

"Math Is Cool" Championships -- 1996-7

December 13, 1996

Individual Test, 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: $7 \times 6 - 12 \div 3$
2. In a regular pentagon what is the measure of each interior angle?
3. What is the first prime number greater than 95?
4. What is the perimeter of a rectangle with sides of 12 and 17?
5. Evaluate: $\frac{1}{7} + \frac{1}{6} - \frac{1}{4}$
6. Evaluate: $\frac{5}{6} \times \frac{1}{2} \div \frac{5}{12}$
7. Evaluate: $3.14 + 1.592 + .6536$ Express your answer as a decimal.
8. What is 12% of 15? Express your answer as a decimal.
9. Evaluate: $6.2 \div 3.2$ Express your answer as a decimal.(exact)?
10. The year 1961 was special because when you leave your paper flat on your desk and spin your paper around upside down the number reads the same. What is the next year that shares the same property?
11. What is the area of a triangle with a base of 12 and a height of 17?
12. If the difference between two numbers is 18, and their sum is 46, what is the smaller of the two numbers?
13. What is the greatest common factor of 21 and 28?
14. What is the area of a circle with diameter 12?

15. What is the next number in the sequence 1,1,2,3,5,8,___?
16. Express .34 as a fraction.
17. If Eho rides his tricycle to Seattle at 9 miles per hour. How long does it take him to go from mile marker 112 to mile marker 28. Express in terms of hours and minutes.
18. How many counting numbers are between 13 and 82 (not including 13 and 82)?
19. What is the greatest common factor of 29041 and 28013?
20. If Biff and his 6 friends all shake each others hands exactly once, how many hand shakes took place?
21. Simplify: $12(x-1)-3(7+2x)$
22. What is the probability of rolling a sum of 4 on two six sided dice?
23. How many ways can Eho choose 4 different flags out of a set of 5?
24. Eho has 23 coins, all quarters and nickels, which add up to \$4.55. How many quarters does he have?
25. If Biff has 3 pairs of trousers, 6 pairs of shoes, 4 hats and 1 shirt, how many different outfits can he wear?
26. Evaluate when $x=5$: $5x^2 -7x+2$
27. Solve for x : $9(x+4)=72$
28. The average of Eho's first five test scores is 89. What score must he receive on his next test to raise his average to 90?(All tests are of equal value)
29. In rectangular coordinates, what is the distance between the point (-2,2) and the point (4,10)?
30. What is the slope of a line that passes through the points (3,5) and (12,17)?

"Math Is Cool" Championships -- 1996

Team Test, Grade 6

December 13, 1996

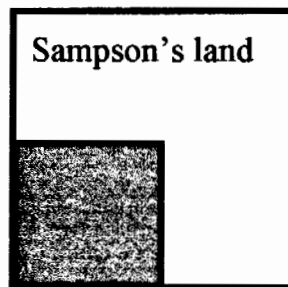
Express all answers as reduced fractions unless stated.

Leave answers in terms of π .

Do not round any answers unless stated.

1. A "perfect" number is a number whose factors have a sum of twice the number. For example 6 is a perfect number because 6 is a perfect number because $(1+2+3+6)=12=(2 \times 6)$. What is the next smallest perfect number?

2. Farmer Sampson owns a plot of land(see diagram). If he wants to divide the land into 4 regions of the same shape and size, how can he do it? Draw a picture.(Sampson's land does not include the gray area)



3. Simplify

$$\frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times \frac{5}{6} \times \dots \times \frac{99}{100}$$

4. It takes Biff 5 hours to mow a lawn by himself. It takes Eho 7 hours to mow the same lawn by himself. How long would it take them to mow the lawn if they worked together?

5. Define $a\#b = (a+b)/(a-b)$

For example $7\#3 = (7+3)/(7-3) = 10/4 = 5/2$

Evaluate $9\#(6\#4)$

6. If you have a tiled floor with sides 12 tiles by 13 tiles and you draw a diagonal line connecting two opposite corners. How many tiles will it pass through?

7. If there are 10 competitors in a given math contest, in how many ways can first, second, third, and fourth place trophies be awarded.

8. Biff, Eho and Sally together spent \$24, of which half was spent by Biff and one-third was spent by Eho. How much did Sally spend?

9. If 3 tics = 4 tacs, and 2 tacs = 3 toes, then 1 toe is how many tics?

10. Biff is now 14 years old. Eho is now 6 years older than Biff was 2 years ago. How old is Eho now?

Practice relay
Person#1
5 + 13

Practice relay
Person#2
TNYWG/2

Practice relay
Person#3
TNYWG X 8

Practice relay
Person#4
TNYWG/3

Relay #1
Person#1
1996-1111

Relay#1
Person#2
TNYWG÷5

Relay#1
Person#3
What is the sum of the digits of TNYWG

Relay#1
Person#4
What is TNYWG X 11

Relay#2

Person#1

What is the area of a rectangle with sides 4 and 7

Relay#2

Person#2

What is the least common multiple of 42 and TNYWG

Relay#2

Person#3

Reduce: $\frac{\text{TNYWG}}{196}$, then find the sum of the reduced numerator and denominator

Relay#2

Person#4

What is the difference between the sum of the factors of 15 and the sum of the factors of TNYWG

"Math Is Cool" Championships -- 1996-7

December 13, 1996
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 9 times 8?
2. What is the perimeter of a square with side length 7?
3. What is one-seventh the sum of 25 and 24?
4. What is the sum of two-thirds and one-seventh?

Person #2

1. What is the area of a circle of radius 5?
2. What do you get if you multiply the sum of 2 and 10 by 4?
3. What is the perimeter of an equilateral triangle with side length 5?
4. What is one-fifth of the sum of 13 and 7?

Person #3

1. Two angles are complementary, what is their sum?
2. What is the sum of one-fifth and one-seventh?
3. What is the result when you multiply 8 and 5, then add 6?
4. What is 4 times the sum of 5 and 2?

Person #4

1. What is the area of a square of side length 5?
2. What is the sum of the interior angles of a triangle, in degrees?
3. What is the difference between 57 and 20?
4. What is 30 percent of 20?

"Math Is Cool" Championships -- 1996-7
6th Grade
College Knowledge Bowl Questions #1

1. How many prime numbers are between 30 and 40?

Answer: 2

2. What is the remainder when 255 is divided by 4?

Answer: 3

3. How many quarters does it take to make \$23.75?

Answer: 95

4. How many ways can three people be seated in seven chairs ?

Answer: 210

5. Find the value of x for the equation $8x-3 = 28$? (Leave answer as a fraction)

Answer: $31/8$

6. How many feet are in a field if there are five people, three cats, and two chickens in the field.

Answer: 26

7. What is the sum of the first 6 prime numbers?

Answer: 41

"Math Is Cool" Championships -- 1996-7
6th Grade
College Knowledge Bowl Questions #2

1. What is the sum of the interior angles of a right triangle?

Answer: 180°

2. How many ways can the letters in the word "ROBERT" arranged?

Answer: 360

3. Find the sum of the remainders of 235 divided by 18 and 100 divided by 12.

Answer: 5

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

Answer: 9

5. What is the first prime number bigger than 100?

Answer: 101

6. What is the units digit of $320 \times 452 \times 75$?

Answer: 0

7. If there are pigs and chickens in a field, and there is a total of 12 heads and 28 feet, how many chickens are in the field?

Answer: 10

"Math Is Cool" Championships -- 1996-7

6th Grade

College Knowledge Bowl Questions #3

1. In how many ways can the letters in the word "BILL" be arranged?

Answer: 12

2. Biff pushes Eho up a 200 foot hill. Biff pushes Eho up the hill 23 feet each day and Eho slides down the hill 13 feet each night. How many days will it take Biff to get Eho to the top of the hill?

Answer: 19

3. What is the value of x for the equation $9x + 17 = 21$? (Leave answer as a fraction)

Answer: $4/9$

4. If two angles are supplementary, their sum is?

Answer: 180°

5. The smallest one digit prime is multiplied by 38257, what is the units digit?

Answer: 4

6. Evaluate when $x = 5$: $3x^2 - 5x + 1$

Answer: 51

7. What is the sum of the numerator and the denominator after you reduce the fraction $275/455$?

Answer: 146

"Math Is Cool" Championships -- 1996

December 13, 1996

Individual Test - Score Sheet

Score:

KEY

Full Name: _____
School: _____

DO NOT WRITE IN SHADED REGIONS

Answer			
1.	38		
2.	108°		
3.	97		
4.	58		
5.	$5/84$		
6.	1		
7.	5.3856		
8.	1.8		
9.	1.9375		
10.	6009		
11.	102		
12.	14		
13.	7		
14.	36π		
15.	13		

Answer			
16.	$17/50$		
17.	9hr 20min		
18.	68		
19.	257		
20.	21		
21.	$6x - 33$		
22.	$1/12$		
23.	5		
24.	17		
25.	72		
26.	92		
27.	4		
28.	95		
29.	10		
30.	$4/3$		

"Math Is Cool" Championships -- 1996

December 13, 1996
Team - Score Sheet

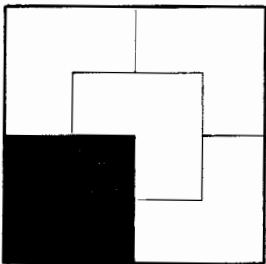
Score:

KEY

School: _____

Team #: _____

DO NOT WRITE IN SHADED REGIONS

Answer			
1.	28		
2.			
3.	1/50		
4.	2 11/12 or 2hr 55min or 35/12		
5.	7/2		
6.	24		
7.	5040		
8.	\$4.00 or 4		
9.	1/2 tic or 1/2		
10.	18 years or 18		

"Math Is Cool" Championships -- 1996

December 13, 1996

Mental Math - Score Sheet

Score:

KEY

School: _____ Team #: _____

-
- A. 1. 72
2. 28
3. 7
4. 17/21

-
- B. 1. 25π
2. 48
3. 15
4. 4

-
- C. 1. 90°
2. 12/35
3. 46
4. 28

-
- D. 1. 25
2. 180°
3. 37
4. 6

"Math Is Cool" Championships -- 1996

December 13, 1996

Practice relay

24

Answer for relay #1

165

Answer for relay #2

6