"Math is Cool" Championships – 2016-17

November 4, 2016

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

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

7th & 8th Grade Individual Contest – Score Sheet
DO NOT WRITE IN SHADED REGIONS

#	Answer	1 or 0	1 or 0
1	3 [units]		
2	32 [units]		
3	obtuse		
4	3 1/5		
5	9/20		
6	115		
7	5:3		
8	187 [square units]		
9	128		
10	[x=] 42		
11	[x=] 255		
12	16 [dogs]		
13	$16\sqrt{55}$		
14	21 [years]		
15	50 [°]		
1-15 TOTAL:			

#	Answer	1 or 0	1 or 0
16	[x=] 7		
17	9 [rectangles]		
18	[x=] -2		
19	$10\sqrt{3}$ [square units]		
20	1/4		
21	9/4		
22	15 [units]		
23	2016 [units cubed]		
24	1.09×10^6		
25	31 1/9 [mph]		
26	24π [square inches]		
27	115 [miles]		
28	61/7		
29	6		
30	[b =] -176		
16-30 TOTAL:			

#	Answer	1 or 0	1 or 0
31	-12		
32	7750		
33	1/204		
34	2197		
35	$\dfrac{\sqrt{2}}{2}$		
36	0		
37	July 26, 2019		
38	141°		
39	-111		
40	2016		
31-40 TOTAL:			

7th & 8th Grade

"Math is Cool" Championships – 2016-17

November 4, 2016

Total Correct:

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

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

7th & 8th Grade Individual Contest – Score Sheet
DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
31-40 TOTAL:			

7th & 8th Grade

"Math is Cool" Championships – 2016-17
Sponsored by:
November 4, 2016
7th & 8th Grade Mental Math Contest

Follow along as your proctor reads these instructions to you. Your Mental Math score sheet is on the back.

GENERAL INSTRUCTIONS applying to all tests:

- *Good sportsmanship is expected throughout the competition by <u>all</u> involved, 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 neares 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 – 2016-17
Sponsored by:
7th & 8th Grade – November 4, 2016
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	Millie has seven dozen eggs that need to be regrouped into packages of fourteen eggs. How many packages of fourteen eggs will Millie have?
2	Solve for x, if five x plus three equals thirty-three.
3	What is the area of a triangle with side lengths of five, twelve, and thirteen?
4	A bag of marbles contains six red and nine purple marbles. A red marble is drawn out. What is the probability on the second draw that the marble will also be red?
5	What is the slope of the line: Y minus 3X equals seven?
6	What is the volume of a pyramid with base area twelve and height five?
7	Find the median of the data set: {eleven, four, two, zero, one, six}
8	What is the next number in the following sequence? Nine, negative three, one, negative one-third, _____.

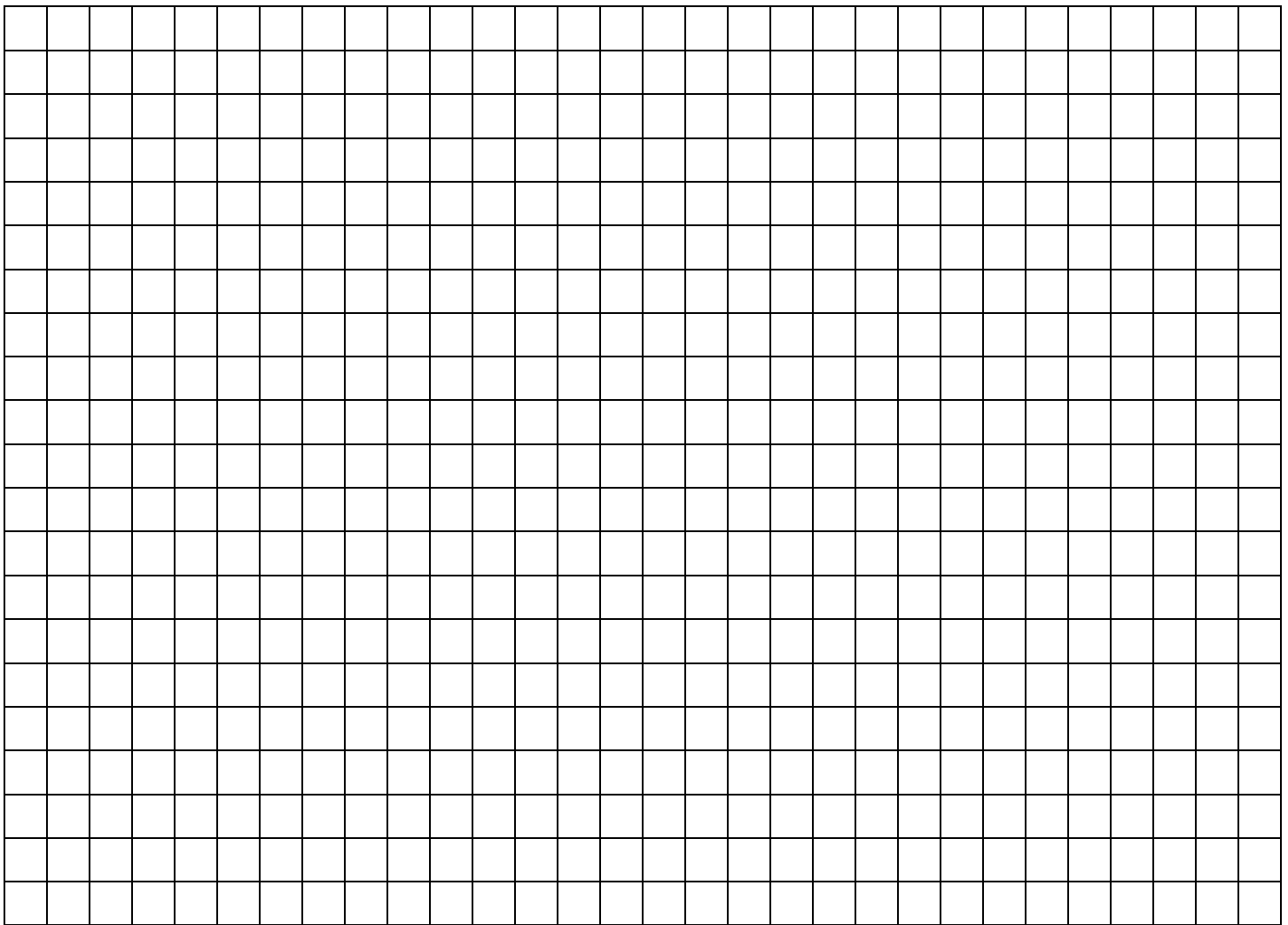# "Math is Cool" Championships – 2016-17
Sponsored by:
November 4, 2016

7th & 8th Grade 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 – 7th & 8th Grade - 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.

"Math is Cool" Championships – 2016-17

Sponsored by:

November 4, 2016

7th & 8th Grade Individual Contest

	Questions 1-30: 2 points each
1	What is the side length of a cube with a surface area of 54?
2	What is the diameter of a circle with area equal to 256π?
3	What type of angle is the supplement of an acute angle?
4	What is 20% of 16? Write your answer as a mixed number.
5	Find the slope of the line: $11x + 4y = 20x - 16y$
6	What is the least common multiple of 5 and 23?
7	The ratio of the areas of two similar octagons is 25:9. What is the ratio of their perimeters? [Write your answer in the form a:b.]
8	What is the area of a rectangle with one side length equal to the fifth prime number and another side length equal to the seventh prime number?
9	What is the greatest common factor of 2^7 and 2^8 ?
10	Solve for x: $x - |-2016| = -1974$
11	Solve for x: $\sqrt{20 + \sqrt{x + 1}} = 6$
12	If 11 mice weigh as much as 4 cats, and 20 cats weigh as much as 16 dogs, how many dogs weigh as much as 55 mice?
13	Evaluate: $\sqrt{11} \cdot \sqrt{4} \cdot \sqrt{20} \cdot \sqrt{16}$
14	Biff is three times older than Eho. It can also be said that Biff is 14 years older than Eho. How many years old is Biff?
15	A triangle has angle measurements of 3x°, 2x°, and (x+30)°. Find the measure of the smallest angle, in degrees.
16	Solve for x: $\frac{1}{8} \cdot \frac{x}{2} \div \frac{3}{6} \div \frac{5}{4} = \frac{7}{10}$
17	If each side of a rectangle is of a length of an integer unit, how many rectangles could have an area of 180 square units?
18	Solve for x: $-2\frac{2}{3}x - 1\frac{1}{3} = 4$
19	Find the area of a triangle with side lengths of 5, 7, and 8.
20	What is the probability of drawing a diamond from a standard deck of 52 cards that is missing all of the face cards (the jacks, queens, and kings)?
21	A right triangle has a short side of 6 and a hypotenuse of 10. A second right triangle, which is similar to the first, has a longer leg of 12. The area of the second triangle is how many times the area of the first triangle?
22	What is the distance between the points (11, 4) and (20, 16)?

23	What is the volume of a cone with a base radius of $\sqrt{\frac{144}{\pi}}$ and a vertical height of 42?
24	Express your answer in scientific notation: $(10^5 + 10^4 - 10^3) \cdot 10^2 \div 10^1$
25	Biff drives from Alphaville to Betaburg at 70 miles per hour, then drives back along the same route at 20 miles per hour. As a mixed number, what was his average speed, in miles per hour?
26	What is the area, in square inches, of the label on a can of soup in the shape of a cylinder, if the can is 6 inches tall and has a radius of 2 inches? (There is no label on the top or bottom of a soup can.)
27	In 2012, Michael Morton ran 172.5 miles at the IAU World Championships. If he spent half of the time running 10 miles per hour, and the other half of the time running 5 miles per hour, then how far, in miles, did he run at 10 miles per hour?
28	Evaluate: $(\frac{9}{8} \div 7 \cdot 6 - \frac{5}{4} + 3^2) \cdot 1^0$
29	What is the 2016$^{\text{th}}$ digit to the right of the decimal point in the decimal expansion of $\frac{2}{13}$?
30	If $f(x) = 11x + b$, $g(x) = 4x^2 - 20x + 16$, and $f\big(g(x)\big) = 44x(x - 5)$, then b equals?

Challenge Questions: 3 pts each

31	A triangle with vertices at (-4, 1), (-1, 3), and (-1, 1) is reflected in the line y=x. Find the product of the six numbers used in the coordinate pairs of the vertices of the new triangle.
32	One year the population of a town increases by 20%. It decreases by 16% the next year. If the population is then 62 more than the original population, what was the original population of the town?
33	A jar contains 3 red marbles, 4 blue marbles, 5 green marbles, and 6 purple marbles. What is the probability of drawing one marble of each color, without replacement, in alphabetical order?
34	What year will it be the next time the volume of a cube with integer sides is equal to the year?
35	Evaluate: sin 45°
36	Evaluate: $e^{i\pi} + 1$
37	What month, day, and year is 2 years, 37 weeks and 5 days from November 4, 2016?
38	It is currently 10:35 PM. Find what time it will be 3 days, 5 hours, and 7 minutes from now. At that time, on an analog clock, what will be the measurement, in degrees, of the smaller angle formed by the hour and minute hands?
39	Evaluate the determinant: $\begin{vmatrix} 3 & 7 & 6 \\ 2 & 9 & 1 \\ 5 & 8 & 4 \end{vmatrix}$
40	Solve: $[\sin 30° \cdot (log_2 1024 + log_3 6561 - log_4 1024 \cdot log_9 6561 \div log_{32} 1024)^2 - \cos 60°] \cdot \sqrt[3]{262144}$

"Math is Cool" Championships – 2016-17
Sponsored by:
8th Grade – November 4, 2016
Individual Multiple Choice Contest

1	Which of the following is equal to $2^{2015} + 2^{2015}$? A) 2^{2016} B) 4^{1008} C) 8^{672} D) 16^{504} E) A, B, C, D
2	What is the ones digit of 2^{2015} ? A) 2 B) 4 C) 6 D) 8 E) Answer not given

USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS # 3-6.
Biff rolls two eight-sided dice in one roll. Eho rolls two twenty-sided dice in one roll.

3	Eho rolls his dice, and finds the sum. What is the probability that the sum is a multiple of 10? A) 1/20 B) 1/10 C) 1/8 D) 1/5 E) Answer not given
4	Eho rolls his dice, and finds the sum. What is the probability that the sum is a multiple of 5? A) 1/20 B) 1/10 C) 1/8 D) 1/5 E) Answer not given
5	Eho rolls his dice, and finds the sum. What is the probability that the sum is a multiple of 3? A) 137/400 B) 133/400 C) 67/200 D) 33/100 E) Answer not given
6	Eho rolls his dice, and finds the sum. What is the probability that the sum is a prime number? A) 107/400 B) 109/400 C) 111/400 D) 113/400 E) Answer not given

USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS # 7-10.
Mr. Neapolitan decides to take a survey of the 40 students in his class. He wants to know what types of ice cream each student likes (chocolate, strawberry, or vanilla). The results reveal to Mr. Neapolitan that 7.5% of the students don't like ice cream at all! He also finds out that the same number of students like both strawberry and vanilla (but not chocolate) as don't like any ice cream. Twice as many students like both chocolate and vanilla (but not strawberry) as those who like both strawberry and vanilla (but not chocolate). One person thought about saying they liked both strawberry and vanilla (but not chocolate), which would have given that group one more than those that like only vanilla, but that person didn't and said they only liked vanilla. Three times as many as those that like only vanilla, less one, prefer only chocolate. Half of the class likes vanilla. The number of students who like both chocolate and strawberry (but not vanilla) raised to the zero power is equal to the number of people who like only strawberry.

7	How many students like chocolate? A) 29 B) 28 C) 18 D) 11 E) Answer not given
8	How many students like vanilla or chocolate (or both), but not strawberry? A) 6 B) 10 C) 21 D) 28 E) Answer not given
9	How many students like only chocolate? A) 5 B) 6 C) 7 D) 11 E) Answer not given
10	How many students like all three (chocolate, strawberry, and vanilla)? A) 5 B) 6 C) 7 D) 11 E) Answer not given

"Math is Cool" Championships – 2016-17
Sponsored by:
8th Grade – November 4, 2016
Team Contest

1	What is the eleventh smallest eleven-digit palindrome?
2	What is the sum of the distinct prime factors of 2016?
3	Convert 2016 (base 10) into a base 16 number.
4	Kevin has 5 shirts, 2 pants, and 1 pair of shoes, which cost him $31 altogether. Justin has 2 shirts, 4 pants, and 1 pair of shoes, which cost him $34 altogether. Jeslyn has 3 shirts, 3 pants, and 1 pair of shoes, which cost her $31 altogether. Assuming that each shirt costs h, each pant costs p, and each pair of shoes costs s, in dollars, what does $672 \cdot h$ equal?
5	How many subsets does this set have? {2, 3, 4, 7, A, 6, B, D, E}
6	How many ways can you arrange the letters in SECRETARIES?
7	What is the surface area of a sphere with a radius of $\sqrt{\frac{21}{2}}$?
8	A movie rental company charges $0.03 for the first day that you have one of their movies rented out from them. It then charges $0.09 for the second day, $0.27 for the third day, etc. This seems like a great deal, so instead of buying them you decide to rent the seven episodes of the Star Wars saga. You watch Episode I on the first night, skip a night, then watch Episode II on the third night, skip a night, then watch Episode III on the fifth night, etc. You return them all on the day that you watch Episode VII. How much money did you spend, in dollars?
9	Three shapes make up a particular complex polygon: a triangle, a square, and a regular hexagon. The triangle shares its middle-sized side with the square. The square shares its top side with the triangle, and its bottom side with the regular hexagon. The regular hexagon shares its top side with the square. The triangle has leg lengths of 4, 13, and 15. Find K, which is the area of the complex polygon. Find R, which is the perimeter of the complex polygon. Find B, which is the radius of a circle inscribed in the square. Find A, which is the number of diagonals in the regular hexagon. Evaluate: $B \cdot A - R + K$
10	Convert this binary number (0100 0101 0001) into a base 5 number.

"Math is Cool" Championships – 2016-17
Sponsored by:
8th Grade – November 4, 2016
Pressure Round Contest

1	What is the minimum number of times you need to flip a fair coin to have less than 1% chance of having all heads?
2	Owen rolled a fair 6-sided die three times. If the sum of the rolls was 15, what is the probability at least one of the rolls was a 6?
3	How many integers from 1 to 1000 are multiples of 3 or 7, but not 21?
4	What is the radius of the circle inscribed in an isosceles triangle with sides of lengths 15, 15 and 24?
5	In simplest form, find the value of $\sqrt{ab - b^2 + ac}$ if a=5, b=3, and c=2.

COLLEGE KNOWLEDGE BOWL ROUND #1 – SET 1

#	Problem	Answer
1	How many times larger is two thousand eight hundred seventy-seven than one hundred thirty seven?	21 [times]
2	What is the volume of a triangular pyramid with base area 12 and height 18?	72 [cu units]
3	I randomly pick a number from 1 to 100. What is the probability that the number is neither a multiple of three nor contains a 3 in it?	11/20
4	Express the base ten number [pause] one thousand one hundred eleven in base 5.	13421 or one-three-four-two-one [base 5]
5	State the volume of the larger of the two. A cube with side length of 9, or a sphere of radius 6.	288 pi [cu units]
6	How many times larger is the volume of a rectangular box with base area 5 and height 7 than a triangular pyramid with base area 7 and height of 5?	3 [times]
7	What is the units digit in the expansion of 3 to the power of 231?	7
8	Solve for the larger solution x in the equation, x squared plus 6 x equals 16.	[x=]2
9	The two legs of a right triangle are 5 and 12. What is the sine of the smallest angle?	5/13
10	Find the area bounded by the line y=x+4 and the x-axis from x equals 0 to 4.	24 [sq units]

COLLEGE KNOWLEDGE BOWL ROUND #2 – SET 2

#	Problem	Answer
1	What is the sum of all the positive factors of 20?	42
2	My favorite number is 12 less than 17 times 12. What is my favorite number?	192
3	If i equals the square root of negative one, then what is i to the 38th power minus i to 48th power?	-2
4	What is the largest prime factor of the number two thousand one hundred twenty-one?	101
5	What is the maximum product of two numbers that sum to 60?	900
6	How many positive integers less than 30 are relatively prime to 30?	8
7	What is the smallest possible value of y in the equation 9 x squared plus 16 y squared equals 144?	-3
8	What is the area of a 30-60-90 triangle with smaller leg of length 6?	18 times root 3
9	What is the volume of the shape made by revolving the line y equals 4 around the x axis from x equals 2 to x equals 9?	112 pi [cu units]
10	What is the probability of getting a sum of 5, from rolling 3 fair six-sided dice?	1/36

COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	How many ways are there to choose 4 balls out of 7 distinct balls?	35 [ways]
2	What is the sum of the first 10 positive multiples of 3?	165
3	Mary added the numbers from 1 to 20 inclusive getting a total of 197. She left out one of the numbers; which number was it?	13
4	What is the sum of the infinite geometric series with common ratio of three-fifths and first term of eight?	20
5	What is the perimeter of a regular hexagon with an apothem of four times the square root of three?	48 [units]
6	How much larger or smaller is the mean than the median of this set of data [5, 19, 12, 14, 23, 16, 2]	Smaller by 1. Must include 'smaller', not -1.
7	How many of the integers from 0 to 300 have the sum of their digits equal to 7?	21 [integers]
8	A is inversely proportional to C. If C is 22 when A is 45 what is C when A is 10?	99
9	What is f inverse of 23 if f of x is equal to the quantity 3 x minus 7?	10
10	The sides of a triangle have integer lengths; it has one side of 12 and another side of 15. How many possibilities are there for the length of the third side?	23 [possibilities]

"Math is Cool" Championships – 2016-17
Sponsored by:
8th Grade – November 4, 2016

COLLEGE KNOWLEDGE BOWL ROUND #4 – SET 4

#	Problem	Answer
1	What is the range of the given set of data: 2, 5, 17, 4, and 12?	15
2	What is the sum of the integers from 20 to 50 inclusive?	1085
3	A geometric sequence has a first term of 16 and last term of one-thirty second. If the common ratio is one-half, how many terms are there in the sequence?	10 [terms]
4	What is the greatest common factor of 156 and 65?	13
5	John begins with twenty dollars and buys 15 apples at 20 percent off. The next day, he returns 2 of them for half what he paid for them. If the original price of apples is $1.60 each, how much money does he have now?	$2.08
6	What time is as long before 7:17PM as 5:24AM is before 6:11AM?	6:30PM
7	A cube has a space or long diagonal of length 6, what is the surface area of the cube?	72 [sq units]
8	What is the largest number in base 10 that can be represented as a 3 digit number in base 9?	728
9	Jill rolls two fair eight-sided dice with the numbers one through eight on each die. What is the probability that there are 2 prime numbers showing and their sum is also prime?	1 / 16
10	A cone of height 5 rests directly on top and matches the base of a hemisphere with lateral surface area 18 pi. What is the total volume of the object?	33 pi

COLLEGE KNOWLEDGE BOWL ROUND #5 – SET 5

#	Problem	Answer
1	Find the product of eighteen, one fourth, and twelve.	54
2	What is the maximum number of nonintersecting diagonals that can be drawn in a regular pentagon?	2 [diagonals]
3	How many non-congruent triangles with integer side lengths are there with a perimeter of 12?	3
4	In how many distinct ways can three identical green turtles and two identical brown turtles be arranged in a line?	10 [ways]
5	There are sixteen focal points in a pattern, and a thread must connect each focal point to each other exactly once. How many threads connect these points?	120 [threads]
6	Find the sum of the first eleven positive even numbers.	132
7	Evaluate y if y equals six x minus y plus twelve and if x equals three.	15
8	What is the combined measure of two interior angles of a regular icosagon, in degrees?	324 [degrees]
9	What is the surface area of a tetrahedron with side length four?	16 root 3 [sq units]
10	Folding a scale on an origami koi takes six minutes each for the first fifteen scales, then four minutes for each subsequent scale. How many minutes does it take to fold all fifty-two scales on one koi?	238 [minutes]

"Math is Cool" Championships – 2016-17
Sponsored by:
8th Grade – November 4, 2016

COLLEGE KNOWLEDGE BOWL ROUND #6 – SET 6

#	Problem	Answer
1	The average of two positive integers is forty-three; what is their maximum difference?	84
2	Express as a decimal, the number of quarts in two and a half pints?	1.25 [quarts]
3	If a regular hexagon's side length is doubled, by what factor is its area increased?	4
4	Three consecutive even integers multiply to four hundred eighty. What is the middle integer?	8
5	How many arcs of length 4 pi can fit into a circle of area 64 pi?	4
6	The sum of two positive integers is seventeen. The sum of one of those integers and the negative of the other is five. What is the larger integer?	11
7	In how many ways can two turtles consume four green pellets if both turtles must receive at least one pellet?	3 [ways]
8	The measures of the angles of a quadrilateral, when listed from smallest to largest, form an arithmetic sequence with common difference of 36; what is the measure in degrees of the largest angle?	144 [degrees]
9	An object cools by three degrees in two minutes, and subsequently cools by three degrees in double the time the previous three degrees took. How many minutes does the object take to cool by twenty-four degrees?	510 [minutes]
10	Mr. Smith has four children with at least 2 girls. What is the probability that all the children are girls?	1 / 11

COLLEGE KNOWLEDGE BOWL ROUND – EXTRA

#	Problem	Answer
1	An exterior angle of a regular polygon measures sixty degrees; how many sides does the polygon have?	6 [sides]
2	What is the eighth term in the arithmetic sequence with first term three and second term eight?	38
3	How many distinct ways can six identical books be placed on three shelves?	28
4	What is the seventh number of the Fibonacci sequence that begins with 1?	13
5	Evaluate three elevenths minus four seventeenths.	7/187
6	What is the smallest multiple of ten that is greater than the twenty-fourth smallest prime number?	90

Extra

"Math is Cool" Championships -- 2016-17

Student Name _____ Team # _____

School Name _____ Proctor Name _____ Room # _____

7th & 8th Grade   <u>Mental Math</u> – 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	6 [packages]		
2	[x=] 6		
3	30 [square units]		
4	5/14		
5	3		
6	20 [units cubed]		
7	3		
8	1/9		

Final Score:

KEY

Student Name _____

Proctor Name _____ Room # _____

SCHOOL NAME _____ **Team #** _____

First Score

(out of 20)

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

"Math is Cool" Championships – 2016-17
8th Grade – November 4, 2016

Final Score:

KEY

SCHOOL NAME _____ Team # _____

Proctor Name _____ Room # _____

First Score

(out of 10)

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	10,001,010,001		
2	12		
3	7E0		
4	[$] 2016		
5	512 [subsets]		
6	1,663,200 [ways]		
7	42 [square units]		
8	[$] 167,403.81		
9	$\dfrac{283 + 507\sqrt{3}}{2}$		
10	13410[5]		

"Math is Cool" Championships – 2016-17
8th Grade – November 4, 2016

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 [times]
2	9/10
3	381
4	4 [units]
5	4

"Math is Cool" Championships -- 2016-17

Student Name _____ Team #_____

School Name _____ Proctor Name_____ Room #_____

7th & 8th Grade   <u>Mental Math</u> – 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 – 2016-17
8th Grade – November 4, 2016

Student Name _____

Proctor Name _____ Room #_____

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 – 2016-17
8th Grade – November 4, 2016

Final Score:

SCHOOL NAME _____ **Team #** _____

First Score

Proctor Name _____ Room # _____

(out of 10)

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			