

"Math is Cool" Championships-2000-01

Sponsored by: Steven E. Gregg D.D.S.

5th Grade - March 16, 2001

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.

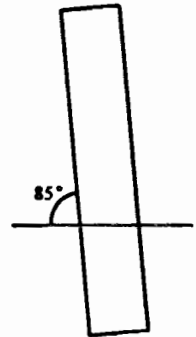
Record all answers on the green cover sheet.

1. Evaluate: 7×12
2. Evaluate: $231 + 619$
3. Evaluate: $75 \div 3$
4. What number is in the ten thousands place? 9,145,237,100
5. True or False: $7 - 6 + 8 - 7 + 9 - 8 = 3$
6. Evaluate: $77003 - 3895$
7. What is the smallest prime number?
8. What is the probability of flipping a fair coin and getting a head if after three previous tries the coin has come up tails?
9. Round to the nearest hundreds place. 43,129,980
10. Lee has \$90.00 to go shopping with. CD's are 4 for \$25, or 3 for \$21, or 2 for \$16.00 each, or one for \$9.00. What is the maximum number of CD's Lee can buy?
11. Lewis and Clark Math Team won the last math competition with a winning score of 54 points. Second place was close behind, losing the first place position by only 4 points. What was the sum of the Lewis and Clark score and second place score?
12. Each skier needs two skis, two ski boots and two ski poles. You have 12 skis, 22 ski boots and 10 ski poles. How many complete sets of ski gear do you have?
13. What is the remainder when 4195 is divided by 9?
14. Josh decides to go backpacking in the Bitterroot Mountains in Idaho 300 miles away. He is planning to stop in Lewistown for supplies on the way. 40 miles past Lewistown he realizes that he has forgotten to stop. He then drives back to get his supplies. How many total miles did he have to drive before he got to the Bitterroot Mountains?

15. Don has a box 5.8 inches on each side. If he has a piece of rope 27.4 inches long, how much extra rope, in inches, will he have after wrapping it around the box once?
16. A "D" battery can illuminate a very small efficient light bulb for 1200 hrs. How many days would that be?
17. What time is it 4 hours, twenty minutes before 3:55 P.M.?
18. A rabbits front foot has five claws while its back foot has four. All 12 pet rabbits needed their claws trimmed. How many total claws need trimmed?
831
19. What two numbers need to be switched to make the following true? $\frac{+69}{820}$
20. What is the sum of the next two numbers in the sequence 3, 6, 9, 12, __, __ ?
21. Colin has 50 candy bars that he wants to divide equally among his friends. Colin realizes that if he had one more candy bar each of his friends would receive 3 candy bars. If he gives each friend 2 candy bars he will have 16 candy bars left over. How many friends does Colin have?
22. A regular octagon has a perimeter of 10 cm. Find the length, in cm, of each side. (Express your answer in decimal form to the hundredths place.)
23. Find the mean: 100, 250, 200, 175, 300
24. Write in scientific notation. 82,300,000,000
25. Mr. Taylor has a whirling sprinkler for watering his lawn. The sprinkler waters a circle with a radius of 12 m. Find the area of the lawn, in meters squared, that he can water at one time.
26. Carl drove his car 50 miles per hour to Kooskia, Idaho, which is 200 miles away. How many minutes did it take him to reach Kooskia?
27. A four person relay team wants to run the 1600 meter relay race in four minutes or less. Person #1 ran the first 400 meters in $52\frac{1}{2}$ seconds, Person #2 ran the next 400 meters in $65\frac{1}{2}$ seconds. Person #3 ran the next 400 meters in $62\frac{1}{2}$ seconds. What is the slowest time, in seconds, the fourth runner can have and still have a team time of 4 minutes or less?(Express answer as a mixed number)
28. Evaluate: The sum of the first 20 even positive numbers minus the sum of the first 20 odd positive numbers.
29. Evaluate: $5\frac{1}{4}$ (Express your answer as a mixed number.)
 $- 2\frac{7}{8}$
30. Bill's sells cans of corn for 28¢ a piece. Meyer's sells corn for 4 cans for \$1.16. Whose corn is cheapest per can, Bill's or Meyer's?

Challenge Questions

31. What day of the week was April 13, 1996?
32. The telephone rate between two calling zones is 45 cents for the first three minutes and 10 cents for each additional minute. How long, in minutes, was a call for which the charge was 95 cents?
33. What is the probability of rolling a sum that is prime when two six-sided dice are rolled?
34. What is one-fourth of seven sixteenths?
35. A post is leaning such that the angle on one side is 85° , what is the angle, in degrees, on the other side of the post?



36. The ratio of boys to girls at the 5th grade "Math is Cool" Championships today is 4 to 7. If there are a total of 440 boys and girls present, how many girls are there?
37. Josh, Lee, Keisha, Colin, Libbey and Christine all decide to have ice cream. The ice cream shop has 3 different flavors of cones, 8 different types of ice cream, and 6 different toppings. How many different types of ice cream cone desserts are possible if you choose one topping, one type of ice cream and one flavor of cone?
38. How many ways can you arrange 5 different books on a shelf?
39. If there were only ten teams competing at today's "Math is Cool" Championships, how many ways could 1st, 2nd and 3rd place be awarded?
40. A regulation baseball diamond, which is a square with area of 8100 ft^2 , is laid out on a field 172 feet wide and 301 feet long. How much greater is the distance, in feet, around the whole field than around the diamond?

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5th Grade - March 16, 2001

Team Multiple Choice Contest

The following are inventory sheets for candy sales. The first day is completely filled out. Fill out the others and answer the following questions.

Inventory for March 12, 2001					
Candy	Amount stocked	Amount left over	Amount sold	Selling price	Amount collected
Starburst	22	10	12	50¢	\$6.00
Skittles	50	11	39	50¢	\$19.50
Snickers	31	20	11	50¢	\$5.50
Lemonheads	20	4	16	25¢	\$4.00
Reese's	23	6	17	50¢	\$8.50
Gobstoppers	29	18	11	25¢	\$2.75
Totals	175	69	106		\$46.25

Inventory for March 13, 2001					
Candy	Amount stocked	Amount left over	Amount sold	Selling price	Amount collected
Starburst	20			50¢	\$5.00
Skittles	50		33	50¢	
Snickers		12	7	50¢	
Lemonheads		18	5	25¢	
Reese's	23			50¢	\$9.50
Gobstoppers	50	0		50¢	
Totals					

Inventory for March 14, 2001					
Candy	Amount stocked	Amount left over	Amount sold	Selling price	Amount collected
Starburst	25	17		50¢	
Skittles	10			50¢	\$4.50
Snickers		21	10	50¢	
Lemonheads	22	11		25¢	
Reese's		11		50¢	
Gobstoppers	18	18		50¢	
Totals	129		50		

1. What type of candy bar was sold the most over the three days?
A) Starburst B) Skittles C) Snickers D) Lemonheads E) Reese's F) Gobstoppers

2. Which day earned the least amount of money?
A) 3-12-01 B) 3-13-01 C) 3-14-01

3. What was the total amount of money earned over the three days?
A) \$129.25 B) \$142.50 C) \$139.50 D) \$138.00 E) Answer not given

4. What was the total number of candy items sold over the three days?
A) 210 B) 310 C) 270 D) 280 E) Answer not given

5. Which type of candy had the highest one day earnings?
A) Starburst B) Skittles C) Snickers D) Lemonheads E) Reese's F) Gobstoppers

6. On what day were the most items sold?
A) 3-12-01 B) 3-13-01 C) 3-14-01

7. What day had the largest stock on the shelf at the beginning of the day?
A) 3-12-01 B) 3-13-01 C) 3-14-01

8. Which day had the most items left over at the end of the day?
A) 3-12-01 B) 3-13-01 C) 3-14-01

9. How many Reese's were stocked on 3-14-01?
A) 20 B) 21 C) 22 D) 23 E) 24

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5th Grade - March 16, 2001

Team Contest

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Do not round any answers unless stated otherwise.

Record all answers on the yellow cover sheet.

1. What is the probability of rolling a sum of 18 with 3 six sided die?
2. What are the odds of rolling a sum of 2 with two six sided die?
3. If Kelly got 100% on her first four math tests, what is the lowest percentage she can get on the fifth test and still get a 95% in the class?
4. Solve for X: $10x - 52 = 48$
5. If I have 4 gallons of lemonade and I drink one quart and 3 pints, how many cups are left?
6. Kelly is four years younger than Stevie, and two years ago Kelly was half the age of Stevie. How old is Stevie now?
7. At a certain road race each runner is required to run with a dog on a leash. The total number of feet and paws that crossed the finish line was 606. How many dogs were in the race?
8. Your team of four averaged 33 points on the individual test today. Two of the scores of your team members were 34 and 32. If the third and fourth members scores differ by 6, what was the highest score on your team of four today?
9. Out of 30 students at the Spokane Academy of Mathematics for 5th Graders, 4 are taking Algebra, 10 are taking Geometry, and 2 are taking both. How many students are taking neither Algebra or Geometry?
10. Evaluate $2A + 3B$ when $A = 4$ and $B = 5$.

Practice relay

Person#1

5 times 7

Practice relay

Person#2

Find the sum of TNYWG and 5.

Practice relay

Person#3

Find the quotient TNYWG and 5.

Practice relay

Person#4

Find the product of TNYWG and 4.

Relay #1

Person#1

What is the tens digit of 646?

Relay#1

Person#2

TNYWG x 3/2

Relay#1

Person#3

What is the mean (average) of TNYWG, 12, 6, and 8?

Relay#1

Person#4

TNYWG x TNYWG

Relay#2

Person#1

2 times 5

Relay#2

Person#2

TNYWG+1+2+3+4+5

Relay#2

Person#3

TNYWG x 0+the perimeter of a square with side length 4.

Relay#2

Person#4

Find the area of a square with perimeter of TNYWG.

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Mental Math Contest

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

Person #1		
1	How many sides does a trapezoid have?	4
2	How many prime numbers are less than 10?	4
3	Evaluate: 2 million - 1	1,999,999
4	Evaluate: 2 times 3 times 4	24
Person #2		
1	How many quarts are in one gallon?	4(quarts)
2	Evaluate; 111 times 9	999
3	What is one-fifth of 15?	3
4	Evaluate: three-fourths minus one-half	1/4
Person #3		
1	If Josh has 24 quarters, how many dollars does he have?	(\$) 6
2	Evaluate: 2 times 2 times 2 times 2	16
3	How many odd positive numbers are less than 18?	9
4	Evaluate: 72 divided by 9	8
Person #4		
1	Write 6 and one-fifth as an improper fraction.	$31/5$
2	Write three-fourths as a decimal.	.75
3	What is the area of a square with side length 9?	$81(\text{un}^2)$
4	What is the perimeter of a triangle with sides of length 6,8 and 10?	$24(\text{un})$

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<u>College Knowledge Bowl Questions #1</u>		
1	Evaluate: twenty-five squared	625
2	What is the probability of flipping 3 heads on a fair coin 3 times in a row?	1/8
3	Solve for x: $3x + 5 = 26$	7
4	The sum of two numbers is 11 and their difference is 3. What is the larger of the two numbers?	7
5	What is the remainder when 626 is divided by 5?	1
6	What is the next number in the sequence? 1,1,2,3,5,8,_____	13
7	If 3 goats with broken legs cost \$42.00, how many dollars would one goat with a broken leg cost?	(\$) 14
Number 8 is an extra question. Only use it if needed.		
8	How many positive primes can evenly divide 28?	2

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<u>College Knowledge Bowl Questions #2</u>		
1	Colin plays tennis for 5 hours 35 minutes. How many minutes is this total?	335(min)
2	What is the product of 42 and 48?	2016
3	Max, Colin, Lee, Keisha, Laine, and Gilda are standing in line. How many different ways can they be arranged?	720(ways)
4	Mordberg can play 29 notes on his accordion in a minute. How many notes can he play in a day?	41,760 (notes)
5	What is the side length of a regular dodecahedron with perimeter 48?	4
6	When rolling two 6 sided dice, what is the probability that the two numbers appearing on the dice are the same?	1/6
7	What is the sum of the first 7 odd whole numbers?	49
Number 8 is an extra question. Only use it if needed.		
8	If today is Thursday, what day of the week will 25 days from now be?	Monday

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College Knowledge Bowl Questions #3

1	What is 2.71828 rounded to the nearest thousandth?	2.718
2	What is the sum of the numerator and denominator after $\frac{2}{30}$ is reduced?	16
3	You went to school at 6:31a.m. and left school at 4:41 p.m. after "Math is Cool" practice. How many minutes were you at school?	610(min)
4	Max is 5 feet 1 inche tall. How many inches is that?	61(in)
5	Josh did 12 math assignments, each had 3 problems. Lee did 5 assignments, each had 7 problems. How many problems did they do together?	71(problems)
6	How many even numbers are between 75 and 105?	15 (numbers)
7	If three dice are rolled, how many different sums are possible?	16(sums)
Number 8 is an extra question. Only use it if needed.		
8	16 consecutive integers sum to 8. What is their product?	0

"Math is Cool" Championships -- 2000-01

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School Name _____ Team # _____

Proctor Name _____ Room # _____

Key

Full Name: _____

1st Score

Individual Contest - Score Sheet

DO NOT WRITE IN SHADED REGIONS

Out of 40

	Answer	1 or 0	1 or 0
1	84		
2	850		
3	25		
4	3		
5	True		
6	73,108		
7	2		
8	1/2		
9	43,130,000		
10	13(CD's)		
11	104(pts)		
12	5(sets)		
13	1		
14	380(miles)		
15	4.2 (inches)		
16	50(days)		
17	11:35 A.M.		
18	216(claws)		
19	6 and 2 (order doesn't matter)		
20	Candy		

	Answer	1 or 0	1 or 0
21	17(friends)		
22	1.25 (cm)		
23	205		
24	8.23×10^{10}		
25	144π (m ²)		
26	240(minutes)		
27	$59 \frac{1}{2}$ (seconds)		
28	20		
29	$2 \frac{3}{8}$		
30	Bill's		
31	Saturday		
32	8 (minutes)		
33	5/12		
34	7/64		
35	95(°)		
36	280(girls)		
37	144(ice-cream desserts)		
38	120(ways)		
39	720(ways)		
40	586 (feet)		

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School Name _____ Team # _____

Proctor Name _____ Room # _____

Key

Team Multiple Choice Contest-Score Sheet

1st Score

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

Out of 18

DO NOT WRITE IN SHADED REGIONS

	Answer	-1, 0 or 2	-1, 0 or 2
1	B		
2	C		
3	A		
4	D		
5	F		
6	B		
7	B		
8	C		
9	D		

"Math is Cool" Championships -- 2000-01

5th grade - March 16, 2001

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	1/216		
2	1/35 or 1 to 35 or 1:35		
3	75(%)		
4	10		
5	54(cups)		
6	10(years old)		
7	101(dogs)		
8	36(points)		
9	18(students)		
10	23		

Relay Contest - Score Sheet

Practice relay

32

Answer for relay #1

64

Answer for relay #2

16