

# "Math is Cool" Championships-2000-01

Sponsored by: Divine's

6<sup>th</sup> Grade - March 2, 2001

Individual Contest

Express all answers as reduced fractions unless stated otherwise.

Leave answers in terms of  $\pi$  where applicable.

Do not round any answers unless stated otherwise.

Record all answers on the green cover sheet.

1. Evaluate:  $45 + 72 - 73$
2. What is the area of a triangle with a base length of 4 and a height of 5?
3. Find the remainder of  $378231 \div 3$ .
4. What is the product of 21 and 23?
5. There is 16 ounces in a pound. How many ounces are in six pounds?
6. What is 15 divided by  $\frac{1}{2}$ ?
7. A clown can hold 18 balloons. How many balloons can 7 clowns hold?
8. Evaluate:  $2\frac{2}{3} + 4\frac{3}{4}$
9. Write 234,000,000 in scientific notation.
10. Round 499,890 to the nearest thousands place.
11. Each row of corn in Carl's garden requires 25 seeds to plant it. How many rows can Carl plant with 800 seeds?
12. State the largest non-positive number.
13. What is the greatest common factor of 30 and 12?
14. Tealah decided to make a deck of cards by removing all the face cards, the aces and the cards with composite numbers on them. If a card is drawn at random from the new deck, what is the probability it is even?
15. Convert 3 yards, 3 feet, 3 inches to inches.
16. What is the reciprocal of the reciprocal of  $\frac{3}{5}$ ?

17. If the sum of the digits of a number is 17, what is the remainder when the number is divided by 3?
18. To prepare for a game at a party, Amanda gave each of the guests a slip of paper with a number on it. Each slip of paper had a number 3 larger than the previous and the first number was 15. The last person in the room was given a piece of paper with the number 105 on it. How many people were given a slip of paper?
19. The ratio of adults to children is 3:5. If 32 people are present, how many children are there?
20. If the cost of carpet is \$17.00 per square yard, what would be the cost, in dollars, of carpeting a room that is 18 feet by 24 feet?
21. The average number of syllables in the words that Colin types is two. Colin can type 70 words per minute. The average length of a sentence that Colin types is 14 words. He usually misspells one word every twenty minutes. How many words would you expect Colin to correctly type in one hour?
22. A grocery store purchased 40 gallons of milk at \$1.10 per gallon and sold it at 52 cents per quart. What profit, in dollars, was made on the 40 gallons of milk?
23. A tire on a certain car has a circumference of 11 feet. If the tire rotates 40 times per minute, how many miles per hour is the car going?
24. How many faces does a rectangular prism have?
25. Silas knows the probabilities of drawing a green, a red and a blue marble from a bowl are  $\frac{1}{3}$ ,  $\frac{1}{2}$  and  $\frac{1}{6}$  respectively. If a green marble is removed, the probability of drawing a green, a red and a blue marble from the bowl are now  $\frac{3}{11}$ ,  $\frac{6}{11}$  and  $\frac{2}{11}$  respectively. How many marbles were originally in the bowl?
26. Keisha can plow 800 square feet of a field every 30 minutes. How many hours will it take Keisha to plow a field 800 feet by 800 feet?
27. Carl, Rob, Colin, Lee, and Keisha are standing in a line. Carl is directly behind Colin. Colin is not in front. Rob is the only person between Lee and Carl. Who is at the front and who is at the back of the line? Write your answer as an ordered pair (front, back).
28. What is the 45<sup>th</sup> number in the sequence 1, 4, 7, 10, 13, 16 ...?
29. If you see lightning far away, you must wait a few seconds until you hear the thunder. If you see lightning strike a water tower two miles from your home, and it takes 9.7 seconds to hear the thunder, what was the speed, in miles per hour, of the sound? (Round to the nearest whole number.)
30. If a Pearson Perfect number is equal to 3 times half of itself, what is the only integer(s) between -1000 and +1000 that would fit this description and restriction?

# Challenge Questions

31. If two six-sided die are rolled, what are the odds of getting matching numbers?
32. Jennifer weighs 105 pounds and sits 5 feet from the center of the seesaw. Becky balances the seesaw when she sits 7 feet from the center. How much does Becky weigh, in pounds?
33. Find the probability of drawing two M's without replacement from the letters in "MATHEMATICAL"?
34. If there are two boinks in a bank, three banks in a bunch, and 5 bunches in a bink, how many bunches can I make from 2 binks and 6 boinks?
35. How fast would you have to go to get to a football game 10 miles across town in exactly 30 minutes? Express answer in miles per hour.
36. If the price on an item drops 10% off each day for three days, what will be the percentage off of the price on the second day of the sale, as compared to the original price?
37. A baseball player's "batting average" is found by dividing the number of hits by the number of times at bat. Amanda's brother, David, had 21 hits in 72 times at bat. Her other brother Caleb has 10 hits in 41 times to bat. How many hits in a row would Caleb need in order to have a higher batting average than his brother?
38. If the definition of a Log is:  $\text{Log}_b A = C$  if and only if  $B^C = A$ . Using this, find C:  $\text{Log}_5 125 = C$ .
39. What day of the week was July 4, 1776?
40. A perfect number is one that is equal to the sum of all its factors, except itself. Find a perfect number between 30 and 500.

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## Team Multiple Choice Contest

1. 200 gallons of water irrigate 1 square mile per day. Which of these answers is the best approximation of the number of gallons needed to irrigate the south pasture for one week?  
A) 16800      B) 14000      C) 12320      D) 2640      E) 20010

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2. Which of these squares does the creek not run through?  
A) B3      B) A3      C) A4      D) B1      E) Answer not given

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3. To the nearest half mile, how far is it from Sampson's house at pt A to the South Bridge at point B?  
A) 5.0      B) 5.5      C) 6.0      D) 6.5      E) Answer not given

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4. A meteorite is predicted to land in the middle of the B3, and the blast will affect all the land within 3 miles. How many different squares will be affected?  
A) 10      B) 9      C) 8      D) 7      E) Answer not given

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5. If 640 acres are in one square mile, how many acres are in C4?  
A) 2560      B) 640      C) 1280      D) 5260      E) Answer not given

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6. Sampson walks 5 miles south from his house, 1 mile west, and 1 mile north. What direction must he head to get to the South Bridge?  
A) North      B) East      C) West      D) South

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7. If 1 Km  $\cong$  .6 miles, which of these answers is the best approximation of length of Sampson's driveway in kilometers?  
A) 2      B) 3      C) 7      D) 9

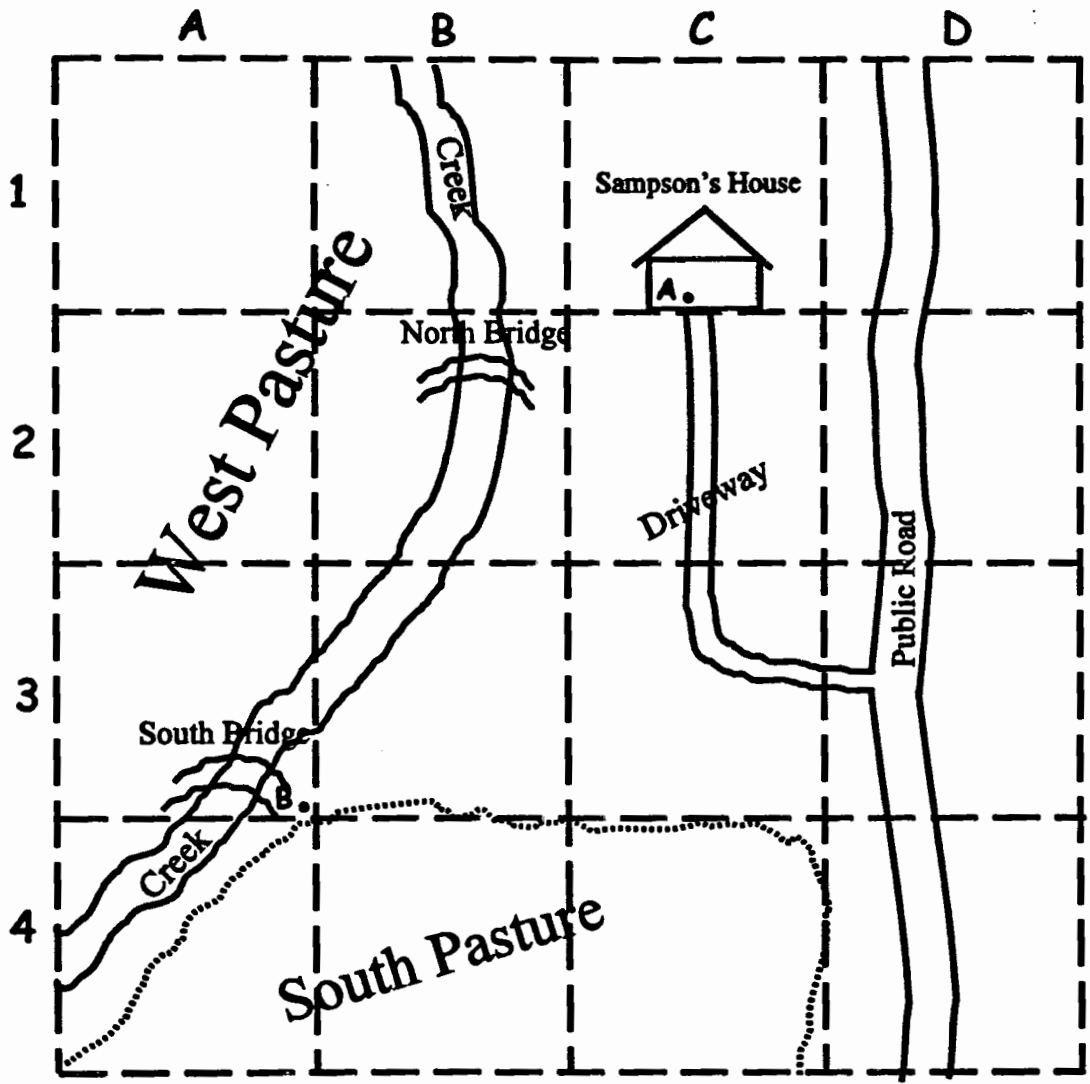
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8. Estimate the number of square miles in the West Pasture bounded by the creek.  
A) 4      B) 8      C) 12      D) 16      E) Answer not given

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9. If 18 cows need two square miles of land, which of these answers is the best approximation of the number of cows the West Pasture will support?  
A) 144      B) 288      C) 108      D) 72

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2 miles



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Team Contest

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1. If  $5 @ 3 = 15$ , and  $4 @ 6 \# 4 = 20$ , what would  $12 @ 4 \# 8 = ?$
2. The difference between the squares of 2 consecutive whole numbers is 15. What is the smaller of the two numbers?
3. An auditorium has 20 rows of seats. There are 20 seats in the first row, 21 seats in the second row, 22 seats in the third row, and so on. How many seats are there in all 20 rows?
4. How many integer values satisfy the given inequality?  $10 < X < 20$
5. If Aaron currently has an average of an 89 in Mrs. Slaughter's class after 5 tests, what is the lowest grade he can get on the next test and still have an average of at least 85?
6. Given this pattern: 1, 1, 2, 3, 5, 8, 13, 21, 34, ... Find the sum of the next two terms.
7. How many 2 inch by 3 inch tickets can be cut from a 2 foot by 3 foot sheet of paper?
8. Write 6 as a base 2 number.

9. Coach Kittrell had each student in his gym class run for five minutes and then tell him how far he or she had gone. Each runner told him what fraction of a mile they had run. Who was the 5<sup>th</sup> fastest runner.

Sharifa:  $\frac{3}{4}$  mile

Ida:  $\frac{4}{7}$  mile

Triscia:  $\frac{3}{5}$  mile

Daniel:  $\frac{5}{6}$  mile

Charles:  $\frac{8}{11}$  mile

Marte:  $\frac{7}{12}$  mile

Julie:  $\frac{6}{7}$  mile

Megan:  $\frac{5}{8}$  mile

Rhonda:  $\frac{11}{16}$  mile

10. Mr. Balcom's saving account statement shows the following transactions. What is his balance, in dollars, at the end of the month?

Previous balance	8/1	\$8,792.50
Deposit	8/6	\$820.40
Deposit	8/9	\$120.50
Withdrawal	8/15	\$1,260.00
Deposit	8/20	\$472.26
Withdrawal	8/26	\$2,768.40
Interest	8/27	\$23.16
Balance	8/31	\$?

Practice relay

Person#1

$$245 + 173$$

Practice relay

Person#2

$$\text{TNYWG} \div 2$$

Practice relay

Person#3

$$\text{TNYWG} \times 8$$

Practice relay

Person#4

$$\text{TNYWG}/4$$

Relay #1

Person#1

$$288 - 170 + 22$$

Relay#1

Person#2

$$\text{TNYWG} \div 2$$

Relay#1

Person#3

What is the remainder when TNYWG is divided by 6?

Relay#1

Person#4

What is  $\text{TNYWG} \times 13$ ?

Relay#2

Person#1

$$\text{What is } 2 + 12 + (7 - 3) \div 2 - 14$$

Relay#2

Person#2

What is  $((\text{TNYWG})^2)^2$ ?

Relay#2

Person#3

What is the area of a circle with radius TNYWG?

Relay#2

Person#4

What is  $(\text{TNYWG}) \div 16\pi$ ?



# "Math is Cool" Championships-2000-01

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6<sup>th</sup> Grade - March 2, 2001

Mental Math Contest

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

Person #1		
1	What is the product of 6 and 4?	24
2	What is the sum of the first three positive even numbers?	12
3	What is the fifth prime number?	11
4	What is the area in square inches, of a square 1 foot on a side?	144
Person #2		
1	What is half the product of 8 and 12?	48
2	What is the probability of rolling a sum of 12 when two dice are rolled?	1/36
3	What is the least common multiple of 9 and 12?	36
4	What is the circumference of the circle with radius 12?	$24\pi$
Person #3		
1	What is 4 times the sum of 7 and 8?	60
2	True or false: 2001 is prime.	False
3	What is the greatest common factor of 108 and 45?	9
4	Drew has 2 quarters, 3 dimes, and 1 nickel in his pocket. How many cents does he have?	85(¢)
Person #4		
1	What is the difference between 45 and 12?	33
2	If the sum of two numbers is 16, and the difference is 4, what is the larger number?	10
3	Evaluate: 2 dozen dozens.	288
4	What is 20% of 45?	9

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6<sup>th</sup> Grade - March 2, 2001

## College Knowledge Bowl Questions #1

1	How many sides does a hexagon have?	6
2	What is the fraction equivalent of .2?	1/5
3	How many cubes with side length one fit in a cube with side length 3?	27
4	What is the ratio of the area of a square with side length 2 to the area of a square with side length 8?	1:16
5	Solve for x: $x + 4 = 22$ .	18
6	What is one-third of 2004?	668
7	An abundant number is a number whose sum of its factors minus itself is greater than the number. Find an abundant number between 20 and 30.	24
Number 8 is an extra question. Only use it if needed.		
8	Evaluate: The sum of the first 50 odd numbers plus the sum of the first 50 even numbers.	5050

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<u>College Knowledge Bowl Questions #2</u>		
1	Find the least common multiple of 250 and 300.	1500
2	What are the odds of flipping a head on one toss of a fair coin?	1/1
3	If Bill-Bob eats 2 jellybeans a day, how many days would it take him to eat his whole bag filled with 506 jellybeans?	253
4	There are cars with one headlight and bikes with one headlight in the "one headlight" parking lot. If was found that there are a total of 62 tires and 20 headlights. How many cars are there in the parking lot?	11(cars)
5	One Lewis and Clark Math Team member can screw in 2 light bulbs in 1 minute. Theoretically, how many Lewis and Clark Math Team members does it take to screw in a light bulb in exactly 10 seconds?	3 (members)
6	What is the fourth root of 625?	5
7	If you toss three coins at the same time, what is the probability of tossing three heads?	1/8
Number 8 is an extra question. Only use it if needed.		
8	How many faces does a tetrahedron have?	4

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## College Knowledge Bowl Questions #3

1	Biff pushes Eho up a 300 foot hill. Biff pushes Eho up the hill 27 feet each day and Eho slides down the hill 6 feet each night. How many days will it take Biff to get Eho to the top of the hill?	14
2	A 21 liter pail is filled with water at a rate of one-fourth liter every two minutes. How many minutes will it take to fill one-third of the pail?	56(mi ns)
3	When a certain number is divided by 7, the remainder is 4 and the quotient is 8. What is the number?	60
4	In a group of five people each person shakes hands with each other person exactly once. How many handshakes occurred?	10
5	If the product of an even number and an odd number is 140, what is the largest possible value of the odd number?	35
6	How many ways can four people be seated in six chairs?	360
7	If I count backwards by fours, starting at 503, what will be the last positive number I will say?	3
Number <u>8</u> is an extra question. Only use it if needed.		
8	If Eric has \$22.20 in dimes, how many dimes does he have?	222

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6<sup>th</sup> grade - March 2, 2001

Key

School Name \_\_\_\_\_ Team # \_\_\_\_\_  
 Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_

Full Name: \_\_\_\_\_

1<sup>st</sup> Score

## Individual Contest - Score Sheet

**DO NOT WRITE IN SHADED REGIONS**

Out of 40

	Answer	1 or 0	1 or 0
1	44		
2	10(units <sup>2</sup> )		
3	0		
4	483		
5	96(ounces)		
6	30		
7	126(balloons)		
8	7 5/12 or 89/12		
9	2.34x10 <sup>8</sup>		
10	500000		
11	32(rows)		
12	0		
13	6		
14	1/4		
15	147(inches)		
16	3/5		
17	2		
18	31		
19	20(children)		
20	(\$ )816		

	Answer	1 or 0	1 or 0
21	4197(words)		
22	(\$ ) 39.20		
23	5(mph)		
24	6(faces)		
25	12(marbles)		
26	400 (hrs)		
27	(Keisha, Lee)		
28	133		
29	742 (mph)		
30	0		
31	1/5		
32	75 (pounds)		
33	1/66		
34	11		
35	20 (mph)		
36	19(%)		
37	3(hits)		
38	3		
39	Thursday		
40	496		

# "Math is Cool" Championships -- 2000-01

6<sup>th</sup> grade - March 2, 2001

# Key

School Name \_\_\_\_\_ Team # \_\_\_\_\_

Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_

## Team Multiple Choice Contest-Score Sheet

1<sup>st</sup> 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	E		
3	A		
4	B		
5	A		
6	C		
7	C		
8	D		
9	A		

# "Math is Cool" Championships -- 2000-01

6<sup>th</sup> grade - March 2, 2001

**Key**

School Name \_\_\_\_\_ Team # \_\_\_\_\_

Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_

## Team Contest-Score Sheet

**DO NOT WRITE IN SHADED REGIONS**

1<sup>st</sup> Score

Out of 10

	Answer	1 or 0	1 or 0
1	40		
2	7		
3	590(seats)		
4	9		
5	65		
6	144		
7	144 (tickets)		
8	110		
9	Rhonda		
10	(\$) <u>6,200.42</u>		

**"Math is Cool" Championships -- 2000-01**

**6<sup>th</sup> grade - March 2, 2001**

School Name \_\_\_\_\_ Team # \_\_\_\_\_

Proctor Name \_\_\_\_\_ Room # \_\_\_\_\_



**Relay Contest - Score Sheet**

**Practice relay**

**418**

**Answer for relay #1**

**52**

**Answer for relay #2**

**16**