"Math is Cool" Masters – 2014-15

January 30, 2015

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	91,383		
2	[$] 2.25		
3	7:58 am		
4	768 [cars]		
5	900 [spells]		
6	11 [cups]		
7	2,190 [minutes]		
8	13 [crimes]		
9	210 [sandwiches]		
10	[$] 13.50		
11	36 [times]		
12	1,200 [mysteries]		
13	31 [years old]		
14	168 [feet]		
15	2 [touchdowns]		
1-15 TOTAL:			

	Answer	1 or 0	1 or 0
16	25 [feet]		
17	Isosceles [triangle]		
18	90 [minutes]		
19	13 [miles]		
20	4 [squirrels]		
21	52π [sq inches]		
22	6 [ways]		
23	3/8		
24	12 [hours]		
25	3.0 [hours]		
26	33 [ramen cups]		
27	490		
28	25200		
29	50.5 [meters]		
30	13 [cm]		
16-30 TOTAL:			

	Answer	1 or 0	1 or 0
31	30 [campers]		
32	$\frac{243}{1024}$		
33	15π [cm]		
34	1386		
35	16		
36	1/4		
37	32 [rectangles]		
38	$1015_{[6]}$		
39	0		
40	996		
31-40 TOTAL:			

6th Grade

Total Correct

"Math is Cool" Masters – 2014-15

January 30, 2015

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 – 2014-15

Sponsored by:

January 30, 2015

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 – 2014-15

Sponsored by:

6th Grade – January 30, 2015

Mental Math Contest

Mental Math – 30 sec per question

8 problems read orally to everyone - Approximately 8% of Individual Score - 25% of team score

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.*

#	Problem
1	Eho has 26 dollars in his piggy bank and Biff has 17 dollars in his piggy bank. How many dollars do they have together in their piggy banks?
2	As a reduced common fraction, what is two-thirds plus one-eighth?
3	Debbie and Sarah share a rectangular room with length 14 feet and width 15 feet. If they want to divide it equally, what is the area in square feet of Sarah's share of the room's floor space?
4	The two legs of a right triangle measure 14 and 25 centimeters. What is the area of the triangle, in square centimeters?
5	As a reduced common fraction, what is the probability of getting exactly 4 heads when flipping a coin 5 times?
6	How many degrees does the minute hand of an analog clock move from 3:15 pm to 3:34 pm?
7	What is the product of the least common multiple and the greatest common factor of 15 and 50?
8	What is the smallest composite number that has no prime factors less than 10?

"Math is Cool" Championships – 2014-15

Sponsored by:

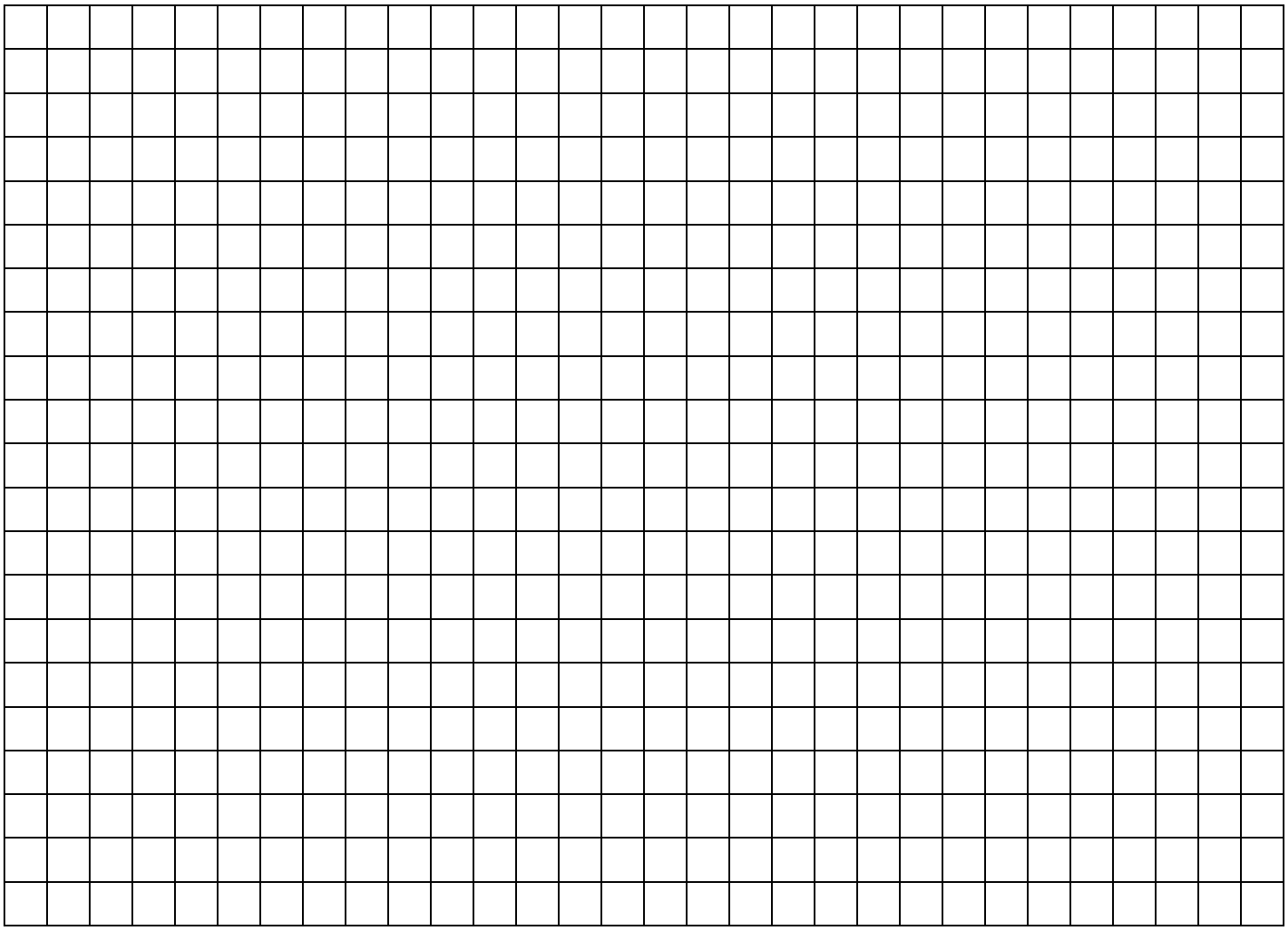
January 30, 2015

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 – 2014-15

Sponsored by:

6th Grade – January 30, 2015

Individual Contest

Record all answers on the colored cover sheet.

	Questions 1-30: 2 points each
1	What is the product of 249 and 367?
2	Tyson has 3^2 quarters. How much money, in dollars, does Tyson have?
3	It takes Jayze 17 minutes to get to class. If he needs to be there by 8:15 am, what time does Jayze need to leave?
4	Godzilla can eat 16 cars every half hour. How many cars can Godzilla eat in one day? Assume there are 24 hours in a day.
5	Sabrina the teenage witch can cast 4 spells a minute. How many spells can she cast from 8:30am to 12:15pm?
6	The Mad Hatter has a tea party for his "unbirthday." He drinks 14 cups of tea, Alice drinks 13 cups, the March Hare drinks 9 cups, and the Dormouse drinks 8. What is the average number of cups of tea consumed at the party?
7	Kurt has 365 songs on his iPod, one for every day of the year. If each song last one-tenth of an hour, how many minutes worth of music does Kurt have on his iPod?
8	Blossom, Bubbles, and Buttercup stopped 7 crimes on Monday, 8 crimes on Tuesday, 9 crimes on Wednesday, and so on. If they continue to stop one more crime than the day before, how many crimes will Blossom, Bubbles, and Buttercup stop on Sunday?
9	For every 7 sandwiches that Scooby and Shaggy make, they eat 4. If they ate 120 sandwiches, how many did they make?
10	If 12 Chipotle burritos cost $18.00, how much, in dollars, would 9 Chipotle burritos cost?
11	Charlie Brown kicks a field goal three out of five times he kicks the football. If he kicks the football 60 times, how many field goals would he kick?
12	Nancy Drew solves 20 mysteries a month. If she started solving mysteries in January 2011, how many will she have solved by December 2015 (i.e., after 5 years)?
13	Abby is eight years older than her sister. If Abby's sister was 13 in 2004, how old will Abby be in 2014?
14	Sid the Sloth moves one foot every hour of the day. In one week, how many feet will Sid have moved?

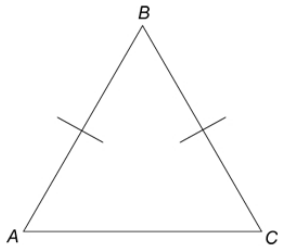
15 Russell Wilson makes touchdowns as shown below:

Game Against	Number of Touchdowns
Raiders	2
Eagles	4
Broncos	1
Cowboys	3
Packers	0

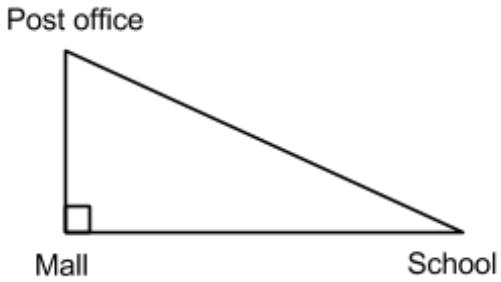
What is the average number of touchdowns made by Wilson?

16 James' giant peach has a diameter of 20 feet. If the diameter grows by one-fourth, how large will the new diameter be?

17 Is the following an equilateral, isosceles, or scalene triangle?



18 Paul Bunyan can chop 12 trees a minute. Babe the ox can pull 8 trees in one minute. If Paul chops trees for one hour, how many minutes will it take Babe to pull them all?

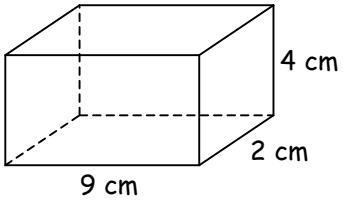
19 

(Drawing not to scale)
The mall is 12 miles from the school. The post office is 5 miles from the mall. How far apart, in miles, is the post office from the school?

20 Squirrels can stuff 13 nuts in each of their two cheeks. If Phoebe has 99 nuts, how many squirrels are needed to take all of Phoebe's nuts? Your answer must be a whole number.

21 Luke the Hamster has two running wheels. One wheel, when laid on a table traces a circle with a circumference of 12π inches. The other wheel when laid on a table traces a circle with a circumference of 8π inches. What is the sum of the traced areas of both wheels in square inches? Express your answer in terms of π.

22 How many ways can the letters in the word "FUN" be arranged?

23	Jimmy Neutron spins a fair spinner with four equal areas, labeled A, B, C, and D respectively. Then he flips a fair coin. What is the probability that Jimmy's spin landed on a consonant and he flipped a "heads?"
24	Randy the Orangutan sleeps twice as long as his sister, Ronda. If Ronda the Orangutan sleeps for one-fourth of the day, how long does Randy sleep, in hours?
25	A giraffe can run at a speed of 30 miles per hour. Magical rocket skates can make an animal travel twice as fast as normal. If Seattle to Portland is 180 miles, and a giraffe is wearing magical rocket skates, how long will it take the giraffe to get to Seattle from Portland? Express the time in hours, rounded to nearest tenth.
26	Swag Money is a new form of currency where 1 Swag Buck is equal to $1.50. If Mitchell has 50 Swag Bucks, how many $2.25 cups of Ramen can he buy?
27	A set of five distinct counting numbers has a mean of 100. What is the greatest possible number in the set?
28	In a number sequence, the first number, 5, is multiplied by 1 to get the second number, 5. The second number, 5, is multiplied by 2 to get the third number, 10. The third number, 10, is multiplied by 3 to get the fourth number, 30, and so on. What is the eighth number in the sequence?
29	Harold runs at a constant rate of 5 meters per second. Ben runs at a constant rate of 4.5 meters per second. If they are both in a 505 meter race and they start at the same time, what is the number of meters that Ben will have left to go when Harold crosses the finish line? Answer as a decimal.
30	A rectangular prism with a volume of 72 cm^3 can have several different combinations of length, width and height. One such combination is shown. If the dimensions are all counting numbers, what is the number of centimeters in the smallest possible sum of length + width + height in one of these combinations? 

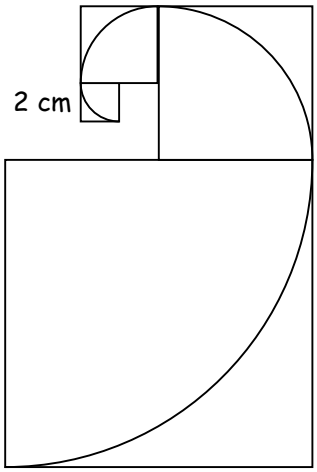
Challenge Questions: 3 points each

31	At a summer camp there are classes in horseback riding, archery, and basket weaving. There are 32 campers and 4 of them take all three classes, 8 take horseback riding and archery, 7 take archery and basket weaving, and 6 take horseback riding and basket weaving. What is the largest number of campers that could be in any one class?

32 In Stage 1, the white triangle is formed by connecting the midpoints of the three sides of the black triangle in Stage 0. In Stage 2, you see the same white triangle as in Stage 1, and three additional white triangles which are formed by connecting the midpoints of the sides of each of the three black triangles from Stage 1. In each successive stage, the white triangles from the previous stage are kept and new white triangles are added by connecting the midpoints of all of the black triangles from the previous stage. In Stage 1, $\frac{3}{4}$ of the original triangle in Stage 0 is shaded. What fraction of the original triangle in Stage 0 will be shaded in Figure 5?

Stage 0 Stage 1 Stage 2 Stage 3

33 The four quadrilaterals in the drawing are squares. The smallest square has side length 2 cm and each successive larger square has side lengths that are double the side lengths of the previous smaller square. The spiral consists of four quarter-circles whose radii correspond with the side length of the square in which they are drawn. In terms of π, what is the number of centimeters in the length of the spiral?



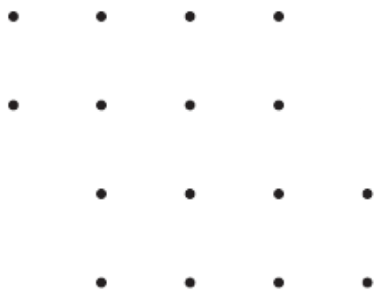
34 What is the sum of the three-digit multiples of 21 that are also multiples of 22?

35

January 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

The month of January has 31 days. If, in a given year, January 1 falls on a Monday, then there will be 5 Mondays, 5 Tuesdays and 5 Wednesdays in January that year. What is the positive difference in the sum of the numbers showing for Mondays, Tuesdays and Wednesdays and the sum of the numbers showing for the other four days of the week in a year when January 1 is a Monday.

36	The set of numbers, {2, 3, 5, 7, 11, 13, 17, 19}, includes all of the prime numbers between 1 and 20. If two numbers are selected at random from the set and multiplied together, what is the probability that the product is even? Answer as a common fraction.
37	What is the number of rectangles that can be drawn having any 4 of the dots in the diagram as their vertices? Assume that the horizontal and vertical distances from each dot to any horizontally or vertically adjacent dot is always the same. 
38	You can evaluate the following expression with the steps shown: $3203_4 =$ $3x4^3 + 2x4^2 + 0x4^1 + 3x4^0 =$ $3x64 + 2x16 + 0x4 + 3x1 =$ $192 + 32 + 0 + 3 =$ 227 The result, 227, is a base-10 number. The base-10 number is equivalent to the base-4 number 3203_4. What base-6 number is 3203_4 equivalent to?
39	Jenny has 12 oz of Sprite in one glass and 12 oz of Coke in an identical glass. She uses a pipette to take exactly 1 oz of Sprite from the Sprite glass and mixes it in with the Coke. Then she takes exactly 1 oz of the mixture in the Coke glass out and mixes it in with the Sprite. What is the difference between the amount of Sprite in the Coke glass and the amount of Coke in the Sprite glass?
40	What is the largest 3-digit number with three distinct prime factors?

"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

Team Multiple Choice Contest

USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS 1 - 4:

Divisibility Rules:

A number is divisible by 2 if it is even

A number is divisible by 3 if the sum of its digits is a multiple of 3

A number is divisible by 4 if the final two digits form a two-digit multiple of 4

A number is divisible by 5 if the final digit is a 5 or a 0

A number is divisible by 6 if it is divisible by 2 and by 3

A number is divisible by 8 if the final three digits form a three-digit multiple of 8

A number is divisible by 9 if the sum of its digits is a multiple of 9

A number is divisible by 10 if it end in 0

A number is divisible by 11 if the sum of its even-positioned digits minus the sum of its odd-positioned digits is a multiple of 11

Example for the divisibility rule for 11: 723456789 = 11 x 65768799

The sum of the even-positioned digits is 7 + 3 + 5 + 7 + 9 = 31

The sum of the odd-positioned digits is 2 + 4 + 6 + 8 = 20

31 - 20 = 11 which is a multiple of 11

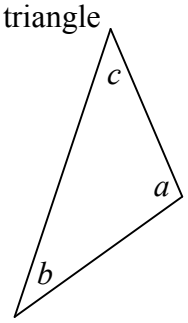
1	Which of the following numbers is divisible by 6? A) 22 B) 55 C) 88 D) 110 E) 132
2	Which of the following numbers is divisible by 4 and 7? A) 192 B) 98 C) 56 D) 48 E) 35
3	Which of the following numbers is not divisible by both 8 and 11? A) 352 B) 396 C) 528 D) 616 E) 704
4	What is the smallest positive integer (whole number) that is a multiple of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11? A) 166320 B) 110880 C) 55440 D) 27720 E) 18480

USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS 5 - 7:

The sum of the measures of the interior angles of a triangle is always 180°. Any quadrilateral (four-sided shape) can be divided into two triangles by randomly picking one of its vertices (corners) and drawing a segment to the opposite vertex. Any pentagon (five-sided shape) can be divided into three triangles by randomly picking one of its vertices and drawing two segments to opposite vertices.

$a + b + c = 180°$

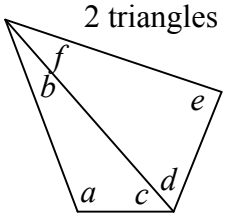
1 triangle

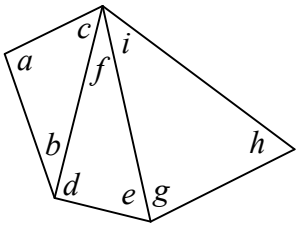


$a + b + c + d + e + f =$

$180° + 180° = 360°$

2 triangles





$a + b + c + d + e + f + g + h + i =$

$180° + 180° + 180° = 540°$

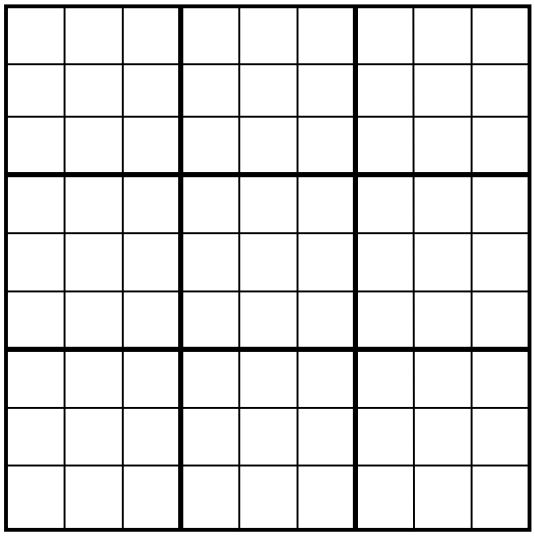
3 triangles

These shapes are called polygons and as the number of sides of a polygon increases by one, the number of triangles it can be divided into in this way increases by one. This pattern can be used to determine the sum of the measures of the interior angles of any polygon by multiplying the number of triangles it can be divided into by 180°.

5	What is the sum of the measures of the interior angles of a rectangle? A) 180° B) 270° C) 300° D) 360° E) 450°
6	What is the sum of the measures of the interior angles of a heptagon (7 sides)? A) 1260° B) 900° C) 720° D) 690° E) 540°
7	The sum of the measures of the interior angles of a polygon with an unknown number of sides is 1620°. What is the number of sides in this polygon? A) 9 B) 10 C) 11 D) 12 E) 13

USE THE FOLLOWING INFORMATION TO ANSWER QUESTIONS 8-10:

In a Sudoku puzzle you must enter the digits 1 through 9 nine times on a 9 by 9 grid such that every row contains the digits 1 through 9, every column contains the digits 1 through 9, and each one of the nine 3 by 3 grids contains the digits 1 through 9.



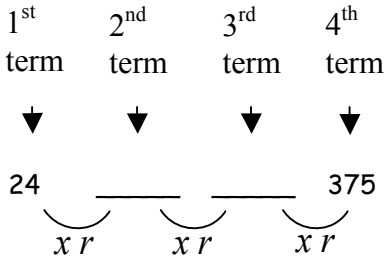
8	What is the sum of all 81 digits of a completed 9 by 9 Sudoku puzzle? A) 495 B) 405 C) 360 D) 315 E) 300
9	For any given 3 by 3 grid, what is the positive difference between the largest possible sum of the digits in the four corners and the smallest possible sum of the digits in the four corners? A) 15 B) 16 C) 18 D) 20 E) 22
10	What is the number of distinct arrangements of the digits 1 through 9 in any given row of a 9 by 9 Sudoku puzzle? A) 362880 B) 40320 C) 72 D) 54 E) 45

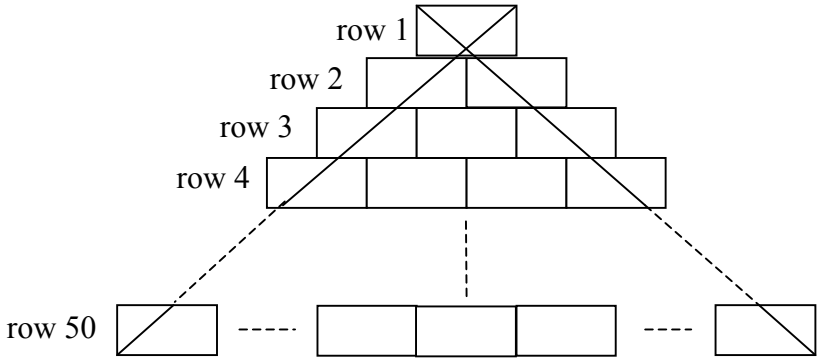
"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

Team Contest

1	Momo is holding 6 red cards and 10 blue cards. Isaac randomly draws one card. As a common fraction, what is the probability that the card he draws is blue?
2	Angela has watched 60% of a movie that is 88 minutes long. As a decimal, what is the number of minutes remaining to be watched?
3	What is the sum of the prime factors of 2015?
4	What is the number of degrees in the measure of the acute angle formed by the hands of a clock at 4:30 pm?
5	The area of a rectangle is 54 cm^2. What is the number of square centimeters in the area of a new rectangle formed by multiplying the side lengths of the first rectangle by $\frac{4}{3}$?
6	A package of spaghetti has a total of 612 noodles in it. Each noodle is 10 inches long. What is the number of yards in the total length of the noodles when they are laid out end to end?
7	The volume of a rectangular prism is 60 in^3 and the lengths of its edges are all whole numbers. What is the number of inches in the largest possible sum of all of the edges of the prism?
8	In the geometric series below 24 is multiplied by a number, r, to get the 2nd term. Then the 2nd term is multiplied by r to get the 3rd term. Finally, the 3rd term is multiplied by r to get 375. What is the sum of the 2nd and 3rd terms? 

9	Several 1 cm-by-2 cm rectangles are stacked in a pattern as shown. Each rectangle is positioned so that its vertical line of symmetry lines up with where the two rectangles directly beneath it come together. This pattern continues for 50 rows total. Line segments are drawn from the upper right corner of the top rectangle (row 1) to the lower left corner of the bottom left rectangle (row 50), and from the upper left corner of the top rectangle (row 1) to the lower right corner of the bottom right rectangle (row 50). As a common fraction, what is the ratio of the number of rectangles not touched by either of the line segments to the total number of rectangles in the 50 rows? 
10	In the expression $\frac{a}{b} x \frac{c}{d}$, the variables a, b, c and d can each be replaced with a distinct digit from 1 to 4 in many ways. For example, two ways include: $\frac{1}{2} x \frac{3}{4}$ and $\frac{1}{3} x \frac{2}{4}$. If the distinct products resulting from this process are written from least to greatest, what is the median of the list? Give your answer as a common fraction.

"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

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 1 x 2 x 3 x 4?	24
Person 2	Divide TNYWG by 3.	8
Person 3	What is TNYWG squared?	64
Person 4	Subtract 24 from TNYWG.	40
	Relay #1	**Answer**
Person 1	What is the smallest prime number between 30 and 40?	31
Person 2	TNYWG equals 15 plus what number?	16
Person 3	What is the square root of TNYWG?	4
Person 4	A circle with an area of 25π cm^2 has its radius multiplied by TNYWG? In terms of π, what is the number of centimeters in the circumference of the resulting circle?	40π [cm]
	Relay #2	**Answer**
Person 1	A bag has 2 white marbles and 3 orange marbles. If one marble is chosen from the bag at random, as a common fraction, what is the probability that it is white?	2/5
Person 2	Multiply TNYWG by 50.	20
Person 3	Multiply TNYWG by 16 and then add 3.	323
Person 4	What is the largest prime factor of TNYWG?	19

"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

COLLEGE KNOWLEDGE BOWL ROUND #1 – SET 1

#	Problem	Answer
1	How many seconds are there in eighteen minutes?	1080 [seconds]
2	How many cookies can Mark make in 2 hours if he makes 26 cookies every 30 minutes?	104 [cookies]
3	What is two-thirds of three-fourths?	One-half.
4	What is 60 percent of 70?	42
5	What is the total number of legs and tails in a group of 16 cats, assuming they all have four legs and one tail?	80
6	What is the mean of this set of numbers? 5, 19, 1, 17, 23	13
7	If a shirt costs 15 dollars at full price, how much will it cost, in dollars and cents, after it goes on sale for 10 percent off?	$13.50 [thirteen dollars and fifty cents]
8	What is the sum of the first 20 counting numbers?	210
9	How many ways can you make 15 cents using pennies, nickels and/or dimes?	6
10	If you start with a penny on day one and it doubles every day, how much money, in dollars and cents, will you have at the end of two weeks?	$81.92

"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

COLLEGE KNOWLEDGE BOWL ROUND #2 – SET 2

#	Problem	Answer
1	What is the sum of one half plus one third plus one sixth?	1
2	How many cups are there in four quarts?	16 [cups]
3	What is the positive difference in temperature from 98 degrees Fahrenheit and 32 degrees Fahrenheit?	66 [degrees F]
4	What is the probability of flipping a fair coin twice and getting a head on both flips?	One-fourth
5	What is 37 percent of 900?	333
6	A math competition has 20 fourth graders and 15 fifth graders. What is the fraction of fifth graders at the competition?	Three-sevenths
7	Charles is cleaning up his room at a rate of 3 percent an hour. Assuming his room is a total mess, how many complete hours will it take for him to have at least half of his room cleaned?	17 [hours]
8	What is the sum of the measures of the interior angles of a regular pentagon in degrees?	540 [degrees]
9	Express four sevenths as a decimal rounded to the nearest hundredth.	.57 or 57 one-hundredths
10	A book has pages numbered 1 through 99. How many times does the digit '1' appear in the page numbers?	20 [times]

"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

COLLEGE KNOWLEDGE BOWL ROUND #3 – SET 3

#	Problem	Answer
1	Solve for x: Two x plus seven equals seventeen.	[X=] 5
2	If Ash catches 7 pokémon a day, how many days have passed by if he's caught 161 pokémon?	23 [days]
3	What is the sum of the first three positive multiples of nine, including nine itself?	54
4	What is the product of the four smallest prime numbers?	210
5	A computer costs 520 dollars before tax. If tax is 10 percent, what is the total computer cost in dollars?	572 [dollars]
6	How many feet are there in 74 yards plus 180 inches?	237 [feet]
7	If a burger bun has 75 sesame seeds on it, how many buns are there if you count 900 sesame seeds?	12 [buns]
8	What is the largest two-digit prime number minus the smallest two-digit prime number?	86
9	Ellen walks 3 miles per hour. How many minutes has she walked if she has traveled 14 miles?	280 [minutes]
10	What is the sum of the number of faces, the number of edges and the number of vertices or corners of a cube?	26

"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

COLLEGE KNOWLEDGE BOWL ROUND #4 – SET 4

#	Problem	Answer
1	How many minutes are there in 780 seconds?	13
2	How many different ways could you arrange the colors of a rainbow if it had 6 colors?	720 [ways]
3	What is the remainder when 2015 is divided by 4?	3
4	If a roll of tape has 132 inches in it, how many rolls of tape would Piccard need to create his abstract art piece that requires 1331 feet of tape?	121 [rolls of tape]
5	If each pen costs 37 cents and each pencil costs 12 cents, how much do 3 pens and 5 pencils cost in dollars and cents?	[$] 1.71 or one dollar and 71 cents.
6	In inches, what is the circumference of a circle with a radius of 3 inches?	6 pi [inches]
7	From a standard 52-card deck we draw one card. What is the probability that it is a heart or a king?	Four-thirteenths.
8	Evaluate two to the seventh power.	128
9	Solve for x if x times x times x equals 125.	X=5
10	Express the decimal zero point six two five as a reduced fraction.	Five-eighths

"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

COLLEGE KNOWLEDGE BOWL ROUND #5 – SET 5

#	Problem	Answer
1	How many centimeters are there in 50 meters?	5000 [cm]
2	If a hen lays 16 eggs every other week, how many eggs will she have after 8 weeks?	64 [eggs]
3	What is the quantity four and one-third divided by the value one-third?	13
4	If a bushel of grapes has 72 grapes, what is the least number of bushels you would need to have over 2015 grapes?	28 [bushels]
5	What is the probability of rolling a one, then a two, and then a three, in three rolls of a fair six-sided die?	$\frac{1}{216}$
6	Solve for x if x plus 18 equals 3 times x plus 8.	[X =] 5
7	What is the product of three times two times negative one times negative three?	18
8	How many distinct ways can you arrange the letters in the word RAINIER, R-A-I-N-I-E-R?	1260 [ways]
9	If an artist finishes 10 percent of a painting in 40 minutes, how many minutes will it take him to finish three-quarters of a painting?	300 [minutes]
10	How many different combinations of ice cream can you make choosing 3 different flavors from 11 possible flavors?	165 [combinations]

"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

COLLEGE KNOWLEDGE BOWL ROUND #6 – SET 6

#	Problem	Answer
1	What is the product of the number of seconds in a minute and the number of minutes in an hour?	3600
2	Froakie the frog eats 12 flies a minute. How many flies does he eat in 17 and one-half minutes?	210 [flies]
3	If one elf can wrap three gifts every two minutes, how many gifts can seven elves wrap in six minutes?	63 [gifts]
4	If 80 percent of the seats in an old movie theater need to be replaced, how many seats will they replace if there are 425 seats?	340 [seats]
5	What is the square root of the quantity eight squared plus six squared?	10
6	How many prime numbers are less than 50?	15 [prime numbers]
7	What is the area, in square centimeters, of a rectangle with a diagonal of 10 centimeters and one length of 8 centimeters?	48 [cm squared]
8	As a common fraction, what is the reciprocal of the decimal value 2 point 3?	Ten twenty-thirds
9	A secret admirer is delivering Patricia roses. If she receives 3 roses every day except Sunday for four weeks, how many dozen roses would she have received?	6 [dozen]
10	A hotel has 84 rooms and each room has either 2 or 3 people staying there. If there are 202 people staying at the hotel, how many rooms have 2 people?	50 [rooms]

"Math is Cool" Championships – 2014-15

Sponsored by:

6th Grade – January 30, 2015

COLLEGE KNOWLEDGE BOWL ROUND – EXTRA

#	Problem	Answer
1	How many seconds are there in one hour and twenty-three minutes?	4980 [seconds]
2	If Gabby grows one and one-half inches of her hair out a month, how many months does it take for her to grow her hair out an extra 12 inches?	8 [months]
3	What is the reciprocal expressed as a common fraction of the quantity two and one half?	Two-fifths
4	What is the greatest common factor of 48 and 84?	12
5	If a giraffe can run 30 miles an hour, what fraction of a mile can it run in 30 seconds?	One-quarter [of a mile]
6	How many counting numbers divide into 24 equally?	8 [counting numbers]

Final Score:

KEY

(Out of 8)

"Math is Cool" Championships -- 2014-15

School: _____ Room # _____ Team #_____

Name: _____Proctor: _____

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	43 [dollars]		
2	19/24		
3	105 [sq ft]		
4	175 [sq cm]		
5	5/32		
6	114 [°]		
7	750		
8	121		

"Math is Cool" Championships – 2014-15

6th Grade – January 30, 2015

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

"Math is Cool" Championships – 2014-15

6th Grade – January 30, 2015

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	5/8		
2	35.2 [minutes]		
3	49		
4	45 [o]		
5	96 [cm^2]		
6	170 [yards]		
7	248 [inches]		
8	210		
9	$\frac{392}{425}$		
10	13/12		

"Math is Cool" Championships -- 2014-15

KEY

6th Grade – January 30, 2015

School:_____Team #_____

Proctor: _____ Room #_____Div _____

PRACTICE RELAY

Answer for person # 1	Answer for person # 2	Answer for person # 3	Answer for person # 4
24	**8**	**64**	**40**
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
31	**16**	**4**	**40π [cm]**
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
2/5	**20**	**323**	**19**
1 or 0	1 or 0	1 or 0	2 or 0

Final Score:

(Out of 8)

"Math is Cool" Championships -- 2014-15

School: _____ Room # _____ Team #_____

Name: _____Proctor: _____

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			
2			
3			
4			
5			
6			
7			
8			

"Math is Cool" Championships – 2014-15

6th Grade – January 30, 2015

School Name _____ Team # _____

Proctor Name _____ Room # _____

Final Score:

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			
2			
3			
4			
5			
6			
7			
8			
9			
10			

"Math is Cool" Championships – 2014-15

6th Grade – January 30, 2015

School Name _____ Team # _____

Proctor Name _____ Room # _____

Final Score:

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			
2			
3			
4			
5			
6			
7			
8			
9			
10			