"Math is Cool" Championships-2003-04

4th Grade - March 12, 2004
Individual Contest

Express all answers as reduced fractions unless stated otherwise.
Leave answers in terms of π where applicable.
Do not round any answers unless stated otherwise.
Record all answers on the colored cover sheet.

1	823 + 782
2	What is the sum of the number of letters in MATH and the number of letters in ADD?
3	Evaluate 3 + 3 - 3 + 3 - 3 + 3 - 3
4	What is the sum of the first five positive integers?
5	If there are nine people standing in three even lines, how many people are in each line?
6	If Kai rides his bike for 5 hours, traveling 100 miles, what is his average speed in miles per hour?
7	What is 7 x 6 x 2 ÷ 12?
8	Round to the nearest tenth: 31.259
9	Evaluate $4 \times 5 \times 3$
10	How many inches are in 5 feet?
11	What is the perimeter of a square with side length 15 feet?
12	If today is Friday, what day is it 78 days from now?
13	What is 75% of 16?
14	If Kai runs a 6-minute mile, and Teddy runs a 8-minute mile, how many more miles will Kai run in 48 minutes?
15	Which is larger, eight-fifths or five-eighths?
16	The ratio of cows to sheep on a ranch is 3 to 5. If there are 120 cows on the ranch, how many sheep are there?
17	My number has a remainder of 1 when divided by 2. My number is less than 90 but greater than 65. My number is a multiple of 7. Find my number.

18	If Kai says "Math" every 4 minutes, Teddy says "Is" every 5 minutes, and Peter says "Cool" every 8 minutes, in how many minutes will they say "Math Is Cool" together after they start together?
19	A white car has no muffler. It annoys people who hear it 3/4 of the time. The probability Mikey will hear the car on any given day is 1/2. What is the probability that Mikey will be annoyed by the white car tomorrow?
20	What is 3 hours, 47 minutes after 9:35 am?
21	Find the smallest whole number that when added to 830 makes a sum greater than 1000.
22	Find the largest 5-digit even palindrome.
23	Person A says the number 122. Person B says 11,222. Person C says 1,112,222. Following this pattern, what would Person D say?
24	**A** is a circle with a radius of 7 inches, and **B** is a circle with a diameter of 10 inches. Which is larger in area, **A** or **B**, or are the areas the same?
25	If a robot makes 2 cars in 3 days, how many days does it take 3 robots to make 12 cars?
26	Take the smallest 3-digit number which has all its digits different. Then rearrange these three digits to form the largest possible 3-digit number.
27	If 51 more than my number is 50, what is my number?
28	What is the area of a square with perimeter 24?
29	Find the number of centimeters difference between the perimeter of a regular octagon of side length 9 centimeters and the perimeter of a regular hexagon of side length 7 centimeters.
30	Colin has math, science, and English textbooks. Colin has three times as many math textbooks as science text books and seven more science textbooks than English textbooks. Assuming he has at least one of each textbook, what is the least number of math textbooks he could have?

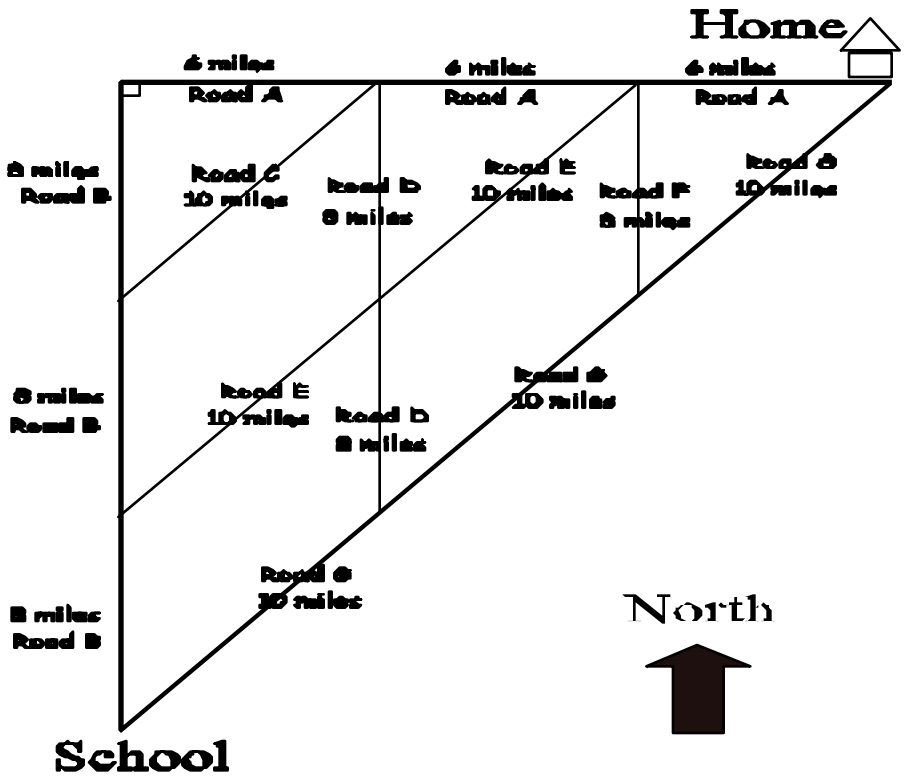
Challenge Questions

31	Find the volume, in cubic centimeters, of a rectangular prism with a base area of 12 square centimeters and a height of 4.5 centimeters.
32	Lee rolls two standard dice. Find the probability that the product of the showing numbers is greater than 1.
33	Libber takes a rectangle and divides it in half. If the two resulting figures are squares with area 36, what is the perimeter of the rectangle?
34	One third of Lakeisha's shirts are red, one fourth of her shirts are white, and one sixth of her shirts are purple. If Lakeisha has only red, white, purple and green shirts, and Lakeisha has 36 shirts total, how many green shirts does she have?
35	The number of restaurants in Mathington doubles every five years. How many times more restaurants will there be in 20 years than there are now?
36	Let $a \quad b = a \times b - 2a/b$. What is $27 \quad 3$?
37	12 cubes are placed together to form a rectangular solid two cubes by two cubes by three cubes. If the entire outside of the rectangular solid is painted and the solid is taken apart into the 12 individual cubes, what is the total number of faces of the cubes that remain unpainted?
38	With 2 dice, what is the probability of rolling a sum of 6 or 8?
39	Lee is taking a math test. There are 40 questions on the test. He gets 6 points for every correct response, 1.5 points for leaving a question blank, and no points for an incorrect response. If Lee leaves 15 questions blank, how many of the remaining questions would he have to get correct in order to get 130.5 points?
40	At Mt. Rainier High School "D" students are on the debate team, "C" students are on the chess team, and "M" students are on the math team. "X" students are on the math team and the debate team, "Y" students are on the chess team and the debate team, and "Z" students are on the math team and chess team. "A" students are on all three teams. In terms of M, X, Z, and A, how many students are only on the math team?

"Math is Cool" Championships-2003-04

4th Grade - March 12, 2004

Team Multiple Choice Contest



Road	Speed Limit in miles per minute
A	2
B	1
C	2
D	2
E	1
F	1
G	1

The map above is a picture of the roads Mr. Sampson can take to get to school. Each morning he starts from his house and only travels west, southwest, or south. He always drives the speed limit.

1	What is the length of road D? A.12 B.13 C.14 D.15 E. 16
2	How many total miles of road are there on the map above? A. 120 B. 126 C. 128 D. 136 E. Answer not given
3	How long in minutes does is take Mr. Sampson to get from one end of road A to the other end of road A? A. 36 B. 9 C. 18 D. 14 E. Answer not given
4	If Mr. Sampson is traveling 75 miles per hour on road G, how many miles above the speed limit is he traveling, in miles per hour? A. 10 B. 15 C. 20 D. 45 E. Answer not given

5	On his way to school, Sampson notices that all the land enclosed by Roads D, E, F, and G is for sale. If he buys it, how many square miles of land will he have purchased? A. 48 B. 24 C. 96 D. 60 E. Answer not given
6	Sampson is in a hurry one morning, and roads D and F are both closed due to construction. What is his fastest route to school? A. Road A to Road B B. Road A to Road C to Road B C. Road A to Road E to Road B D. Road G E. Answer not given
7	Assuming he only travels toward the school, what is the difference between the maximum number of miles Sampson could take to school and the fewest number of miles Sampson could take to school? A. 8 miles B. 10 miles C. 12 miles D. 14 miles E. Answer not given
8	Sampson signs up for the Neighborhood Road Patrol. As a member, he must drive every mile of road looking for downed power lines and trees. Assuming he always travels to school by turning west, southwest, or south, what is the fewest number of days Sampson will need to drive to school to have driven every mile of road? A. 6 days B. 5 days C. 8 days D. 7 days E. Answer not given
9	Because it's the day before summer, Mr. Sampson isn't thinking about his driving. If he takes a random direction at each intersection he comes to, and he always turns west, southwest or south, what is the probability he finds himself at the intersection of roads A and B? A. 1/2 B.1/6 C. 1/9 D. 1/18 E. Answer not given

"Math is Cool" Championships-2003-04

4th Grade -March 12, 2004
Team Contest

Express all answers as reduced fractions unless stated otherwise.
Leave answers in terms of π where applicable.
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Record all answers on the colored cover sheet.

1	Sampson uses incorrect grammar 3/4 of the time. 1/2 of the remaining time, he is discussing mathematics. What percentage of the time does Mr. Sampson use correct grammar when not discussing math?
2	Niki is four years older than Keisha. Matt is three years older than Niki. If Keisha is 18 now, how many years old was Matt 10 years ago?
3	Mike plays "Worms" 5 hours a day. Aaron plays "Jedi Knight" 3 hours a day. Brian plays "Crystal Chronicles" 13 hours a day. How many hours of video games do they play in a week, if Mike plays 5 days a week, Aaron plays 7 days a week, and Brian plays 2 days a week?
4	Find the sum of the next three numbers in the following sequence: 1, 5, 9, 13, 17, __, __, __
5	Shaun makes a rectangular cake that has side lengths 9 inches and 18 inches. Kiersten greedily eats a square out of the middle of the cake that has side lengths of 3 inches. What is the area of the remaining cake?
6	On Valentine's Day (February 14), Diego buys Kelly one rose for each thing he loves about her. Kelly realizes the number of roses is 3 times the number of days since she met Diego including today and the day they met. If Kelly and Diego met on January 11, how many things does Diego love about Kelly?
7	Peter meets three new people each day at camp. If he is at camp for a total of 14 days, how many new people does he meet at camp?
8	Michelle sets her alarm clock for 6:00 am but always hits the snooze button and sleeps in until 6:13. Michelle has to leave for school at 7:35 am. It takes her 15 minutes to shower, 12 minutes to blow dry her hair, 13 minutes to get dressed and do her make-up, and 10 minutes to eat breakfast. If Michelle spends the remaining time reading the newspaper, how many minutes does she have each morning to read the newspaper?
9	Diego is building a tree house. It takes 35 boards to build the floor and 17 nails per board to attach them. If he can drive in 5 nails per hour , how long, in hours, will it take to nail down the floor?
10	Find the product of 456 and 789.

Person #1 Practice Relay	Evaluate 2 x 3	6
Person #2 Practice Relay	Evaluate TNYWG - 3 + 7	10
Person #3 Practice Relay	Find TNYWG divided by 2	5
Person #4 Practice Relay	Five times TNYWG	25
Person #1 Relay #1	Evaluate: 15 - 9 + 4 + 6	16
Person #2 Relay #1	TNYWG divided by the number of miles a car going 2 miles per minute will travel in 2 minutes.	4
Person #3 Relay #1	TNYWG plus the fourth positive odd number.	11
Person #4 Relay #1	Evaluate: 5 × TNYWG × 3	165
Person #1 Relay #2	Find number of sides in a hexagon plus the number of faces on a standard die.	12
Person #2 Relay #2	TNYWG plus 5 × 5	37
Person #3 Relay #2	TNYWG minus the total number of dots on a standard die	16
Person #4 Relay #2	17 + the number of feet in three yards + TNYWG	42

Practice Relay
Person#1
Evaluate 2 x 3

Practice Relay
Person#1
Evaluate 2 x 3

Practice Relay
Person#1
Evaluate 2 x 3

Practice Relay
Person#1
Evaluate 2 x 3

Practice Relay
Person#2
Evaluate TNYWG - 3 + 7

Practice Relay
Person#2
Evaluate TNYWG - 3 + 7

Practice Relay
Person#2
Evaluate TNYWG - 3 + 7

Practice Relay
Person#2
Evaluate TNYWG - 3 + 7

Practice Relay
Person#3
Find TNYWG.divided by 2

Practice Relay
Person#3
Find TNYWG.divided by 2

Practice Relay
Person#3
Find TNYWG.divided by 2

Practice Relay
Person#3
Find TNYWG.divided by 2

Practice Relay
Person#4
Five times TNYWG

Practice Relay
Person#4
Five times TNYWG

Practice Relay
Person#4
Five times TNYWG

Practice Relay
Person#4
Five times TNYWG

Relay #1
Person#1
15 - 9 + 4 + 6

Relay #1
Person#1
15 - 9 + 4 + 6

Relay #1
Person#1
15 - 9 + 4 + 6

Relay #1
Person#1
15 - 9 + 4 + 6

Relay #1
Person#2
TNYWG divided by the number of miles a car going 2 miles per minute will travel in 2 minutes.

Relay #1
Person#2
TNYWG divided by the number of miles a car going 2 miles per minute will travel in 2 minutes.

Relay #1
Person#2
TNYWG divided by the number of miles a car going 2 miles per minute will travel in 2 minutes.

Relay #1
Person#2
TNYWG divided by the number of miles a car going 2 miles per minute will travel in 2 minutes.

Relay #1
Person#3
TNYWG plus the fourth positive odd number.

Relay #1
Person#3
TNYWG plus the fourth positive odd number.

Relay #1
Person#3
TNYWG plus the fourth positive odd number.

Relay #1
Person#3
TNYWG plus the fourth positive odd number.

Relay #1
Person#4
Evaluate: 5 × TNYWG × 3

Relay #1
Person#4
Evaluate: 5 × TNYWG × 3

Relay #1
Person#4
Evaluate: 5 × TNYWG × 3

Relay #1
Person#4
Evaluate: 5 × TNYWG × 3

Relay #2
Person#1
Find number of sides in a hexagon plus the number of faces on a standard die.

Relay #2
Person#1
.Find number of sides in a hexagon plus the number of faces on a standard die.

Relay #2
Person#1
.Find number of sides in a hexagon plus the number of faces on a standard die.

Relay #2
Person#1
.Find number of sides in a hexagon plus the number of faces on a standard die.

Relay #2 Person#2 TNYWG plus 5 × 5
Relay #2 Person#2 TNYWG plus 5 × 5
Relay #2 Person#2 TNYWG plus 5 × 5
Relay #2 Person#2 TNYWG plus 5 × 5

Relay #2
Person#3
TNYWG minus the total number of dots on a standard die

Relay #2
Person#3
TNYWG minus the total number of dots on a standard die

Relay #2
Person#3
TNYWG minus the total number of dots on a standard die

Relay #2
Person#3
TNYWG minus the total number of dots on a standard die

Relay #2
Person#4
17 + the number of feet in three yards + TNYWG

Relay #2
Person#4
17 + the number of feet in three yards + TNYWG

Relay #2
Person#4
17 + the number of feet in three yards + TNYWG

Relay #2
Person#4
17 + the number of feet in three yards + TNYWG

"Math is Cool" Championships-2003-04

4th Grade - March 12, 2004

Mental Math Contest

Express all answers as reduced fractions in terms of radicals and π, where applicable, unless otherwise instructed.

Person #1		
1	Evaluate: 4 times 3 plus 4.	16
2	How many dimes are in two dollars and sixty cents?	26 [dimes]
3	What is one fourth of 12?	3
4	What is the area of a rectangle with sides of lengths 3 and 5?	15[units^2]
Person #2		
1	Evaluate: 5 halves times four.	20/2, 10
2	If Teddy has four blue socks, 3 green socks, and 7 red socks in a drawer, how many socks must he draw out randomly to ensure a matching pair?	4 [socks]
3	Keisha shoots an average of four free throws in each basketball game. If she plays in 25 games, how many free throws does she shoot total?	100 [free throws]
4	What is the area of a square with side length 2?	4[units^2]
Person #3		
1	What is 1 half plus 2 fourths?	1, 2/2, 4/4
2	If Kai has five dollars and gives two dollars and sixty cents to Peter, how much does he have left, in dollars?	[$] 2.40
3	What is the area of a triangle with base 4 and height 8?	16
4	In 1 hour, how many times could a car driving 30 miles per hour travel around a circular track 2 miles long?	15 [times]
Person #4		
1	What is the quotient of 42 and 3?	14
2	What is the volume of a cube with side length 2?	8[units^3]
3	If today is Friday, what day will it be 22 days from now?	Saturday
4	What is 10 percent of 20?	2

"Math is Cool" Championships-2003-04

4th Grade - March 12, 2004

College Knowledge Bowl Questions #1		
1	How many zeros are in the product of one hundred eighty thousand and one thousand.	7[zeros]
2	Andy wants to buy 5 cookies at 15 cents and 2 muffins at 35 cents. If he pays for these items with a ten dollars bill, how much change should he get back in dollars?	[$] 8.55
3	What is the time three-quarters of an hour before 3 PM?	2:15 PM
4	Subtract the smallest 4-digit whole number from the smallest 5-digit whole number.	9000
5	Lewis rolls a standard six-sided die. What is the probability that the number showing is greater than 4?	1/3 or 2/6
6	Twenty seconds is what fraction of a minute?	1/3
7	At a race where people have a choice between racing on unicycles, which have 1 wheel, and racing on bicycles which has two wheels, Colin counts 20 wheels and 12 heads. How many bicycles are there?	8 [bicycles]
Number ***8*** is an extra question. Only use it if needed.		
8	Find the sum of the different prime factors of 12.	5

"Math is Cool" Championships-2003-04

4th Grade - March 12, 2004

College Knowledge Bowl Questions #2		
1	A regular pentagon has a side length of three inches. If two congruent pentagons this size are placed together along a side without overlapping, how many inches will be in the perimeter of the new figure?	24 [inches]
2	The first three numbers of a sequence are 29, 23, and 17. What is the fifth number of the sequence?	5
3	The Big Saltine is a lake with a bottom that is 420 feet below sea level. If a tower 760 feet tall was placed on the bottom of the Big Saltine, how many feet above sea level would the tower's top be?	340[feet]
4	What is the result when the greatest common factor of 20 and 95 is subtracted from 16.	11
5	Half a puppy's weight plus 8 pounds is equal to 15 pounds. How many pounds does the puppy weigh?	14[pounds]
6	How much money in dollars do I have if I have 38 pennies and half as many nickels?	[$]1.33
7	What is the result when you reverse the digits of six thousand twenty four, and then add 30.	4236
Number ***8*** is an extra question. Only use it if needed.		
8	What is the perimeter of a rectangle if the area of the rectangle is 128 and one side length is two times the other side length.	48

"Math is Cool" Championships-2003-04

4th Grade - March 12, 2004

College Knowledge Bowl Questions #3		
1	What is the largest possible number of Mondays in February if it is not a leap year?	4
2	What is the sum of 914 and 782 rounded to the nearest hundred?	1700
3	Susan reads 46 words every 30 seconds. How many words would she read in 10 minutes?	920[words]
4	A class period is 55 minutes long and the teacher talks for 35 minute. If the remaining time is for work on assignments, how many minutes do the students have to work on their assignment?	20[minutes]
5	Silas, Rupaul and Colinbob are clowns. If all 3 of them want to perform in the circus and only 2 of them will be chosen, how many different combinations of clown pairs could be chosen?	3[combinations]
6	Jon runs a mile in 6 minutes and Elise runs a mile in 5 minutes, how many miles will Elise have run by the time Jon has run 10 miles?	12 [miles]
7	The sum of an even number and an odd number is multiplied by the sum of an odd number and an even number. Is the product even or odd?	Odd
Number ***8*** is an extra question. Only use it if needed.		
8	Dan Burger sharpens his pencil an average of 20 times a day. How many times would he sharpen his pencil in one week?	140[times]

"Math is Cool" Championships -- 2003-04

4th grade - March 12, 2004

School Name_____Team #_____

Proctor Name_____Room #_____

Key

Full Name:_____

1st Score

Out of 40

Individual Contest - Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	1605		
2	7		
3	3		
4	15		
5	3[people]		
6	20 [mph]		
7	7		
8	31.3		
9	60		
10	60[inches]		
11	60 [feet]		
12	Saturday		
13	12		
14	2 [miles]		
15	8/5 or eight-fifths		
16	200 [sheep]		
17	77		
18	40 [minutes]		
19	3/8		
20	1:22 pm		

	Answer	1 or 0	1 or 0
21	171		
22	89,998		
23	111,122,222		
24	**A**[is larger]		
25	6 [days]		
26	210		
27	-1		
28	36[units^2]		
29	30[centimeters]		
30	24 [math textbooks]		
31	54[centimeters cubed]		
32	35/36		
33	36[units]		
34	9 [green shirts]		
35	16[times more]		
36	63		
37	40 [faces]		
38	5/18 or 10/36		
39	18 [questions correct]		
40	M-Z-X+A		

"Math is Cool" Championships -- 2003-04

4th grade - March 12, 2004

School Name_____Team #_____

Proctor Name_____Room #_____

Key

Team Multiple Choice Contest-Score Sheet

1st Score

Out of 18

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

"Math is Cool" Championships -- 2003-04

4th grade - March 12, 2004

School Name_____Team #_____

Proctor Name_____Room #_____

Key

1st Score

Out of 10

Team Contest-Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer	1 or 0	1 or 0
1	12.5[%]		
2	15[years old]		
3	72[hours]		
4	75		
5	153 [square inches]		
6	105 [things]		
7	42[people]		
8	32 [minutes]		
9	119 [hours]		
10	359,784		

"Math is Cool" Championships -- 2003-04

4th grade - March 12, 2004

School Name_____Team #_____

Proctor Name_____Room #_____

Key

Relay Contest - Score Sheet

Practice relay
6
10
5
25
Answer for relay #1
16
4
11
165
Answer for relay #2
12
37
16
42