"Math is Cool" Championships -- 1997-8
Sponsored by: Skaug Brothers Inc

March 6, 1998

Individual Contest, Grade 6

Express all answers as reduced fractions unless stated.
Leave answers in terms of π.
Do not round any answers unless stated.

1. Evaluate: 5+3 x 2+4

2. In a regular octagon what is the measure of each interior angle?

3. Evaluate $5^3 - 5^4 + 387$

4. What is the perimeter of an equilateral triangle with one side of length 47?

5. Evaluate: $\frac{4}{3} + \frac{3}{4} - \frac{7}{6}$

6. Evaluate: 9^4

7. Round the following to the nearest ten-thousandth: 3.14159265

8. What is the remainder when 1131 is divided by 12 ?

9. If Tommy won 30% of his chess matches during the first half of the season, what percent of his remaining matches must he win to finish the season with 50% wins?

10. If a triangle has sides 7 and 8, what is the greatest whole number length the third side can be?

11. If the difference between two numbers is 14 and their sum is 34, what is the smaller of the two numbers?

12. What is the least common multiple of 26 and 8 ?

13. What is the area of a circle with diameter 18 ?

14. How many cubes one inch on a side are needed to produce a cube one foot on a side?

15. Fred has pennies and nickels in his pocket. If he has 47 cents and 19 coins, how many pennies does he have?

16. Express $\frac{2}{3}$ as a decimal to the nearest hundredths.

17. Seven math team students all shake hands with each other. How many handshakes occur?

18. What is the probability of rolling a sum of 8 on two six sided dice?

19. Evaluate the expression $3x^2 - 4x - 6$ when $x = 7$?

20. A square has an area of 121. What is the perimeter?

21. What is the product of 3 plus 7 and 4 minus 2 ?

22. Sam has two hats, three shirts, seven pair of pants and four pairs of shoes. How many different outfits could he wear?

23. Katie has a drawer of socks that consist of three brown socks, four red socks and five purple socks. How many socks must be drawn out of the drawer to ensure a match?

24. In a field that has cats and geese there is 9 heads and 28 feet, how many cats are in the field?

25. In a rectangular coordinate system what is the distance between the points (-3,4) and (5,19)?

26. What is the slope of a line passing through points (-3,4) and (5,7)?

27. The average of Roy's first three test scores is 71. What score must he receive on his next test to raise his average to 73?

28. What is the mean of the following data set? 5, 9, 14, 7, 6, 9, 12, 10

29. Einstein Grade School contains 42 boys and 57 girls. The Algebra class at that school contains 7 boys and 19 girls. What is the probability that a randomly selected girl is in this class?

30. What is the probability that a positive two digit number selected at random has its tens digit at least two more than its units digit?

"Math is Cool" Championships-1997-8
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Team Multiple Choice Contest, 6th Grade
March 6th , 1998

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1. The largest prime factor of 999,999.

A) 9 B) 99 C) 999 D) answer not given

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2. The radius plus the diameter of a circle is 18π. What is the radius of the circle?

A) 3π B) 6π C)12π D) answer not given

---

3. Which of the following numbers are closest together?

A) 72^2 & 63^2 B) 63^2 & 54^2 C) 54^2 & 45^2 D) 45^2 & 35^2

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4. $\frac{12}{11}$ is how much bigger than $\frac{11}{12}$?

A) $\frac{1}{12}$ B) $\frac{1}{11}$ C) $\frac{23}{132}$ D) answer not given

---

5. The sum of the first 50 primes is

A) odd B) even C) neither D) answer not given

---

6. Which of these numbers is larger than its square?

A) 1 B) 0 C) 7 D) 0.7 E) answer not given

---

7. A 54 gallon tank is filled at a rate of $\frac{1}{3}$ gallon per minute.

How many minutes will it take to fill $\frac{1}{2}$ of the tank?

A) 81 minutes B) 54 minutes C) 53 minutes D) answer not given

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8. Which of the following has the smallest reciprocal?

A) 7 B) 77 C) 0.7 D) 0.77

---

9. Evaluate: $\sqrt{40+\sqrt{81}}$

A) 5 B) 8 C) 25 D) answer not given

"Math is Cool" Championships -- 1997-8
Sponsored by: Skaug Brothers Inc

Team Test, Grade 6

March 6, 1998

Express all answers as reduced fractions unless stated.
Leave answers in terms of π.
Do not round any answers unless stated.

1. Sean did math from March 5th 1998 3:45 p.m. to March 7th 1998 6:12 a.m. How many minutes did he do math?

2. What is the probability of rolling a sum of 8 or less on two six sided dice?

3. Dayna has three fewer dollars than Shane. Together they have 45 dollars. How many dollars does Dayna have ?

4. If 14 soggies costs as much as 6 crunchies, and 5 crunchies costs 35 cents, how much does one soggy cost?

5. If the number of apples in a bag is divided by 2,3,or 5 the remainder is 1. What is the smallest number of apples in the bag if there are at least 2 apples in the bag?

6. Two dice are tossed 126 times. How many times would you expect to roll a sum of eleven?

7. How many distinct arrangements are there of the letters in the word CONTESTS?

8. An alien race has a written language that contains only five letters. Assuming any combination of letters will form a word, how many possible three letter words are there in this language?

9. How old is Mick if the following is true?
   Nick is twice as old as Dick.
   Dick is four years younger than Rick .
   The oldest of the four boys is 16 years.
   Mick's age is the average of Nick's and Rick's.

10. How many ways can a math team of four students be arranged in a straight line?

Practice relay
Person#1
5 + 13

Practice relay
Person#2
TNYWG ÷ 2

Practice relay
Person#3
The product of TNYWG and 8

Practice relay
Person#4
TNYWG ÷ 3

Relay #1
Person#1
What is the product of 45 and 3

Relay#1
Person#2
TNYWG ÷ 5

Relay#1
Person#3
What is the perimeter of a equilateral triangle with side length TNYWG?

Relay#1
Person#4
What is the perimeter of a square with side length TNYWG?

Relay#2
Person#1
What is the sum of the interior angles of a square?

Relay#2
Person#2
What is the greatest common factor of 28 and TNYWG

Relay#2
Person#3
Find the sum of the first TNYWG positive whole numbers?

Relay#2
Person#4
What is the sum of the interior angles of a regular polygon with TNYWG sides?

"Math is Cool" Championships -- 1996-7
Sponsored by: Skaug Brothers Inc

March 6, 1998

Mental Math, Grade 6

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

Person #1

1. What is 12 times 13?
2. What is the perimeter of a square with area 25 ?
3. What is one-ninth of the sum of 40 and 41?
4. What is the difference between nine-elevenths and one-half?

Person #2

1. What is the radius of a circle with area 81π?
2. What is the product of the sum of 8 and 4 and the quotient of 9 and 3?
3. What is the length of each side of a regular heptagon with perimeter 70?
4. What is one-eleventh of the sum of 91 and 8?

Person#3

1. Two angles are supplementary, what is their sum?
2. What is the sum of three-eighths and one-fourth?
3. How many quarters are in $7.75?
4. How many sides does a decagon have?

Person#4

1. What is the product of the first three primes?
2. What is the greatest whole number that divides 51?
3. What is the difference between 95 and 20?
4. How many hours are in a week?

"Math is Cool" Championships -- 1997-8
6th Grade
College Knowledge Bowl Questions #1

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1. How many prime numbers are between 0 and 45?

Answer: 14

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2. If the product of an even number and an odd number is 960, what is the largest possible value of the odd number?

Answer: 15

---

3. Solve for x in the equation: $17x - 7 = 27$?

Answer: 2

---

4. How many ways can two people be seated in thirteen chairs?

Answer: 156

---

5. If it is March now, what month will it be 1998 months from now?

Answer: September

---

6. If I count backwards by nines, starting at 1000, what will be the last positive number I will say?

Answer: 1

---

7. A square can intersect a circle at most how many times?

Answer: 8

Extra Question:

There are dogs and people in a field. If there are 10 heads and 30 feet, how many people are there?

Answer: 5

"Math is Cool" Championships -- 1997-8
6th Grade
College Knowledge Bowl Questions #2

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1. What is the product of the first five prime numbers?

Answer: 2310

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2. When a certain number is divided by 7, the remainder is 5 and the quotient is 9. What is the number?

Answer: 68

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3. What is the largest prime factor of 72?

Answer: 3

---

4. How many diagonals can be drawn in a convex octagon?

Answer: 20

---

5. In a group of five people each person shakes hands with each other person exactly once. How many handshakes occurred?

Answer: 10

---

6. What is the units digit of 325x455x75?

Answer: 5

---

7. Solve for x: $2^8 - 2^7 - 2^6 - 2^5 = 2^x$

Answer: 5

Extra Question:

Which is largest? 4/5 or 6/7 or .854 or 17/20

Answer: 6/7

"Math is Cool" Championships -- 1997-8
6th Grade
College Knowledge Bowl Questions #3

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1. 85 is the sum of two consecutive positive numbers, what is the smallest of the two numbers?

Answer: 42

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2. 30% of a number is 21. What is the number?

Answer: 70

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3. What is the value of x which makes the equation $11x - 4 = 75$ true ?(Leave the answer as an improper fraction)

Answer: 79/11

---

4. Two positive numbers differ by 3. One number has 2 digits and the other number has 3 digits. What is the smallest possible sum for these two numbers?

Answer: 197

---

5. The average of 11 whole numbers is 11. If ten of these numbers are 2, what is the eleventh number?

Answer: 101

---

6. Evaluate the expression $2x^3 - x + 14$ when $x = 3$.

Answer: 65

---

7. What is the least number of square tiles 2 feet by 2 feet that are needed to cover a floor 24 feet by 36 feet ?

Answer: 216

Extra Question:

Three consecutive integers sum to 48. What is the smallest of these numbers?

Answer: 15

"Math is Cool" Championships -- 1997-8

March 6, 1998

Individual Test - Score Sheet

Score:

KEY 6th

Full Name:_____ School:_____

DO NOT WRITE IN SHADED REGIONS

	Answer		
1.	15		
2.	135°		
3.	-113		
4.	141		
5.	11/12		
6.	6561		
7.	3.1416		
8.	3		
9.	70%		
10.	14		
11.	10		
12.	104		
13.	81π		
14.	1728		
15.	12		

	Answer		
16.	.67		
17.	21		
18.	5/36		
19.	113		
20.	44		
21.	20		
22.	168		
23.	4		
24.	5		
25.	17		
26.	3/8		
27.	79		
28.	9		
29.	1/3		
30.	2/5		

"Math Is Cool" Championships -- 1997-8

March 6, 1998 6th Grade

Team Multiple Choice Contest - Score Sheet

Score:

KEY 6th

School:_____ Team #:_____

DO NOT WRITE IN SHADED REGIONS

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

	Answer		
1.	D		
2.	B		
3.	D		
4.	C		
5.	A		
6.	D		
7.	A		
8.	B		
9.	D		

"Math Is Cool" Championships -- 1997-8

March 6, 1998

Team - Score Sheet

Score:
KEY 6th

School:_____ Team #:_____

DO NOT WRITE IN SHADED REGIONS

	Answer		
1.	2307		
2.	13/18		
3.	$21		
4.	3¢		
5.	31		
6.	7		
7.	10080		
8.	125		
9.	14		
10.	24		

"Math Is Cool" Championships -- 1997-8

March 6, 1998

Mental Math - Score Sheet

Score:

KEY 6th

School:_____ Team #:_____

A. 1. 156
2. 20
3. 9
4. 7/22

B. 1. 9
2. 36
3. 10
4. 9

C. 1. 180
2. 5/8
3. 31
4. 10

D. 1. 30
2. 51
3. 75
4. 168

"Math Is Cool" Championships -- 1997-8

March 6, 1998

Practice relay

24

Answer for relay #1

324

Answer for relay #2

1440