

"Math is Cool" Championships-1999-00

Sponsored by: Washington Trust Bank

6th Grade - March 3, 2000

Individual Contest

Express all answers as reduced fractions unless stated otherwise.

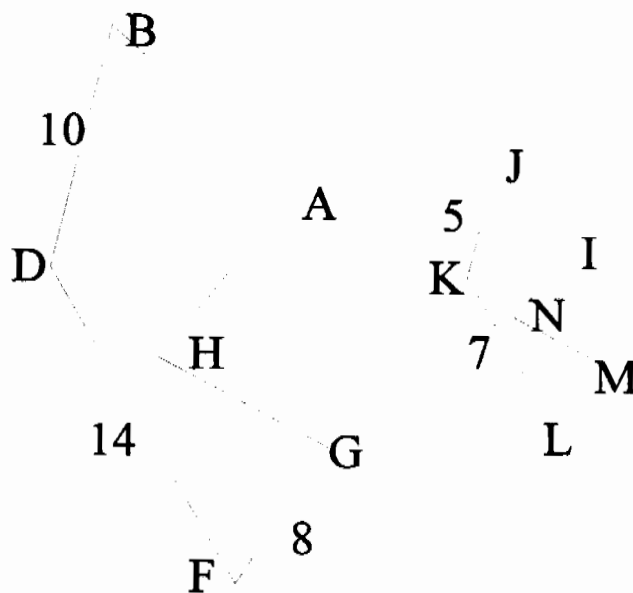
Leave answers in terms of π where applicable.

Do not round any answers unless stated otherwise.

Record all answers on the green cover sheet.

1. Evaluate: $3.15 + 7.86 + 23.1$
2. Evaluate: $2 + 3 + 5 + 10 - 18 + 15$
3. What is the area of a square with side length 5?
4. What is the smallest two digit number?
5. Find the remainder of $865432165 \div 2$.
6. What is the product of 356 and 224?
7. Laurie can read one book every 3 hours. How many books can she read in 24 hours?
8. What is the greatest common factor of 12 and 18?
9. What is the first prime number?
10. Round 0.5467215 to the nearest hundredth.
11. Find the missing number: $3 + 4 + 5 + 6 + 7 = 8 + 9 + \underline{\hspace{2cm}}$
12. What is the first two digit prime number?
13. Mackenzie drove a snowmobile for three hours at a constant speed of 40 mph. How many miles did she go?

14. In Krista's math class there are twice as many girls as boys. If there are 60 students in the class, how many boys are in the class?
15. What is the probability of rolling an even number with the roll of one six-sided die?
16. What is the sum of the first 10 positive odd numbers?
17. Dylan has \$3.35 of change in his pocket. He has no coins larger than a quarter. What is the least number of coins he could have in his pocket?
18. What is the range of the following set of data: 34, 17, 29, 55, 74, 44, 155, 54?
19. How many diagonals can be drawn in a convex pentagon?
20. Figure $ABCDEFGH$ is similar to figure $IJKLMN$. What is the length of \overline{LM} ?



21. Sarah is preparing for a backpack trip. She has determined she will need to eat 4,500 calories a day. She is going to get 30% of her daily calories from a new high performance food supplement called *GOO*. One ounce of *GOO* has 100 calories in it. How many ounces of *GOO* does she need for a ten day trip?

22. How many numbers between 40 and 70, not including 40 and 70, can be written as the sum of two odd numbers?
23. The area of a triangle is 28 and the length of the base is 7. What is the height of the triangle?
24. Amy wants to buy a blouse that costs \$25.00. If sales tax is 8%, how much will Amy pay for the blouse?
25. As people entered a room they were given a number in consecutive order. The first person was given the number 14 and the last person was given the number 81. How many people entered the room?
26. What is the mean of the set of data: 1, 2, 9, 11, 15, 29, 48, 111, 170, 234?
27. A taxi service charges \$2.10 for pick-up, \$1.80 for the first mile, and \$.10 for each tenth of a mile after that. How far in miles did someone travel who paid \$8.20? Express your answer as a decimal.
28. What is the ratio of a side of a square to its perimeter?
29. Jenny lives in Seattle and called Morten in Norway. When Jenny called Morten at 6:00 A.M. Saturday morning Seattle time Morten told her it was 3 P.M. Saturday afternoon. Morten told Jenny he was busy and told her to call him back Tuesday at 7:00 P.M. Norway time. What day of the week and what time of the day will it be in Seattle when Jenny calls Morten Back?
30. Kirsten surprised her friends by bringing a bag of candy, which contained 858 pieces. She divided the candy evenly among her friends. If every friend got at least 5 but no more than 10 pieces of candy, how many friends did Kirsten give candy to?

Challenge Questions

31. Find the missing number: $\sqrt{4+9+36} = \sqrt{4} + \sqrt{9} + \underline{\quad}$
32. The smallest odd number greater than 399 is divided by 10. What is the remainder of this division?
33. Chase needs to determine the weight of a cube measuring 3 feet in each side. Chase cut a small piece of the large cube measuring two inches by three inches by four inches and determined its weight to be two pounds. How much did the original cube weigh?
34. Drew rolled a die 216 times. What is the predicted number of times 5 will appear?
35. What is the slope of the line passing through the points (3,1) & (8,11)?
36. Silas prepared a bowl of fruit for his friends who were coming to his house to study math. The bowl had three times as many apples as oranges, and one-fourth as many pears as oranges. Altogether, there are 85 pieces of fruit in the bowl. How many pears are in the bowl?
37. The sum of the squares of the first 20 positive integers is 2870. What is the sum of the squares of the first 19 positive integers?
38. In a list of two hundred numbers, each number after the first number is four more than the number before it. What is the difference between the first and the last number on the list?
39. In what base is $204 + 314 = 521$?
40. The average grade in Astrophysics is 75%. The Ahrens twins each had 99% before they dropped the class. The average grade before they dropped the class was 78%. How many people were originally in the class?

"Math is Cool" Championships-1999-00

Sponsored by: Washington Trust Bank

6th Grade - March 3, 2000

Team Multiple Choice Contest

Feed Report January 1, 2000

Types of Grain	Chicken Diet Mixture % of each type of grain	Pigs Diet Mixture % of each type of grain	Cows Diet Mixture % of each type of grain	Horses Diet Mixture % of each type of grain	Amount of each type of grain the farmer started the month with (In thousands of pounds)
Corn	20%	50%	30%	10%	73
Barley	30%	10%	4%	30%	80
Wheat	10%	10%	6%	20%	20
Oats	40%	30%	60%	40%	100

Animal	Number of pounds of grain each group of animals is expected to eat during the month of January. (In thousands of pounds)
Chickens	10
Pigs	30
Cows	150
Horses	80

1. What was the total number of pounds of grain-mixture expected to be fed in the month of January?

- A) 270 B) 2700 C) 27000 D) 270000 E) Answer not given
-

2. How many pounds of corn is expected to be fed to the chickens in the month of January?

- A) 1000 B) 1500 C) 1800 D) 2000 E) Answer not given
-

3. How many pounds of corn is expected to be fed to the animals in the month of January?

- A) 70,000 B) 80,000 C) 90,000 D) 70 E) Answer not given
-

4. The farmer will run out of some types of grain before the month of January is over. Which types of grain will he run out of?

- A) corn B) wheat and oats C) corn and wheat D) all of the types of grain E) Answer not given
-

5. How many tons of wheat will the cows eat during the month of January? (2000 pounds = 1 ton)

- A) 1 B) 2.1 C) 3.3 D) 4.5 E) Answer not given
-

6. The farmer does not have enough feed on hand to feed the animals for the entire month of January. Of the different types of grain he needs to get, which one will he need to get the most of?

- A) corn B) barley C) wheat D) oats
-

7. A cow eats twice as much as a horse and four times as much as a pig. A chicken eats an eighth as much as a pig. In the month of January, which animal does the farmer own the most of?

- A) chickens B) pigs C) cows D) horses
-

8. If the farmer owned 1,000 chickens, in the month of January, how many pounds (to the nearest pound) of grain-mixture will a horse eat in one month? (Use information from # 7)

- A) 150 B) 160 C) 220 D) 300 E) Answer not given
-

9. Which group of animals will eat the most barley during the month of January?

- A) chickens B) pigs C) cows D) horses

"Math is Cool" Championships-1999-00

Sponsored by: Washington Trust Bank

6th Grade - March 3, 2000

Team Contest

Express all answers as reduced fractions unless stated otherwise.

Leave answers in terms of π where applicable.

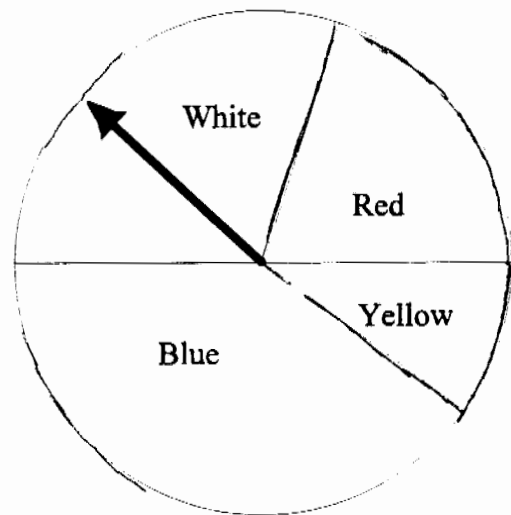
Do not round any answers unless stated otherwise.

Record all answers on the yellow cover sheet.

Use the following chart and diagram to answer questions 1-3. The chart shows the results of spinning a spinner 300 times. The diameter of the spinner is 4.

Spinner results	
Red	60
White	90
Blue	120
Yellow	30
Total Number of Spins	300

1. What is the probability that in one spin that the arrow will land on blue?
2. What is the exact area of the yellow region?
3. What is the probability that in two spins that the arrow will stop on both blue and red?



4. Evaluate: $\frac{1}{5} + \frac{2}{3} - \frac{7}{10}$
5. What is 3% of 256? Express your answer as a decimal to the nearest hundredth.
6. What is the exact area of a circle with diameter 4?
7. How many tiles 6 inches by 6 inches are required to cover a floor 12 feet by 12 feet?
8. Express .56 as a fraction.
9. Simplify: $4(3 - 2x) + 5(7 - 4x)$
10. How many ways can you arrange 6 different books on a shelf?

Practice relay
Person#1
 $245 + 173$

Practice relay
Person#2
 $TNYWG \div 2$

Practice relay
Person#3
 $TNYWG \times 8$

Practice relay
Person#4
 $TNYWG/4$

Relay #1
Person#1
 $183 + 457 - 16$

Relay#1
Person#2
 $TNYWG \div 3$

Relay#1
Person#3
What is the remainder when TNYWG is divided by 7?

Relay#1
Person#4
What is $TNYWG \times 15$

Relay#2
Person#1
What is the area of a triangle with base length 7 and height length 12?

Relay#2
Person#2
What is the sum of the digits in TNYWG?

Relay#2
Person#3
What is the lowest common multiple of 75 and TNYWG?

Relay#2
Person#4
What is the difference between TNYWG and the third prime number?

"Math is Cool" Championships-1999-00

Sponsored by: Washington Trust Bank

6th Grade - March 3, 2000

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 7 and 8?
2. What is the perimeter of a square with side length 15?
3. What is one-seventh the sum of 14 and 7?
4. What is the sum of one-fifth and one-eighth?

Person #2

1. What is the area of a circle of radius 6?
2. What do you get if you multiply the sum of 7 and 8 by 3?
3. What is the perimeter of an equilateral triangle with side length 11?
4. What is 2 to the fourth power?

Person#3

1. What is the sum of the interior angles of a triangle?
2. What is the perimeter of a regular pentagon with side length 4?
3. What is the result when you multiply 3 and 2, then add 6?
4. What is 8 times the sum of 5 and 4?

Person#4

1. If there are 4 cows and 2 chickens in a field, how many legs are there?
2. What is 15 divided by one-half?
3. What is the difference between 22 and 4?
4. What is 10 percent of 190?

"Math is Cool" Championships-1999-00

Sponsored by: Washington Trust Bank

6th Grade - March 3, 2000

<u>College Knowledge Bowl Questions #1</u>		
1	When 4,654 is multiplied with 32, what is the tens digit?	2
2	In how many ways can the letters in the word "GENIUS", spelled with all capital letters, be arranged?	720
3	How many prime numbers are between 25 and 40?	3
4	If Ryan has \$16.50 in nickels, how many nickels does he have?	330
5	In a park, there are seagulls and squirrels. The total number of animals is 15, and the total number of legs is 40. How many seagulls are there?	10
6	What is the sum of the first 5 even numbers?	30
7	In quadrilateral ABCD, angle A is equal to angle B, and angle C is equal to angle D. Angle C is twice angle B. What is the measure, in degrees, of the largest angle in the quadrilateral?	120°
Number 8 is an extra question. Only use it if needed.		
8	Find the value of x for the equation $2-3x = -2$.	4/3 or 1 1/3

"Math is Cool" Championships-1999-00

Sponsored by: Washington Trust Bank

6th Grade - March 3, 2000

<u>College Knowledge Bowl Questions #2</u>		
1	If the product of an even number and an odd number is 384, what is the largest possible value of the odd number?	3
2	How many ways can three people be seated in eight chairs?	336
3	If I count backwards by sevens, starting at 800, what will be the last positive number I will say?	2
4	When a certain number is divided by 4, the remainder is 1 and the quotient is 26. What is the number?	105
5	In a group of six people each person shakes hands with each other person exactly once. How many handshakes occurred?	15
6	Which is largest? $\frac{12}{17}$ or $\frac{5}{7}$ or .701 or $\frac{14}{21}$	$\frac{5}{7}$
7	The average of 10 whole numbers is 10. If nine of these numbers are 1, what is the tenth number?	91
Number <u>8</u> is an extra question. Only use it if needed.		
8	How many ways can you arrange five different books on a shelf?	120

"Math is Cool" Championships-1999-00

Sponsored by: Washington Trust Bank

6th Grade - March 3, 2000

<u>College Knowledge Bowl Questions #3</u>		
1	Biff pushes Eho up a 126 foot hill. Biff pushes Eho up the hill 29 feet each day and Eho slides down the hill 8 feet each night. How many days will it take Biff to get Eho to the top of the hill?	6
2	Evaluate when $x=3$; $2x^2-4x+5$	11
3	What is the sum of the numerator and the denominator after you reduce the fraction 143 divided by 286?	3
4	A 15 liter pail is filled with water at a rate of one half liter every two minutes. How many minutes will it take to fill two-thirds of the pail?	40 (mins)
5	What is measure of the third angle of a triangle knowing that the first angle has a measure of 58.6 degrees and the second angle has a measure of 45.5 degrees?	75.9
6	Silas and Eric counted leaves on two plants. Eric's count was a two digit number. Silas got a four digit number. If the difference between their numbers was 901, what was the sum of their numbers?	1099
7	What positive number when multiplied by itself always returns itself as the answer?	1
Number <u>8</u> is an extra question. Only use it if needed.		
8	Is the sum of the first 1000 odd numbers is odd even or neither?	Even

"Math is Cool" Championships -- 1999-00

6th grade - March 3, 2000

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	34.11		
2	17		
3	25		
4	10		
5	1		
6	79744		
7	8		
8	6		
9	2		
10	.55		
11	8		
12	11		
13	120		
14	20		
15	1/2		
16	100		
17	14		
18	138		
19	5		
20	4		

	Answer	1 or 0	1 or 0
21	135		
22	14		
23	8		
24	27		
25	68		
26	63		
27	5.3(miles)		
28	1:4		
29	Tuesday @ 10 a.m.		
30	143		
31	2		
32	1		
33	1944		
34	36		
35	2		
36	5		
37	2470		
38	796		
39	7		
40	16		

"Math is Cool" Championships -- 1999-00

6th grade - March 3, 2000

School Name _____ Team # _____

Proctor Name _____ Room # _____

Key

Team Multiple Choice Contest-Score Sheet

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

1st Score

Out of 18

DO NOT WRITE IN SHADED REGIONS

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

"Math is Cool" Championships -- 1999-00

6th grade - March 3, 2000

School Name _____ Team # _____

Proctor Name _____ Room # _____

Key

Team Contest-Score Sheet

DO NOT WRITE IN SHADED REGIONS

1st Score

Out of 10

	Answer	1 or 0	1 or 0
1	40% or $\frac{2}{5}$		
2	4π or $\frac{2}{5}(\pi)$		
3	16% or $\frac{4}{25}$		
4	$\frac{1}{6}$		
5	7.68		
6	4π		
7	576		
8	$\frac{14}{25}$		
9	$47-28x$ or $-28x + 47$		
10	720		

"Math is Cool" Championships -- 1999-00

6th grade - March 3, 2000

School Name _____ Team # _____

Proctor Name _____ Room # _____

Key

Relay Contest - Score Sheet

Practice relay

418

Answer for relay #1

75

Answer for relay #2

145

"Math is Cool" Championships -- 1999-00


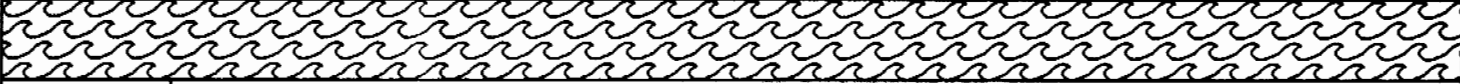
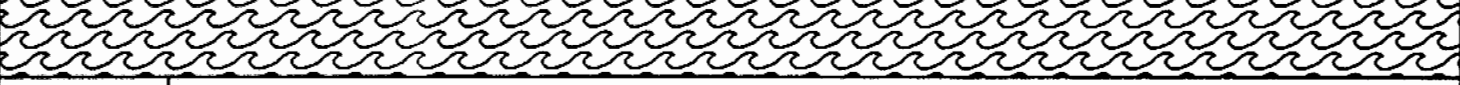
6th grade - March 3, 2000

School Name _____ Team # _____

Proctor Name _____ Room # _____

Key

Mental Math - Score Sheet

1	56
2	60
3	3
4	13/40
	
1	36π
2	45
3	33
4	16
	
1	180°
2	20
3	12
4	72
	
1	20
2	30
3	18
4	19