"Math Is Cool" Championships-1998-9

Sponsored by: Washington Trust Bank

5th Grade - March 26, 1999

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.

1. MATH - IS = COOL. If MATH = COOL, what is the value of "IS"?

2. Evaluate: 23,456 - 1,999

3. Find the product of 23 and 55.

4. State the next number in the sequence:
   0, 1, 4, 9, 16, 25, 36, ____

5. Find the remainder of the quotient of 752 and 3?

6. Is 1.00 - .99 >, < or = to 1.001 - .009

7. What is the sum of 1 + 3 + 5 + 7 + ...+ 15 + 17?

8. School starts at 8:00A.M. If it takes Stephen 13 minutes to get to school, what time should Stephen leave his house if he wants to arrive 14 minutes before school starts?

9. What is the mode of the following data set?
   {9, 12, 18, 14, 12, 13, 20, 12, 16, 12, 18}

10. What is the maximum number of times a triangle and circle intersect?

11. What is the sum, in degrees, of the interior angles of a square?

12. Express $\frac{5}{8}$ as a decimal.

13. What number must I multiply by 3 to get 51?

14. In a dog race, my dog ran after a mail truck and finished 7th best, which was also 7th from last. If there were no ties, how many dogs ran in the race?

15. Evaluate: 7,000,000 + 700,000 + 70,000 + 7,000 + 700 + 70.

16. Greg has $30.00 to play miniature golf. Games are $4.00 each or $8.00 for three games. What is the maximum number of games Greg can play with $30.00?

17. True or False: A rhombus has no parallel lines.

18. Nathaniel bought 84 donuts. How many dozen donuts did he buy?

19. Mr. Sampson took his Mathletes on a canoe trip. They began their canoe trip in the early morning of July 11th and ended their canoe trip in the late evening July 27th. How many days were they gone on the canoe trip?

20. Nicole paid her Beanie Baby tag protector bill of $3.00 by using the same number of half-dollars and quarters. How many quarters did she use?

21. Ann makes 5 out of every 6 shots she attempts when playing basketball. How many shots would she expect to make in a game if she attempts 30 shots?

22. Nat can mow a square lawn that is 30 yards on each side in 45 minutes. At the same rate, how long will it take him, in terms of hours, to mow a square lawn that is 60 yards on a side?

23. A whole number is greater than 50 and smaller than 500. What is the smallest possible value of the sum of all of its digits?

24. If $A \otimes B = ((A \times B) + \frac{B}{A}) \times (B - A)$, what is the value of $2 \otimes 8$?

25. What is the reciprocal of $\frac{25}{625}$?

26. If pencils cost 22¢ a piece, how many could you buy with a dollar?

27. Duchow gave $258 to the "Feed the Great Dane Fund." The Great Dane eats $15 worth of food a day. How many full days did his contribution feed the Great Dane?

28. Five less than six more than seven is _____.

29. A mile long train, traveling 1 mile a minute, comes to a tunnel 1 mile long. How many minutes does it take the train to go through the tunnel?

30. Bryan has a sock full of quarters and would like to buy a gift for Sally that costs $1.75. If he only pays in quarters, how many will he need to have in order to buy the gift?

Challenge Questions

31. If a bag contains five red marbles, six green marbles and three yellow marbles, what is the probability of drawing a green marble on the first draw?

32. Anna laughs every 5 minutes while Alexis laughs every 11 minutes. At what time will they next laugh together if they laughed together at 11:47A.M?

33. Nat was born at 11:06 A.M. on July 15, 1981. Greg was born at 10:48 P.M. on July 16, 1981. How many minutes older than Nat is Greg?

34. A mile is equivalent to 5280 feet. How many yards are in two miles?

35. In how may ways can the letters in BANANA be arranged?

36. Greg had 72 baseball cards. He gave 2-for-1 in five trades, and received 3-for-1 in three trades. How many cards does he have now?

37. A small auditorium has one seat in the first row, three seats in the second row, six seats in the third row, ten seats in the fourth row and so on for a total of ten rows. What is the seating capacity of the auditorium?

38. If a bicycle license plate consists of 2 letters followed by 1 digit, how many different license plates are possible if the letters P and Z and the digit 0 (zero) cannot be used?

39. When Nathaniel plays against his father in his video game, the odds are 3 to 2 that Nathaniel will win. What is the probability that Nathaniel will win on the first game they play?

40. State the odds of an event given the probability is 8/9.

"Math Is Cool" Championships-1998-9

Sponsored by: Washington Trust Bank

5th Grade - March 26, 1999

Team Multiple Choice Contest

---

1. Which is the solution to the following equation:

$$4 \times A - 2 \times B + C = 23$$

A) A = 5, B = 4, C = 11 B) A = 6, B = 1, C = 3 C) A = 4, B = 2, C = -8 D) Answer not given:

---

2. A triplet plant grows 1 leaf the first month, and then it triples its leaves each month thereafter. If it must have more than 90 leaves before it can be picked, what is the least number of months it must grow before it can be picked?

A) 2 B) 30 C) 31 D) 29 E) 9 F) Answer not given

---

3. The local library fine schedule for overdue books is as follows:
25 (cents) per day for each of the first three days
10 (cents) per day thereafter

Daniel paid a fine of $1.35. How many days overdue was his library book?

A) 5 B) 9 C) 7 D) 13 E) 11 F) Answer not given

---

4. Kevin earned $55 a week for the first 20 weeks of the year. He then received a 10 percent raise and worked for 20 more weeks. How much did he earn for the 40 weeks?

A) $4000 B)$2310 C) $2320 D)$1700 E)Answer not given

---

5. Richard Rodgers and Oscar Hammerstein wrote 4 smash musical hits in a short period of time. The 4 musicals were *Carousel, The King and I, Oklahoma,* and *South Pacific.* They wrote the first one in 1943. *Carousel* was written 2 years after *Oklahoma. South Pacific* was written 2 years before *The King and I. The King and I* was written last, 8 years after *Oklahoma.* When was *South Pacific* written?

A) 1943 B) 1945 C) 1947 D) 1949 E) Answer not given

---

6. Which equation could be used to solve this problem?
Each day Mrs. Hochstatter walks fast for .2 miles as part of her physical therapy. How many days will it take her to walk a total of 1.8 miles?

A) 1.8 + .2 = 2 B) 1.8 ÷ .2 = 9 C) 1.8 - .2 = 1.6 D) 1.8 x .2 = .36

---

7. Three dice are rolled. What is the probability that all 3 dice show the same number?

A) 1/36 B) 1/18 C) 1/9 D) 17/19 E) 125/216 F) Answer not given

---

8. Julie comes home from school to find a bowl of 5 apricots and 4 plums on the table. She decides to have a snack. First she selects a piece of fruit at random and then puts it back. She then selects another at random. What is the probability both selections were apricots?

A) 33/19 B) 15/9 C) 25/81 D) 34/11 E) 72/79

---

9. Don borrowed 34 quarters from Fred. The next day Don gave Fred 102 nickels. How much does Don still owe Fred?

A) $5.32 B) 12 quarters C) 70 nickels D) $5.00 E) Answer not given

---

"Math Is Cool" Championships-1998-9

Sponsored by: Washington Trust Bank

5th Grade - March 26, 1999

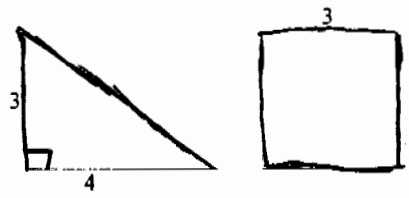
Team Contest

Express all answers as reduced fractions in terms of radicals.

1. Evaluate: 1 + 2 + 3 + ...+ 97 + 98 + 99 + 100

2. A duck named Howard says only two things, "Quack" and "I love apples." He says "Quack" on Mondays, Wednesdays, and Fridays. He says, "I love apples" on Tuesdays, Thursdays, and Saturday. He doesn't talk on Sundays. If today is Friday, March 26th, what will he say 101 days from now?

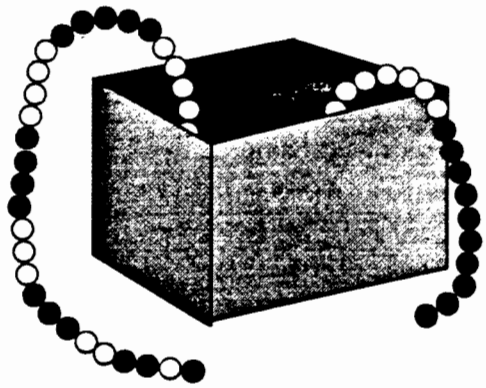
3. The triangle and square shown have the same perimeters. What is the positive difference of their areas?



4. If I counted 1000 legs in a herd of sheep, how many sheep are in the herd?

5. Find the next term in the sequence: 5, 13, 29, 61, 125, ____

6. Assume the pattern of the beads holds true. How many beads total are on the chain?



7. What is the mean of 7, 8, 9, 10, 11, 12, 13, 14, and 15?

8. The sum of two numbers is eight. If four is three more than one of the numbers, what is three more than the other number?

9. What is the sum of the two largest primes less than 100?

10. Yes or No: It is possible to draw a equilateral right triangle.

Practice relay
Person#1
What is the product of 6 and 4?

Practice relay
Person#2
What is the quotient of TNYWG and 8?

Practice relay
Person#3
What is the sum of TNYWG and 7?

Practice relay
Person#4
What is the product of TNYWG and 10?

Relay #1
Person#1
What is the remainder of the quotient of 58 and 3?

Relay#1
Person#2
What is the product of TNYWG and 3 + 5 + 7 - 6 - 4- 3- 1

Relay#1
Person#3
Divide the TNYWG by 15 - 11 + 9 + 2- 14.

Relay#1
Person#4
It costs $14.00 a week to feed Waldo. How many dollars would it cost to feed him for TNYWG days?

Relay#2
Person#1
What is the sum of the ten-thousands digit and the hundreds digit of 1,234,567?

Relay#2
Person#2
TNYWG - 16 + 16 - 8 + 8 - 4 + 4 - 2

Relay#2
Person#3
What is the sum of TNYWG and the area of a square with side length 4?

Relay#2
Person#4
What is the difference between the TNYWG and the perimeter of a rectangle with sides of length 3 and 4?

"Math Is Cool" Championships-1998-9

Sponsored by: Washington Trust Bank

5th Grade - March 26, 1999

Mental Math

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

Person #1

1. What is 139 - 21?
2. What is the smallest prime number?
3. How many sides does an octagon have?
4. What is the perimeter of a square with a side length of 5?

Person #2

1. What is 56 ÷ 8?
2. Rachel is 60 inches tall. How tall is she in feet?
3. How many pints are in 2 gallons?
4. You have 3 cookies. Andrew gives you 2 dozen more. How many cookies do you have?

Person#3

1. What is 12 x 11?
2. Math Team practice starts at 3:00pm. You were 17 minutes early. What time did you arrive?
3. What is one third of 42?
4. Grace is 3 years old. Amanda is 3 times older. How old is Amanda?

Person#4

1. What is 34 + 57?
2. How many centimeters are in one meter?
3. You have 6 apples and you give 2 to each of your 2 friends. How many apples do you have left?
4. What is 30 x 40?

"Math Is Cool" Championships-1998-9

Sponsored by: Washington Trust Bank

5th Grade - March 26, 1999

College Knowledge Bowl Questions #1

---

1. How many nickels are in 15 dollars?

Answer: 300

---

2. There are 180 days in a school year and you make lunch every day using 5 baggies each day. What is the total number of baggies used in a year?

Answer: 900

---

3. If the perimeter of a square is 20, what is its area?

Answer: 25

---

4. What is the value of the sum of the first 15 odd numbers?

Answer: 225

---

5. Greg's car gets 20 miles to the gallon. Gas costs 99 cents per gallon. To the nearest dollar, find how much money he will spend on gas to get to Seattle which is 180 miles away.

Answer: $9.00

---

6. Corndoggy wants to buy Betsy Lou a gift that has a price tag of $250. If the sales tax is 10%, how much money, in dollars, would he need to purchase the gift?

Answer: ($)275

---

7. What is the remainder when two hundred seventy four thousand, three hundred sixty two is divided by 93?

Answer: 12

Extra Question: In 1983, Toto had a hit song with "Africa." What is the prime factorization of 1983?

Answer: 3x661

"Math Is Cool" Championships-1998-9

Sponsored by: Washington Trust Bank

5th Grade - March 26, 1999

College Knowledge Bowl Questions #2

---

1. Kevin and Silas are eating oranges. Silas eats 3 more oranges than Kevin does in one hour. How many does Kevin eat in one hour if they eat 75 oranges in 3 hours?

Answer: 11

---

2. (Number of sides of a square) plus (number of sides of a pentagon) minus (number of sides of a hexagon) = number of sides of what geometric shape?

Answer: triangle

---

3. The difference between two numbers is 333. If the smaller number is 321, what is the larger number?

Answer: 654

---

4. What is the product of the reduced numerator and denominator of 63/72?

Answer:56

---

5. What is 16 times 16?

Answer: 256

---

6. What is the next number of this pattern? 1,1,2,3,5,8,13,___?

Answer: 21

---

7. If two angles are complementary, what is their sum?

Answer: 90

Extra Question: What is the probability of getting a four then a two when tossing one die twice?

Answer: 1/36

"Math Is Cool" Championships-1998-9

Sponsored by: Washington Trust Bank

5th Grade - March 26, 1999

College Knowledge Bowl Questions #3

---

1. How many prime numbers are between 30 and 50?

Answer: 5

---

2. Grandma Vicki has a rectangular garden 6 foot by 9 foot and needs to put a fence post every 3 feet. How many fence posts are needed for her garden?

Answer: 10

---

3. What is the sum of the first 6 odd numbers?

Answer: 36

---

4. Evaluate: 123 x 45.

Answer: 5535

---

5. What is 75% of 200?

Answer: 150

---

6. Twelve coins have a value of $1.00. All the coins are nickels and dimes. How many of the twelve coins are nickels?

Answer: 4

---

7. How many positive primes have a remainder of zero when divided by 17?

Answer: 1

Extra Question: The average of 9 numbers is 9. If 8 of these numbers are 1 what is the other number?

Answer: 73

Math Is Cool" Championships -- 1998-9

5th Grade - March 26, 1999

School Name_____Team #_____

Proctor Name_____Room #_____

Key

Full Name:_____

1st Score

Out of 30

Individual Contest - Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer		
1.	0		
2.	21,457		
3.	1265		
4.	49		
5.	2		
6.	<		
7.	81		
8.	7:33 A.M.		
9.	12		
10.	6		
11.	360(degrees)		
12.	.625		
13.	17		
14.	13(Dogs)		
15.	7,777,770		
16.	10(Games)		
17.	False		
18.	7 (dozen)		
19.	17(days)		
20.	4(quarters)		

	Answer		
21.	25(Shots)		
22.	3(hours)		
23.	1		
24.	120		
25.	25		
26.	4(pencils)		
27.	17(Days)		
28.	8		
29.	2(Minutes)		
30.	7(Quarters)		
31.	3/7		
32.	12:42 P.M.		
33.	2142(Minutes)		
34.	3520(Yards)		
35.	60		
36.	73(Cards)		
37.	220(Seats)		
38.	5184 (License Plates)		
39.	3/5		
40.	8/1 or 8 to 1 or 8:1		

Math Is Cool" Championships -- 1998-9

5th Grade - March 26, 1999

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

Math Is Cool" Championships -- 1998-9

5th Grade - March 26, 1999

School Name_____Team #_____

Proctor Name_____Room #_____

Key

Relay Contest - Score Sheet

Practice relay

100

Answer for relay #1

($)2

Answer for relay #2

8

Math Is Cool" Championships -- 1998-9

5th Grade - March 26, 1999

School Name_____Team #_____

Proctor Name_____Room #_____

Key

1st Score

Out of 10

Team Contest-Score Sheet

DO NOT WRITE IN SHADED REGIONS

	Answer		
1.	5050		
2.	Quack		
3.	3(sq units)		
4.	250 (Sheep)		
5.	253		
6.	100(beads)		
7.	11		
8.	10		
9.	186		
10.	No		