"Math is Cool" Championships – 2015-16

February 19, 2016

Total Correct

KEY

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

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

6th Grade Individual Contest – Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	30300		
2	3		
3	36 [in^2]		
4	7/11		
5	65 [%]		
6	200		
7	330 [seconds]		
8	3 [cents]		
9	6 [even numbers]		
10	61		
11	180 [cm^3]		
12	1/24		
13	[x =] 9		
14	50 [minutes]		
15	27 [°]		
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16	112		
17	4 [days]		
18	40 [cents]		
19	39 [cm]		
20	31 [multiples]		
21	-14		
22	10 [pairs]		
23	57 [people]		
24	12 [chords]		
25	675		
26	1/27		
27	14		
28	11/36		
29	26 [pathways]		
30	36 [°]		
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31	991		
32	2/105		
33	4 [cm]		
34	15		
35	13462		
36	30 [m]		
37	231/2[°]		
38	109		
39	20160 [ways]		
40	600 + 48π [cm^2] or equivalent		
31-40 TOTAL:			

6th Grade

Total Correct

"Math is Cool" Championships – 2015-16

February 19, 2016

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

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

6th 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:			

6th Grade

"Math is Cool" Championships – 2015-16

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February 19, 2016

6th 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 all involved. Bad sportsmanship may result in disqualification.*
- *Calculators or any other aids may not be used on any portion of this contest.*
- *Unless stated otherwise:*
  - *For problems dealing with money, a decimal answer should be given.*
  - *Express all rational, non-integer answers as reduced common fractions.*
- *For fifth and sixth grade, all fractions and ratios must be reduced.*
- *Counting or natural numbers refer to the numbers 1,2,3,4 and so on and do NOT include 0.*
- *Units are not necessary unless it is a problem that deals with time and, in that case, am or pm is needed. 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 filled out at the top of the sheet.*
- *Tests will be scored as a 0 if answers are not recorded correctly on the answer sheets.*
- *Blank answer sheets and answer sheets with no name will also 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

You may NOT be seated next to anyone from your school. If you are MOVE NOW to avoid being disqualified! 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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6th Grade – February 19, 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

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#	Problem
1	A rectangle has a width of eleven centimeters and a length of twelve centimeters. What is the number of square centimeters in the area of the rectangle?
2	How many even numbers are there between twenty-one and twenty-nine?
3	What is ten thousand minus one hundred?
4	The measures of two angles in a triangle are fifty degrees and sixty degrees. What is the number of degrees in the measure of the third angle?
5	In the series A, B, C, D, (pause), B is two times A, C is two times B, and D is two times C. How many times B is D?
6	What is the number of minutes it takes to travel one mile when traveling at an average rate of twelve miles per hour?
7	What is one-third divided by one-half?
8	A one-liter liquid mixture contains thirty percent water. A three-liter liquid mixture contains seventy percent water. The two mixtures are combined. What percent of the new four-liter mixture is water?

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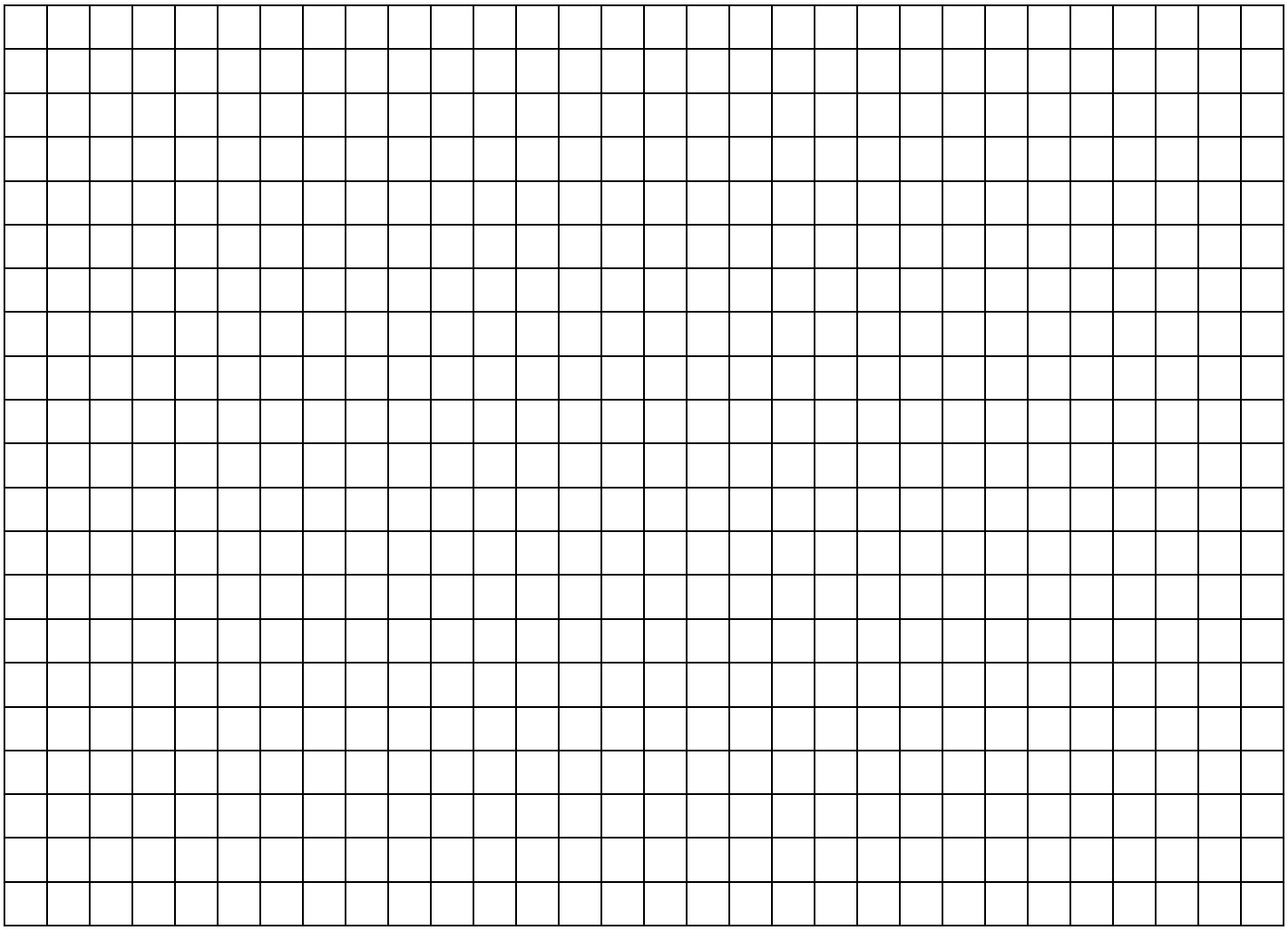
Individual Contest – 6th Grade

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.



"Math is Cool" Championships – 2015-16

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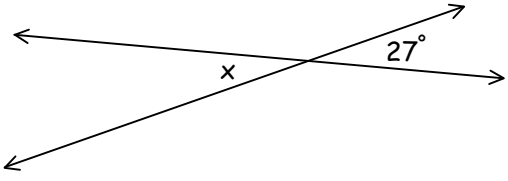
6th Grade – February 19, 2016

Individual Contest

Record all answers on the colored cover sheet.

	Questions 1-30: 2 points each
1	What is 300 times 101?
2	What number is 5% of 60?
3	The base of a triangle is 8 inches and the height is 9 inches. What is the number of square inches in the area of the triangle?
4	A common fraction is a fraction with one counting number over another counting number and the greatest common factor of the two counting numbers is one. For example, $\frac{6}{2}$ is not a common fraction because the greatest common factor of the two counting numbers is two, not one. Express the given fraction as a common fraction: $\frac{210}{330}$
5	On Saturday, there is a 35% probability of rain. As a percentage, what is the probability that it will not rain on Saturday?
6	What is the value of the expression: (7 + 13) x (26 - 16)?
7	How many seconds are in five and one half minutes?
8	One five-pound bag has 399 Jolly Ranchers in it and costs $11.97. As a number of cents, what is the average cost of one Jolly Rancher from this bag?
9	How many even numbers are there from 1 to 13?
10	The first three terms of an arithmetic sequence are shown below. What is the tenth term in the sequence? -2, 5, 12, . . .
11	What is the number of cubic centimeters in the volume of a rectangular prism whose length is 3 centimeters, whose width is 6 centimeters, and whose height is 10 centimeters?
12	What is $\frac{3}{8} - \frac{1}{3}$?
13	Solve the following equation for x: 3x - 8 = 19
14	Aleah practices piano for 30 minutes on Monday, 50 minutes on Tuesday, 60 minutes on Wednesday, and 60 minutes on Thursday. What is the average number of minutes each day that she practices piano during the four days?
15	In the drawing below, what is the number of degrees in the measure of the angle represented by x? 

16 As a three-digit counting number, what is the median of the five expressions below?
$1 \times 10^2,\ 3 \times 8^2,\ 5 \times 6^2,\ 7 \times 4^2,\ 9 \times 2^2$

17 It takes three teachers four days to write forty-eight math problems. Assuming the teachers all work at the same average rate, how many days would it take two teachers to write thirty-two math problems?

18 Ben has two dollars in dimes and nickels. He has twice as many dimes as nickels. In cents, what is the value of his nickels?

19 The perimeter of a rectangle is 80 centimeters. If the lengths of the sides are all counting numbers, what is the number of centimeters in the length of the longest possible side this rectangle could have?

20 What is the number of three-digit multiples of twenty-nine?

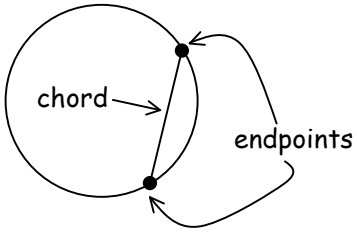
21 In the expression *ab - cd*, each variable *a, b, c,* and *d* can be replaced by a distinct member of the set {1, 2, 3, -4}. Reminder: *ab* means *a* times *b* and *cd* means *c* times *d*. What is the smallest possible value of *ab - cd*?

22 Twin primes are prime numbers that differ by two, such as 3 and 5. Distant Cousin primes are prime numbers that differ by ten, such as 3 and 13. How many pairs of Distant Cousin primes are there such that both numbers are less than one hundred?

23 Statistics are shown in the table below from a survey of 104 people who own cats, dogs, both or neither. What is the number of people surveyed who have neither a cat nor a dog?

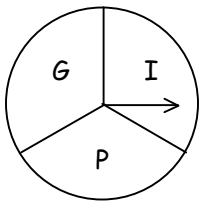
	Have Cats	Have No Cats	Total
Have Dogs	21	15	36
Have No Dogs	11		68
Total	32	72	104

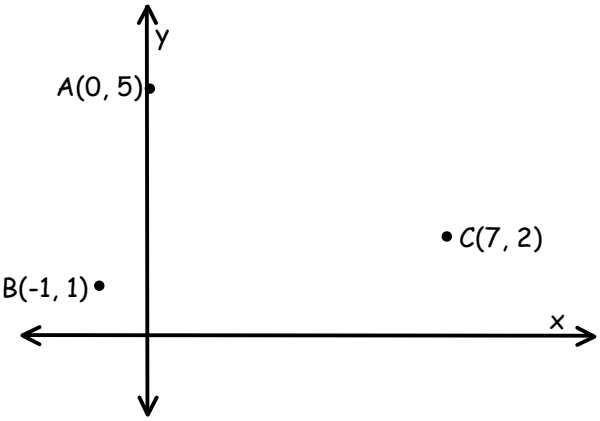
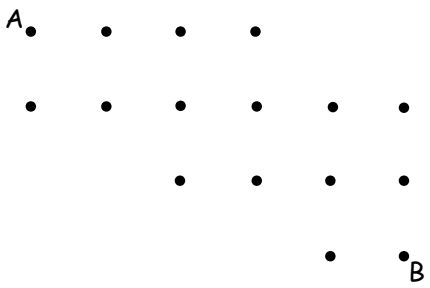
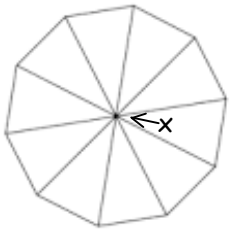
24 A chord is a segment whose endpoints are on a circle (see example). How many different-length chords can be drawn in a circle whose area is 36π square meters, if the number of meters in the lengths of the chords must be counting numbers?



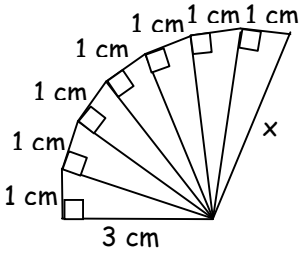
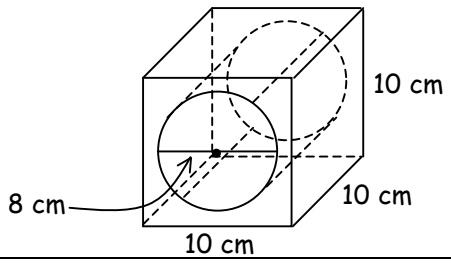
25 Let M be a three-digit number. The prime factorization of M is $3^a \times 5^b$, where *a* and *b* are counting numbers. What is the largest possible value of M?

26 Francine has a spinner with three sections that are equal in area, as shown. The sections are labeled with the letters G, I, and P. She spins the spinner three times and writes down the chosen letter each time. Assume the arrow is equally likely to land on any one of the three letters for any given spin. As a common fraction, what is the probability that she writes the word PIG?



27	What is the sum of the coordinates of point D, such that ABCD is a parallelogram and point D is in quadrant I (the upper right quadrant)? 
28	Aiman bought a new rectangular rug for his rectangular living room and placed it on the floor of the living room. The floor of the living room is eighteen by twelve feet and the rug is ten by fifteen feet. As a common fraction, what fraction of the room is not covered by the rug?
29	What is the number of distinct pathways that can be drawn from point A to point B if your pencil tip must either go directly down or directly to the right each time you move it. 
30	The figure shown is a regular decagon. Regular means that all of the sides of the decagon are equal in length and all of its interior angles have the same measure. What is the number of degrees in the measure of the angle labeled with x? 

Challenge Questions: 3 points each	
31	When 55 is divided by 4, the remainder is 3. When 55 is divided by 6, the remainder is 1. When 55 is divided by 8, the remainder is 7. What is the greatest three-digit number that has these same respective remainders when divided by 4, 6, and 8?

32	In a jar there are 4 red, 2 green, 6 blue, 9 orange, 3 purple, and 12 yellow skittles mixed together. Marshawn randomly takes two from the jar. As a common fraction, what is the probability that one is blue and the other is green?
33	Each of the triangles in the drawing is a right triangle. The hypotenuse of the smallest triangle is the long leg of the second-smallest triangle, the hypotenuse of the second-smallest triangle is the long leg of the third-smallest triangle, and so on. What is the number of centimeters in the length of the side labeled x? 
34	A cube has a distinct number from the set {2, 3, 5, 7, 11, 13} on each of its faces. A second cube has a distinct number from the set {4, 6, 8, 9, 10, 12} on each of its faces. The cubes are rolled and the numbers showing are added. If all 36 of the possible sums are written in a list, what is the mean value of the list?
35	Four-digit numbers can be written in the form abcd, where a, b, c, and d represent the digits of the number. What is the sum of the four-digit numbers that have the property that the two-digit numbers ab, bc, and cd are all perfect squares?
36	When Rey used The Force to summon Luke's lightsaber, it traveled to her through the air at an average rate of 72 kilometers per hour. If it took 1.5 seconds to get to her, what was the number of meters in the distance between Rey and the lightsaber before she summoned it? There are 1000 meters in one kilometer.
37	What is the number of degrees in the measure of the smaller angle formed by the hour hand and the minute hand of a clock at 12:21 pm?
38	A set of ten counting numbers has a mean of exactly 30, a median of exactly 36, and a unique mode of 38. What is the largest possible number in the set?
39	There are nine positions that make up a baseball team's lineup. The Bay City Bombers have eleven players on their team. If their pitcher is always High Heat McHugh, their catcher is always Bert the Backstop, and their 2nd baseman is always Jose, in how many distinct ways can the other six positions be filled with the remaining players on the team?
40	A cube with edge length 10 centimeters has a hole in the shape of a cylinder. The circular bases of the missing cylinder shape are centered in two opposing square faces of the cube and the length of their diameter is 8 centimeters. What is the number of square centimeters in the surface area of the cube, including the cylinder shaped surface of the hole through the middle? The formula for the surface area of a cylinder is $2\pi r^2 + 2\pi rh$. 

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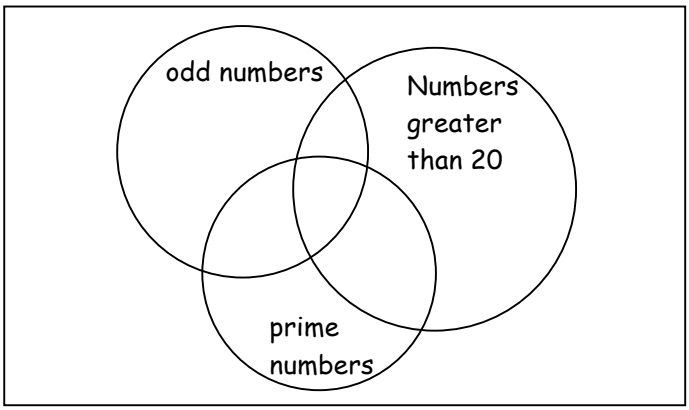
6th Grade – February 19, 2016

Team Multiple Choice Contest

The following Venn Diagram is used to sort the counting numbers from 1 to 30.



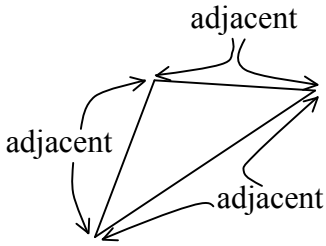
1	How many counting numbers from 1 to 30 are in the circle labeled 'odd numbers'? A) 15 B) 13 C) 12 D) 10 E) 3
2	How many counting numbers from 1 to 30 are outside the three circles, but inside the rectangle? A) 0 B) 1 C) 9 D) 10 E) 11
3	What is the sum of the counting numbers from 1 to 30 that are in the region where all three circles intersect? A) 127 B) 125 C) 79 D) 52 E) 29

Use for questions 4-6: In the game of American Football there are five types of scoring plays. A Touchdown is worth 6 points, a Field Goal is worth 3 points, a Safety is worth 2 points, a 2-Point Conversion is worth 2 points, and an Extra Point is worth 1 point. Extra Points and 2-Point Conversions can only occur directly after a Touchdown and cannot occur on their own. Touchdowns, Field Goals, and Safeties can happen at any time during a game.

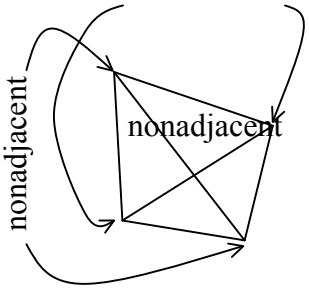
4	In one game, Russell scores two Touchdowns and each Touchdown is followed by a successful Extra Point for a total of 14 points. In how many ways can the other team score the same number of points without scoring a Touchdown? Example: one way would be to score 7 Safeties. A) 2 B) 3 C) 4 D) 5 E) 6
5	If a football game could last forever and a team could score an unlimited number of Touchdowns with Extra Points, Touchdowns with 2-Point Conversions, Touchdowns, Field Goals, and Safeties, what would be the largest score that would be impossible for a team to get? A) 109 B) 76 C) 57 D) 41 E) 1

6	Steven has made 154 Field Goals in 177 attempts. How many Field Goals must he make in a row in order to bring his overall success rate to exactly 90 percent? A) 26 B) 32 C) 41 D) 50 E) Answer not given.

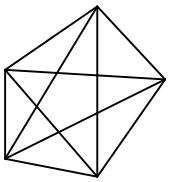
Use for questions 7-10: A diagonal is a line segment that connects any two nonadjacent vertices of a polygon. A triangle has no diagonals, because all of its vertices are adjacent to each other. The number of diagonals in a four-sided polygon (quadrilateral), in a five-sided polygon (pentagon), and a six-sided polygon (hexagon) are shown below.



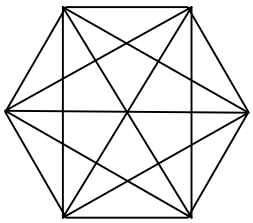
0 diagonals



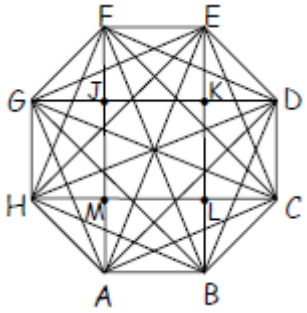
2 diagonals



5 diagonals



9 diagonals

7	What is the number of regions into which the hexagon is divided by its 9 diagonals? A) 24 B) 21 C) 19 D) 18 E) 16
8	What is the number of diagonals in a seven-sided polygon (heptagon)? A) 13 B) 14 C) 15 D) 16 E) 21
9	Regular polygons have the property that all of their sides are the same length and all of their interior angles have the same measure. The regular octagon shown has twenty diagonals. What is the number of different lengths that any of the twenty diagonals could be? A) 20 B) 10 C) 5 D) 4 E) 3 
10	If the side length of the regular octagon ABCDEFGH in problem 9 is six centimeters, what is the number of square centimeters in the sum of the areas of the four triangles: ΔAMH, ΔBLC, ΔDKE, *and* ΔFJG? A) 9 cm^2 B) 18 cm^2 C) $18\sqrt{2}$ cm^2 D) 36 cm^2 E) Answer not given.

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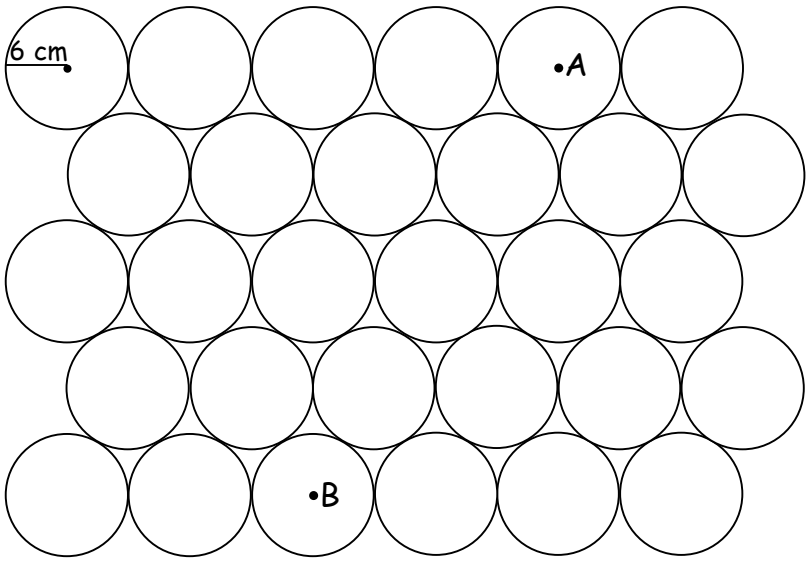
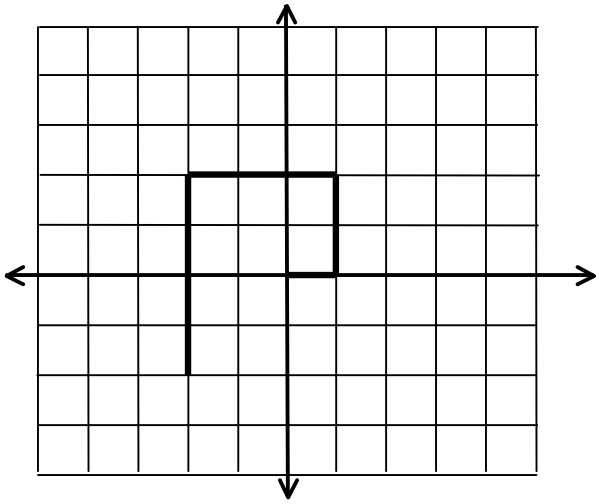
6th Grade – February 19, 2016

Team Contest

1	What is the value of x in the following equation? 15x - 22 = 38
2	What is the mean of the following data set? {10, 20, 40, 50, 70, 80, 100, 110, 150}
3	Abel, Bianca, Charlie and Dora must form a straight line. In how many different orders can they stand?
4	The diagram shown is made of 30 circles, all with a radius of 6 centimeters. Any two intersecting circles intersect each other at a single point. Points A and B are the centers of their respective circles. What is the number of centimeters in the length of a segment drawn from A to B? 
5	The following numbers are written in order from least to greatest. What is the first number in the list? $\frac{2}{3}, \frac{3}{5}, \frac{5}{9}, \frac{8}{11}, \frac{61}{100}$
6	There is an 80% probability that LeBron makes any given free throw. As a common fraction, what is the probability that he misses two free throws in a row?
7	The number 2016 = 2000 + 16. This has the form $a(1000) + a^4$, where a represents the digit in the thousands place. Including 2016, what is the number of four-digit numbers having this form?

8	Jed has thirty-six cards numbered from 1 to 36. After putting the cards in order from least to greatest, he removes card 1, skips one card and removes card 3, skips two cards and removes card 6, skips three cards and removes card 10, and so on removing one card after skipping strings of cards that increase by one each time until he either skips or removes card 36. He then shuffles the remaining cards. If he randomly selects two cards without replacement, as a common fraction, what is the probability that the number on the first card minus the number on the second card is ten?
9	What is the number of right triangles that can be drawn such that three of the dots are vertices? Assume the dots are evenly spaced horizontally and vertically.
10	On a coordinate plane, a segment with an endpoint at the origin, (0, 0), is drawn to the right 1 unit. A second segment, beginning at the end of the first segment, is then drawn straight up that is two units long. A third segment, beginning at the end of the second segment, is drawn to the left that is three units long, followed by a fourth segment, beginning at the end of the third segment, which is drawn straight down and is four units long. These four segments are shown below. This pattern of drawing segments whose lengths are increasing each time by one unit that are going horizontally right, then vertically up, then horizontally left, then vertically down, is continued until 101 segments have been drawn. The coordinates of the final endpoint of the 101st segment are (x, y). What is the value of x - y? 

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6th Grade – February 19, 2016

ROBERT DIRKS Relay Contest

RELAYS - 5 minutes per relay – 15% of team score

There is no talking during this event and you must always be facing forward. Person #1 will be given an answer sheet(s) and will need to fill out the top. The proctor will hand out a strip of paper to each person. These need to be face down on your desk until it is time for the relay to start. Once the relay begins, everyone may turn over their strip of paper and begin working. You may write on the strip of paper to come up with your answer. However, when person #1 figures out his/her problem, he/she will record ***just his/her final answer*** *on the answer sheet and pass only the answer sheet back to the person behind. This continues until person #4 puts an answer on the answer sheet and gives it to the proctor. A correct answer from person #1, #2 and #3 is worth 1 point each. A correct answer from person #4 is worth 2 points making each relay worth 5 points. You will see the expression* ***TNYWG*** [Proctor: write this on the board] *which means: "the number you will get". This is where you put your teammate's answer that they pass back to you, and then you should be able to solve your question. Once the relay begins, turn over your strip of paper and* ***make sure you have the right person number.*** *Remember, no talking and remain facing forward to avoid being disqualified!*

	Practice Relay	**Answer**
Person 1	What is the sum of one, two, three, four and five?	15
Person 2	What is TNYWG squared?	225
Person 3	What is the sum of the digits of TNYWG?	9
Person 4	TNYWG standard dice are rolled and the numbers showing are added. What is the largest possible sum?	54
	Relay #1	**Answer**
Person 1	What is the number of faces on a cube?	6 [faces]
Person 2	What is the sum of the positive factors of TNYWG?	12
Person 3	A list of consecutive prime numbers beginning with two, is written until there are TNYWG numbers in the list. What is the largest number in this list?	37
Person 4	If TNYWG is a base-eight number, what is its value in base-ten?	31
	Relay #2	**Answer**
Person 1	What is the mean of the set of positive whole numbers, one through five?	3
Person 2	The radius of a circle is TNYWG centimeters. What is the number of centimeters in the circumference of the circle?	6π [cm]
Person 3	What is TNYWG, divided by π, and then multiplied by twelve?	72
Person 4	Angle A has a measure of TNYWG degrees. What is the number of degrees in the measure of the angle complementary to angle A?	18 [°]

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COLLEGE KNOWLEDGE BOWL ROUND #1 – SET 1

#	Problem	Answer
1	Evaluate: twelve percent of two hundred fifty.	30
2	I have eight red socks, four blue socks, three green socks, five purple socks, and two hundred yellow socks in my drawer. How many socks do I need to pull out of my drawer **without looking** to make sure I've pulled out two socks of the same color?	6 [socks]
3	Adam has a box of apples. He gives half of his apples to Ben, and one-third of the remaining apples to Carl, leaving four apples in the box. How many apples were in the box originally?	12 [apples]
4	What is the number of cubic inches in the volume of a cube with a side length of sixteen inches?	4096 [inches^3]
5	Evaluate: one hundred twenty-five to the second power	15625
6	What is the remainder when two thousand sixteen is divided by seventeen?	10
7	I have a deck of two hundred cards, numbered one through two hundred. What is the sum of the numbers on the cards?	20100
8	On a farm there are cows and people. Given that there are forty-eight heads and one hundred seventy-eight legs, how many people are there?	7 [people]
9	What is the sum of the distinct prime factors of four hundred and twenty?	17
10	Two standard six-sided dice are rolled and the numbers showing are added together. As a common fraction, what is the probability that the sum is a prime number?	5/12 or "5 out of 12" or "5 over 12".

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COLLEGE KNOWLEDGE BOWL ROUND #2 – SET 2

#	Problem	Answer
1	Solve the following equation for x: (pause) three x plus two equals thirty-five.	[x=] 11
2	In how many distinct orders can I place six books on my shelf?	720 [orders]
3	I flip three coins. As a common fraction, what is the probability that exactly two land tails up?	3/8 or "3 out of 8" or "3 over 8".
4	As a decimal, what is the median of the following set of numbers: five, one, twelve, eight, three, fifteen, three, and nine million.	6.5
5	A regular octagon has a side length of four yards. In inches, what is the perimeter of the octagon?	1152 [inches]
6	Express six-thirteenths as a decimal rounded to the nearest thousandth.	[0].462
7	As a common fraction, what is one-half plus one-third plus one-fourth plus one-fifth?	77/60 or "77 over 60"
8	A book has pages numbered one through one hundred and seven. How many times does the digit "seven" appear in the page numbers?	21 [times]
9	It takes me thirty-two seconds to make a sandwich. At this rate, how many minutes will it take me to make fifteen sandwiches?	8 [minutes]
10	When Biff multiplies his favorite number by twenty-three and subtracts two thousand sixteen, the result is the product of forty-three and five. What is three times Biff's favorite number?	291

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COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	Jimmy John can eat fifteen tacos in thirty-six minutes. At this rate, how many tacos can he eat in one hour?	25 [tacos]
2	What is fifty-four thousand three hundred and twenty-one minus twelve thousand three hundred and forty-five?	41,976
3	Calculate the sum of the first twelve even counting numbers.	156
4	What is the sixteenth prime number?	53
5	What is five hundred sixty-seven divided by nine.	63
6	As a decimal, what is fifteen percent of two thousand sixteen?	302.4
7	What is the number of square centimeters in the area of a triangle with a base of length twenty-four centimeters and a base to height ratio of six to seven.	336 [cm^2]
8	I draw a card randomly from a standard fifty-two-card deck. As a common fraction, what is the probability that it is a red card or that it is a seven?	7/13 or "7 out of 13" or "7 over 13"
9	It takes two hours and thirty-six minutes for Eho to jog to Seattle. On average he jogs one mile every thirteen minutes. How long, in miles, is his route to Seattle?	12 [miles]
10	I have a magical piggy bank that triples the number of pennies in it every night. On the first day, I put one penny into it, and don't put anything else in. On the ninth day, in dollars and cents, how much money is in the piggy bank?	[$] 65.61 or "65 dollars and 61 cents"

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COLLEGE KNOWLEDGE BOWL ROUND #4 – SET 4

#	Problem	Answer
1	What is the number of odd numbers between ten and thirty-two?	11 [odd numbers]
2	June can run a mile in nine minutes. At this rate, what is the number of miles she can run in three hours?	20 [miles]
3	Bill has twenty-one cards numbered one through twenty-one. If Nancy randomly chooses one, as a common fraction, what is the probability that it is a multiple of five?	4/21 or "4 out of 21" or "4 over 21"
4	What is the mean of the first five positive multiples of thirteen?	39
5	What is the greatest number of two-inch by two-inch, non-overlapping squares that can be drawn on one side of a five-inch by seven-inch rectangular index card.	6 [squares]
6	What is the product of ninety-nine, times one hundred, times one hundred and one?	999900
7	Brian has some coins worth forty cents in his pocket. More than half of his coins are dimes, but not all of his coins are dimes. How many of his coins are nickels?	2 [nickels]
8	The prime factorization of two thousand and sixteen is two to the 'A' power times three to the second power times seven. What is the value of 'A'?	5
9	What is the number of minutes that elapse from two forty-five P.M. one day to eleven fourteen A.M. the next day	1229 [minutes]
10	How many two-digit prime numbers less than fifty are still prime numbers when you reverse their digits?	5 [prime numbers]

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COLLEGE KNOWLEDGE BOWL ROUND #5 – SET 5

#	Problem	Answer
1	What is the largest three-digit multiple of nineteen?	988
2	What is the greatest common factor of thirty, forty, and fifty-five?	5
3	What is sixty-seven times thirty-four?	2278
4	Solve the following equation for x: four x minus ten equals twenty-two	[x =] 8
5	Joyce can read sixteen pages every twelve minutes. At this rate, what is the number of minutes it would take her to read a four hundred and thirty-two page book?	324 [minutes]
6	What is the sum of the fifth smallest positive multiple of seven and the fifth smallest positive multiple of eleven?	90
7	How many ways can twenty-seven cents be made with combinations of pennies, dimes, and quarters?	4 [ways]
8	Beginning with the number three, more numbers are generated by doubling the previous number each time. The second number is six, the third number is twelve, and so on. This continues until there are a total of ten numbers, including three. What is the median of these ten numbers?	72
9	How many distinct ways are there to arrange the letters in the word Wookiee, spelled W-O-O-K-I-E-E?	1260 [ways]
10	A rectangle has an area of twenty-four square inches. Its side lengths are counting numbers. What is the number of inches in the diameter of the largest circle that can be drawn inside the rectangle so that it does not extend outside of the rectangle?	4 [inches]

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COLLEGE KNOWLEDGE BOWL ROUND #6 – SET 6

#	Problem	Answer
1	What is two thousand times three hundred?	600000
2	What is the remainder when five hundred is divided by seventeen?	7
3	Zamzam has a set of cards with the two-digit numbers written on them, and in the set she has one card for every two-digit number. If she draws a card at random, as a common fraction, what is the probability that it is in the thirties?	1/9 or "1 out of 9" or "1 over 9"
4	What is the positive difference between the greatest prime factor and the least prime factor of seventy-two?	1
5	What is four to the fourth power minus three to the third power?	229
6	Geronimo can fold three napkins, each in the shape of a bird of paradise in seventy-five seconds. At this rate, how many minutes will it take him to fold enough napkins for a dinner party of thirty-six people?	15 [minutes]
7	A parallelogram is drawn on a coordinate plane with vertices at zero comma zero, four comma zero, six comma five, and two comma five. What is the number of square units in the area of the parallelogram?	20 [units^2]
8	There are four Zoinks in a Jinkies and six Jinkies in a Jeepers. How many Jeepers are in twenty-four Zoinks?	1 [Jeepers]
9	Pierre walks along the perimeter of a rectangular field a total of two and a half times. His total walking distance is seven hundred and fifty yards. The ratio of the length of the field to the width is two to one. What is the number of square yards in the area of the field?	5000 [yd^2]
10	Two cards are randomly chosen from a standard fifty-two-card deck. As a common fraction, what is the probability that one is red and the other is black?	26/51 or "26 out of 51" or "26 over 51"

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COLLEGE KNOWLEDGE BOWL ROUND – EXTRA

#	Problem	Answer
1	What is one thousand and one times twenty nine?	29029
2	A train leaves station A traveling at an average rate of sixty miles per hour. It arrives at station B after two hundred minutes. What is the number of miles between station A and station B?	200 [miles]
3	What is the number of centimeters in the area of a circle with a circumference of twenty pi centimeters?	100π [cm^2]

Final Score:
KEY
(Out of 8)

"Math is Cool" Championships -- 2015-16

Student Name _____ Team #_____

School Name _____ Proctor Name_____ Room #_____

6th Grade **Mental Math** – 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score
You may NOT be seated next to anyone from your school. If you are, MOVE NOW to avoid being disqualified! 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	132 [cm^2]		
2	4 [even numbers]		
3	9900		
4	70 [°]		
5	4		
6	5 [minutes]		
7	2/3		
8	60 [%]		

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6th Grade – February 19, 2016

School Name_____Team #_____

Proctor Name _____Room #_____

Final Score:

KEY

First Score

(out of 20)

Team Multiple Choice Contest – 15 minutes – 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. When you are prompted to begin, tear off the colored sheet, pass out a copy of the test to each team member, and begin testing. ***Since this is a multiple choice test, ONLY a letter response should be listed as an answer on the answer sheet.***

Correct responses are worth 2 points, incorrect responses are worth -1 point and no response is 0 points.

DO NOT WRITE IN SHADED REGIONS

	Answer	-1, 0 or 2	-1, 0 or 2
1	A		
2	C		
3	D		
4	B		
5	E		
6	E (53)		
7	A		
8	B		
9	E		
10	D		

"Math is Cool" Championships – 2015-16

6th Grade – February 19, 2016

School Name_____ Team #_____

Proctor Name_____ Room #_____

Final Score: KEY

First Score (out of 10)

Team Contest – Score Sheet – 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 a 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	[x=] 4		
2	70		
3	24 [orders]		
4	48 [cm]		
5	5/9		
6	1/25		
7	5 [numbers]		
8	4/189		
9	78 [triangles]		
10	101		

"Math is Cool" Championships -- 2015-16

6th Grade – February 19, 2016

KEY

ROBERT DIRKS RELAY EVENT

PRACTICE RELAY

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
15	**225**	**9**	**54**
1 or 0	1 or 0	1 or 0	2 or 0

RELAY # 1

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
6 [faces]	**12**	**37**	**31**
1 or 0	1 or 0	1 or 0	2 or 0

RELAY # 2

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
3	**6π [cm]**	**72**	**18 [°]**
1 or 0	1 or 0	1 or 0	2 or 0

Final Score:
(Out of 8)

"Math is Cool" Championships -- 2015-16

Student Name _____ Team #_____

School Name _____ Proctor Name_____ Room #_____

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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

6th Grade – February 19, 2016

School Name_____ Team #_____

Proctor Name _____ Room #_____

Final Score:

First Score
(out of 20)

Team Multiple Choice Contest – 15 minutes – 20% of team score

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

"Math is Cool" Championships – 2015-16

6th Grade – February 19, 2016

School Name_____ Team #_____

Proctor Name_____ Room #_____

Final Score:

First Score
(out of 10)

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	Answer	1 or 0	1 or 0
1			
2			
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