

"Math is Cool" Championships-2000-01

Hosted by: James A. Garfield High School

4th Grade - March 23, 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: $7 \times 10 \times 5 \times 0 \times 2 \times 6$.
2. True or False: $7 + 21 + 6 + 9 + 10 = 54$
3. Evaluate: $10 - 10 + 10 - 10 + 10 - 10 + 10 - 10 + 10 - 10 + 10 - 10 + 10$.
4. Evaluate: $(11 \div 11) \times (21 \div 21) \times (13 \div 13) \times (44 \div 44)$.
5. Evaluate: $53,001 - 21,999$.
6. Evaluate: $1350 \div 1350$
7. Evaluate: $\frac{6}{13} - \frac{2}{13} + \frac{1}{13}$
8. What is the remainder when 821 is divided by 7?
9. Eho has 4 dozen socks. What is the total number of socks he has?
10. Write the number two million, one hundred and twenty-three thousand.
11. It is $\frac{1}{2}$ of a mile around a certain city block. How many times must you run around the block in order to run $17 \frac{1}{2}$ miles?
12. What is the sum of the next two numbers in the sequence? 3, 7, 11, 15, _____, _____
13. In the drink "grapefruit", there are 32 grams of sugar in one bottle. How many grams of sugar are in 12 bottles?
14. Biff moved a box 2 yards and one foot. How many inches did he move the box?

15. If $A = 9$ and $B = 6$, Evaluate: $A+B+A+B$
16. With the toss of a six sided dice, what is the probability you will get a four?
17. What should be in the blank? $3 + 3 + 3 + 3 = 4 + 4 + 4 + 4 - \underline{\hspace{2cm}}$
18. What is the perimeter of a square with a side of length 21?
19. David has 6 books. Two of the books have 150 pages each, two other books have 100 pages each and one book has 120 pages. The total of all the pages is 700. How many pages does the last book have?
20. Find the smaller of two numbers whose sum is 15 and whose difference is 1.
21. If Biff's sock drawer contains 7 red socks, 14 purple socks, 6 gray socks, 11 orange socks, 5 black socks and 12 green socks, how many socks must be drawn to be sure of getting a matching pair?
22. With the toss of a six sided die, what are the odds of rolling a three or a six?
23. Will the sum of two even numbers always be even or odd?
24. The wool from 60 sheep can make 300 coats. How many coats can the wool from 2 sheep make?
25. You are reading the book "The Door in the Wall" that is 121 pages long. You are finished with the first 16 pages and have decided to read 5 pages a day to finish the book. How many more days will it take you to finish reading the book?
26. What is the product of the number of ounces in a pound and the number of months in a year?
27. Biff and Eho were supposed to meet at 11:25 a.m. Biff arrived on time, but Eho arrived 43 minutes late. When did Eho arrive? (answer must have an a.m. or p.m. on it)
28. If $A \odot B = Ax(A+B)$. Evaluate: $7 \odot 6$
29. What is the area of a circle with diameter 16?
30. Sean can do 330 math problems every two hours. How many math problems can he do in 20 minutes?

Challenge Questions

31. Caleb was reading and noticed that the sum of the page numbers on the two pages he was reading from was seventy-one. What is the smallest number of the two pages he was opened to?
32. What number fits all the clues?
 1. It is between 10 and 30.
 2. The number is prime.
 3. When two is added to the number it is evenly divisible by 5.
 4. When the digits of the number are reversed the new number is not prime.
33. The sum of Biff and Eho's ages is 33, what will the sum of their ages be in 711 years?
34. A math team of 12 members wins first place at the "Math is Cool" Championships. Each member shakes hands exactly once with every other member. How many handshakes occur?
35. From a standard deck of cards, what is the probability of drawing a three or a six in a single draw?
36. Biff is fourteen years older than Eho. Twenty-one years ago, Biff was twice as old as Eho's age. What is Biff's age now, in years?
37. The product of 444 whole numbers is 2310. What is the largest possible value the sum of the numbers can have?
38. Tony has a cube eight inches on a side. He paints the entire outside of the cube. Next he cuts the cube into smaller cubes 1 inch on a side, how many smaller cubes will have paint on only one side?
39. This summer the Math Team plans to climb the highest peak in Montana, Granite Mountain. They plan to set up base camp at Avalanche Lake where the support team will stay. For every person that climbs Granite Mountain, 4 support people are needed at base camp. If 20 people are on the hike, how many people will be able to climb Granite Mountain?
40. How many ways can Lisa make \$3.00 using only quarters, dimes and nickels?

Example: 12 quarters, 0 dimes, 0 nickel
8 quarters, 8 dimes, 2 nickel

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Team Multiple Choice Contest

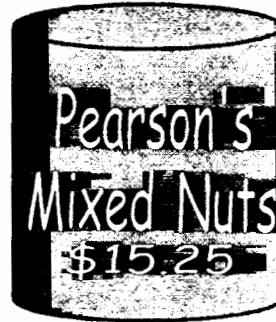
A barrel contains 10,000 mixed nuts.

Half of them are peanuts.

1/4 of them are pecans.

1/8 of them are macadamia nuts and

1/8 of them are cashews.



1. How many of the nuts are peanuts?
a. 5,000 b. 2,500 c. 4,000 d. 3,000 e. Answer not given
2. How many of the nuts are pecans?
a. 5,000 b. 2,500 c. 4,000 d. 3,000 e. Answer not given
3. How many of the nuts are cashews or macadamia nuts?
a. 5,000 b. 2,500 c. 4,000 d. 3,000 e. Answer not given
4. How many more pecans are there than cashews?
a. 1,000 b. 3,000 c. 1,250 d. 500 e. Answer not given
5. Pearson's Mixed Nuts cost \$15.25 per barrel. How much would the purchase of 100,000 mixed nuts cost?
a. \$1,525.00 b. \$1,525.25 c. \$1,525.50 d. \$1,525.75 e. Answer not given
6. What answer is the closest to the percentage of the barrel that is either peanuts or pecans?
a. 50% b. 35% c. 60% d. 75%
7. If Mr. Sampson pays for the purchase of two barrels of mixed nuts with a \$50 dollar bill, how much change should he get back?
a. \$15.75 b. \$5.50 c. \$7.50 d. \$19.50 e. Answer not given
8. If Carl and Keisha want to split the cost of their purchase of 50,000 mixed nuts evenly, how much, to the nearest cent, would they each have to pay?
a. \$38 b. \$76.26 c. \$55.89 d. \$38.13 e. Answer not given
9. What is the largest number of barrels that can be purchased with \$137.20?
a. 6 b. 7 c. 8 d. 9 e. Answer not given

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Team Contest

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1. A palindrome is a number that reads the same forwards and backwards. 2002 is a palindrome. What is the next palindrome greater than 2002?
2. Biff has \$8.23. What is the most number of dimes Biff could have, if it is known that he has at least 4 pennies and at least one quarter?
3. Josh went to the store and bought a rabbit and rabbit food. The rabbit and the rabbit food cost \$21.00 together. The rabbit was twenty dollars more than the food. How much did the rabbit cost?
4. Find "A" so the mean of the following set of data is 20. 12, 13, 14, A
5. The sum of three consecutive numbers is 24. What is the largest of the three?
6. Colin has seven fewer dollars than Max. Together they have 73 dollars. How many dollars does Colin have?
7. Kelly has only quarters, dimes, nickels, and pennies. She has 11 coins which have a total value of 72¢. How many pennies does Kelly have?
8. I am thinking of a number. If I multiply the number by 3 then add 21, the answer is 45. What is the number?
9. Tealah and Amanda were working on a math problem. Tealah wrote
$$\begin{array}{r} 85 \\ + 27 \\ \hline \end{array}$$
but miscopied the 5. Julie wrote
$$\begin{array}{r} 37 \\ + 27 \\ \hline \end{array}$$
but miscopied the 3.
What should the sum be?
10. A covered wagon could travel 3 miles per hour. A group was doing some pre-planning for the trip and decided they wanted to cover 990 miles in 30 days. How many hours a day would they need to travel to reach their goal?

Practice relay

Person#1

$16 + 40$

Practice relay

Person#2

$TNYWG \div 7$

Practice relay

Person#3

$TNYWG \text{ times } 4$

Practice relay

Person#4

$TNYWG \div 2$

Relay #1

Person#1

$54 + 29$

Relay#1

Person#2

$TNYWG - 50$

Relay#1

Person#3

$TNYWG \div 3$

Relay#1

Person#4

$TNYWG \text{ times } 7$

Relay#2

Person#1

If 4 oranges cost \$1.00, how many pennies would you need to buy one?

Relay#2

Person#2

If Sarah can walk 5 miles per day, how many days will it take for her to walk $TNYWG$ miles?

Relay#2

Person#3

What is the sum of the first $TNYWG$ positive whole numbers?

Relay#2

Person#4

How many whole numbers are between $TNYWG$ and 20?(Not including $TNYWG$ and 20)

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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	What is the product of 3 and 8?	24
2	What is the sum of 33 and 16?	49
3	What is the quotient of 24 and 2?	12
4	What is the perimeter of a rectangle with side length 4 and 5?	18
Person #2		
1	What is the product of 7 and 8 ?	56
2	What is the difference between 55 and 12 ?	43
3	What is the quotient of 70 and 10?	7
4	How many cups are in one quart?	4
Person #3		
1	What is the product of 9 and 6?	54
2	What is the difference between 29 and 28?	1
3	What is the quotient of 81 and 9?	9
4	How many feet are in 1 yard?	3
Person #4		
1	What is the product of 11 and 7?	77
2	What is the sum of 29 and 18?	47
3	What is the difference between 65 and 12?	53
4	How many quarters are in 6 dollars?	24

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College Knowledge Bowl Questions #1

1	What is the probability of drawing a four or a red 2 in one draw from a standard deck of 52 cards?	6/52 or 3/26
2	One sheep makes $4\frac{1}{2}$ coats. How many coats can 8 sheep make?	36(coats)
3	What is the perimeter of a triangle with sides length 21, 25 and 30?	76
4	What comes next in the sequence? 4, 7, 10, 13, _____	16
5	The sum of two consecutive even numbers is 42. What is the smallest number?	20
6	There are chickens and cows in a field. There are a total of 10 heads and 34 feet. How many cows are in the field?	7(cows)
7	What is the value, in dollars, of 5 quarters, 8 dimes, and 8 pennies.	(\$) 2.13
Number 8 is an extra question. Only use it if needed.		
8	What do I get if I multiply 12 by 12 and then divide the result by 6?	24

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College Knowledge Bowl Questions #2

1	What is the sum of 9 eights?	72
2	What time is it 23 minutes before 12:10 p.m.?	11:47a.m.
3	What is the perimeter of a regular pentagon with side length 6?	30
4	What do I get if I divide 75 by 5 and then add 15?	30
5	Aaron gets a weekly allowance of 8 quarters, 22 dimes, 17 nickels and 15 pennies. If he spends \$1.25 each week, how much money, in dollars, does he save each week?	\$3.95
6	What is the sum of the thousands' digit and the tens' digit of 87,932? (Read number as 87 thousand 9 hundred thirty-two)	10
7	What is the perimeter of a rectangle with sides of 17 and 12?	58
Number <u>8</u> is an extra question. Only use it if needed.		
8	The sum of two consecutive odd numbers is 100. What is the largest of the two numbers?	51

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College Knowledge Bowl Questions #3

1	$15 + 15 + 15 = 9$ times what number?	5
2	What is the tens digit of the product of 12,234 and 20?	8
3	What is the greatest common factor of 27, 9 and 18?	9
4	How many days are in 16 weeks?	112(days)
5	Amanda earns \$2.25 each time she mows the lawn. One summer she mowed the lawn 16 times. How much money did she earn in dollars?	(\$) 36
6	Biff is 82 years old and Eho is 76 years old. What is the difference between Biff and Eho's ages in years?	6(years)
7	What is the sum of the first two odd primes?	8
Number <u>8</u> is an extra question. Only use it if needed.		
8	How many days are in the month of September?	30

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Key

School Name _____ Team # _____

Proctor Name _____ Room # _____

Name: _____

1st Score

Individual Contest - Score Sheet

DO NOT WRITE IN SHADED REGIONS

Out of 40

Answer	1 or 0	1 or 0
0		
false		
10		
1		
31002		
1		
5/13		
2		
48(socks)		
2,123,000		
35 (times)		
42		
384(grams)		
84(inches)		
30		
1/6		
4		
84		
80(pages)		
7		

Answer	1 or 0	1 or 0
21	7(socks)	
22	2/4 or 1/2 or 1:2 or 2:4	
23	even	
24	10(coats)	
25	21(days)	
26	192	
27	12:08p.m.	
28	91	
29	64π	
30	55(problems)	
31	(page)35	
32	23	
33	1455	
34	66(handshakes)	
35	8/52 or 4/26 or 2/13	
36	49(years)	
37	2753	
38	216(cubes)	
39	4(people)	
40	205(ways)	

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Key

School Name _____ Team # _____

Proctor Name _____ Room # _____

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

Key

School Name _____ Team # _____
 Proctor Name _____ Room # _____

1st Score

Team Contest-Score Sheet

DO NOT WRITE IN SHADED REGIONS

Out of 10

	Answer	1 or 0	1 or 0
1	2112		
2	79(dimes)		
3	(\$) 20.50		
4	41		
5	9		
6	(\$) 33		
7	7		
8	8		
9	114		
10	11(hours)		

Relay Contest - Score Sheet

actice relay

swer for relay #1

swer for relay #2