ E) Answer not given.
6	When the vertices of a regular polygon are named in alphabetical order starting with A, \overline{KC} passes through the center of the figure. What vertex lies directly across the center from P? A) E B) F C) G D) H E) Answer not given.
7	If you deposit a million dollars in an account giving 12% annual interest compounded quarterly, how many dollars (rounded to the nearest cent) will be in the account at the end of one year? A) \$1,124,608.81 B) \$1,125,942.81 C) \$1,120,000.00 D) \$1,121,121.12 E) Answer not given.
8	In a six-by-four array of unit squares, how many paths of length ten are there from the upper right corner to the lower left corner that pass through the central intersection? A) 105 B) 10 C) 210 D) 100 E) Answer not given.
9	When the equations $y = 2(x - 3)^2 - 4$ and $y^2 - 4(x + 8)^2 = 1$ are graphed in the Cartesian Plane, at how many points do they intersect? A) 1 B) 2 C) 3 D) 4 E) Answer not given.
10	How many positive integral factors of 120 are also factors of 210? A) 4 B) 8 C) 12 D) 15 E) Answer not given.

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 Team Contest

1	A hexagon has five angles measuring 51° , 115° , 151° , 15° , and 111° . What is the measure of the sixth angle, in degrees?
2	Write the letters below (NOT the values or expressions) in order of ascending value: $A=1234+9753$ $B=43*59$ $C=1,000,000/99$ $D=34567-23581$
3	When my secret number is divided by two and this result is increased by three, the final result is four times the number that is five more than six. What is my secret number?
4	What is the sum of the positive multiples of three less than 100 that are not factors of 540?
5	If $q(q(r)) = r + 48$, determine all possible values of $q(-9)$.
6	Express the base-eight number 12345_8 as a base-four number.
7	What is the sum of the value(s) of θ between 0 and 2π inclusive that satisfy $\frac{\sin \theta}{3 \sin \theta - \cos \theta} = \frac{\cos \theta}{\sin \theta + 7 \cos \theta}?$
8	A group of friends contributes equally to rent a large beach house for Memorial Day weekend. If there had been two fewer friends, everyone would have paid \$50 more. If the original group had invited Weird William, his wife would have contributed \$500 to the rental (in addition to him paying his fair share of the remainder, even though she wouldn't have attended), so that everyone attending would have had to pay \$50 less than the original group. How many dollars did it cost to rent the house for the weekend?
9	What is the sum of the number of vertices on a regular icosahedron, the number of tablespoons in a half gallon, and the number of seconds in four hours?
10	In the cryptarithm below, each letter represents a distinct digit (i.e. if an A is a 1, all A's are 1's and B's cannot be 1's). What is the largest possible value of the four-digit number ABCD? $\begin{array}{r} AB \\ \times C \\ \hline BCD \end{array}$

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Pressure Round Contest

1	Evaluate: $\sum_{f=0}^6 \cos^2\left(\frac{5\pi f}{12}\right)$
2	What value(s) of p satisfy $\frac{p+3}{2p^2-5p+7} = \frac{3p+14}{6p^2-5p+7}$?
3	Evaluate: $\frac{(-3(-5)-(-4))^{-1}}{(-2-(-6)-1)(-1)}$
4	If $\log_f g = h$ and $\log_g f = 5 - 6h$, what is the product of all possible values of h ?
5	An isosceles right triangle has legs of length 3 cm. The hypotenuse of this triangle is used as a leg of another isosceles right triangle that does not overlap any other triangles, and this process is continued until there are a total of seven triangles. What is the total area, in square centimeters, of these seven triangles?

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COLLEGE KNOWLEDGE BOWL ROUND #1 - SET 1

#	Problem	Answer
1	What is the quotient when two thousand, four hundred, eighty-four is divided by twelve?	207
2	Isabella runs the first kilometer of her five-kilometer race in five minutes. How many minutes should she take to run the remaining four kilometers if she wants to average fifteen kilometers per hour for the whole race?	15 [min]
3	A recursive sequence has first term nine and subsequent terms each one less than twice the previous term. What is the fourth term of this sequence?	65
4	What is the area, in centimeters, of an ellipse with a twenty-six centimeter major axis and foci that are ten centimeters apart?	156π (156 "pie") [cm ²]
5	What is the surface area, in square meters, of a right rectangular prism with edges measuring nine, seven, and four meters?	254 [cm ²]
6	Express the prime factorization of eighty-four in exponential form.	$2^2 \cdot 3 \cdot 7$ [in any order] (two-squared times three times seven)
7	If two liters of a fifty-percent-acid solution are mixed with three liters of a five-percent acid solution, what percent of the resulting solution is acid?	23 [%]
8	In how many ways can the letters in the word BUMBLEBEE (spelled B-U-M-B-L-E-B-E-E) be arranged?	10,080 (ten thousand eighty)
9	What is the smallest possible integer number of meters in the length of the fourth side of a quadrilateral with three sides measuring eight, forty-one, and fourteen meters?	20
10	How many positive four-digit integers contain four non-zero digits that collectively have a greatest common factor greater than one?	338

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COLLEGE KNOWLEDGE BOWL ROUND #2 - SET 2

#	Problem	Answer
1	What is the mode of the data set three [PAUSE] nine [PAUSE] five [PAUSE] three [PAUSE] four [PAUSE] one [PAUSE] four [PAUSE] six [PAUSE] nine [PAUSE] nine?	9
2	If Gary can write a math test in one hour and Harry can write one in forty minutes, how many minutes would it take them to write a math test if they worked together?	24 [min]
3	What is the nineteenth term of an arithmetic sequence with first term thirty and common difference eleven?	228
4	How many real roots does five-M-squared-minus-fifty-M-minus-ninety have?	2 [real roots]
5	What is the measure, in degrees, of an interior angle in a regular eighteen-gon?	160 [°]
6	When four students sit in a row, Yvonne is not next to Xavier, and Willa is somewhere to Vinnie's right. How many seating orders are possible?	6
7	If five times the quantity two "D" plus one is equal to four more than three times the quantity "D" minus two, what is the value of "D"?	-1
8	An unusual dartboard is a rectangle measuring thirty by forty-five centimeters, with a concentric twenty by thirty-five centimeter rectangular "cow's eye" within it, and a concentric ten by twenty-five centimeter "bull's eye" within that. What is the probability that a dart that hits this dartboard lands inside the "cow's eye" but not the "bull's eye"?	1/3
9	A rhombus with sides measuring five meters has an area of twenty square meters. A similar rhombus has an area of five square meters. How long, in meters, are the sides of this second rhombus?	5/2 (five-halves)
10	Express the polar coordinates four COMMA thirty degrees as rectangular coordinates in the form X COMMA Y.	($2\sqrt{3}, 2$) (two-root-three-COMMA-two)

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COLLEGE KNOWLEDGE BOWL ROUND #3 - SET 3

#	Problem	Answer
1	What is the sum of the terms of an infinite geometric sequence with first term forty five and common ratio two-thirds?	135
2	Evaluate nineteen squared minus sixteen squared.	105
3	What is the dot product of the vectors four COMMA three COMMA two and one COMMA five COMMA six?	31
4	What is the least common multiple of eighteen and twenty-four?	72
5	What is the volume, in cubic meters, of a right circular cylinder with a base radius of seven meters and a height of six meters?	294π [m ³] (294 "pie")
6	In triangle D-C-B, side B measures eight meters, side C measures three meters, and angle D measures forty-five degrees. What is the area of the triangle, in square meters?	$6\sqrt{2}$ [m ²] (six-root-two)
7	What is the distance between the points five-COMMA-seven and two-COMMA-one?	$3\sqrt{5}$ (three-root-five)
8	Express nine-hundred-eighty-seven as a base-six number.	4323 _[6]
9	What is the length, in meters, of the altitude to the shortest side of a triangle with sides measuring nine, nine, and six meters?	$6\sqrt{2}$ [m] (six-root-two)
10	What is the product of the four fourth- roots of sixteen-I?	-16i

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COLLEGE KNOWLEDGE BOWL ROUND #4 - SET 4

#	Problem	Answer
1	What is the measure, in degrees, of an angle supplementary to an angle measuring eighty-three degrees?	97 [°]
2	Evaluate six-factorial divided by three-factorial.	120
3	A set of three integer test scores from zero to one-hundred inclusive has a mean of eighty-one and a median of seventy-three. What is the largest possible value of its range?	30
4	How many positive five-digit integer palindromes are divisible by four?	200
5	What is the area, in square meters, of an equilateral triangle with sides measuring twelve meters?	$36\sqrt{3}$ [m ²] (36-root-3)
6	If the sine of "X" is three-fifths, and "X" is an angle in the first quadrant, what is the cosine of two "X"?	7/25 (seven twenty-fifths)
7	A zoo exhibit contains bipeds and quadrupeds. If there are a total of 84 heads and 200 feet, how many quadrupeds are there?	16
8	How many positive integers are factors of forty-eight?	10
9	Two circles have radii of twelve meters and their centers are thirty meters apart. What is the length, in meters, of one of their common internal tangents?	18 [m]
10	Express the sum of four-five-six-base-seven and six-four-two-base-seven as a base-seven number.	1431 _[7] one four three one [base seven]

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COLLEGE KNOWLEDGE BOWL ROUND #5 - SET 5

#	Problem	Answer
1	A four-by-four magic square contains the integers from 2 to 17. What is the "magic sum" of each row, column, and diagonal?	38
2	What number is thirty eight more than half of three hundred fifty two?	214
3	How many minutes are there in three days?	4320 [min]
4	If the probability of rain tomorrow is two-thirds and the probability of tomato soup for lunch tomorrow is three-fourths and these two events are independent, what is the probability of rain but NOT tomato soup for lunch tomorrow?	1/6
5	What is the sum of the roots of three-W-squared-plus-eight-W-equals-fifty?	-8/3 (negative eight thirds)
6	A square is drawn with sides measuring twenty meters. Four circles of radius three meters are drawn centered at the vertices of the square. A fifth circle is then drawn tangent to all the other circles. What is the largest possible radius, in meters, of the fifth circle?	$10\sqrt{2} + 3$ [m] (ten-root-two-plus-three)
7	A superset of the set of positive one-digit integers contains at least six prime numbers. What is the smallest possible number of elements in the superset?	11
8	What is the sum of the positive integers less than twenty that are divisible by either three or five (or both)?	78
9	What are the coordinates, in the form "X" comma "Y", of the center of the hyperbola with equation three "X" squared minus fifteen "Y" squared plus nine "X" plus sixty "Y" equals ninety?	$\left(-\frac{3}{2}, 2\right)$ (negative three halves COMMA two)
10	In how many ways can two Snickers Bars and three Twix Bars be distributed among four kids, if fairness is not necessary?	200

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COLLEGE KNOWLEDGE BOWL ROUND #6 - SET 6

#	Problem	Answer
1	What is the sum of the number seven thousand, three hundred, sixty-four and the number eighty-one thousand, nine hundred, fifty-two?	89316
2	What is the product, expressed as a mixed number, of two-and-two-fifths and two-and-two-ninths?	$5\frac{1}{3}$ (five and one third)
3	What are the coordinates, in the form "X" COMMA "Y", of the "X" intercept of the line two "X" plus five "Y" equals eighteen?	(9,0) (nine COMMA zero)
4	What is the sum of the positive odd numbers less than fourteen?	49
5	When three standard six-sided dice are rolled, what is the probability that the smaller two sum to seven? Note: the largest die could have the same value as one or both of the smaller dice.	1/8
6	Two triangles are similar. If the smaller has sides measuring three, five, and six meters, and the larger has two sides measuring ten and twenty meters, what is the length, in meters, of the third side of the larger triangle?	50/3 (fifty thirds)
7	What is the sum of the integers from thirteen to thirty-one inclusive?	418
8	If "U" of "V" equals forty minus three "V", what is "U" of "U" of "V"?	$9v - 80$ (nine V minus 80)
9	In triangle J-H-G, side J measures twelve centimeters, angle J measures thirty degrees, and angle H measures one-hundred-thirty-five degrees. How many centimeters long is side H?	$12\sqrt{2}$ [cm] (12 root 2)
10	You have six white Lego blocks and four green Lego blocks, but one white Lego block has been glued to the top of a green lego block. How many distinguishable vertical towers can be created by stacking all of these blocks on top of one another?	209

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COLLEGE KNOWLEDGE BOWL ROUND - EXTRA

#	Problem	Answer
1	What is the tenth term of a geometric sequence with fifth term five and a common ratio of five?	15625
2	When five coins are flipped, what is the probability that there are at least two heads?	13/16
3	If Lameness is inversely proportional to the square of Intelligence, and an Intelligence of three corresponds to a Lameness of eight, what is the Lameness of a person with an Intelligence of six?	2
4	What is the length, in meters, of the hypotenuse of a right triangle with legs measuring twelve meters and eighteen meters?	$6\sqrt{13}$ [m]

Extra

Final Score:

KEY

(Out of 8)

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School: _____ Room # _____ Team # _____

Name: _____ Proctor: _____

PreCalculus & Calculus

Mental Math - 30 sec per question**8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score**

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	Answer	1 or 0	1 or 0
1	39		
2	5/2 [hrs]		
3	90 [diagonals]		
4	6 [integers]		
5	$\frac{2\pi}{3}$		
6	[\$] $\frac{KD}{8}$		
7	8/27		
8	$\frac{3\sqrt{2}}{2}$		

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

"Math is Cool" Masters - 2011-12

11th & 12th Grade - December 3, 2011

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	277 [°]		
2	BCDA [in that order]		
3	82		
4	1278		
5	15		
6	1103211 ₄		
7	5 π		
8	[\$] 5600		
9	14540		
10	9672		

"Math is Cool" Masters - 2011-12
11th & 12th Grade - December 3, 2011

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	$\frac{7}{2}$
2	$\frac{77}{41}$
3	$-\frac{1}{57}$
4	$\frac{1}{6}$
5	$\frac{1143}{2}$ [cm ²]