

8

Algebra I Team Question #1

MAO Regional

9 FEB 1991

Solve each equation for the unknown. Then find the value of $A - B + 2C - D$

$$4A + 7 = -21$$

$$\frac{B - 3}{4} = -6$$

$$5C + 7 = 28 + 2C$$

$$3D - \frac{D}{2} = 15$$

Algebra I

Team Question # 2

MAO Regional

9 FEB 1991

Let: $w = (6 + 6) \div 6 + (6 + 6) \div 6$

$$x = 6 \div 6 + 6 \div 6 + 6 \div 6$$

$$y = (6 + 6 + 6 - 6) \div (6 + 6)$$

$$z = 6 + 6 \div 6 + 6 - 6 \div 6$$

Find the value of $\frac{w}{x} + \frac{y}{z}$

Algebra I Team Question # 3

MAO Regional

9 FEB 1991

Let $x =$ the sum of the first 5 prime numbers

$y =$ the sum of the positive integral divisors of 12

$z =$ the sum of the first 10 positive odd integers

Find the value of $\frac{x}{z} \cdot \frac{1}{y}$

Algebra I Team Question # 4

MAO Regional

9 FEB 1991

Find all real values of x and y for which the given equation is true:

$$(|x| + 1, 2 - y) = (2, y - 4)$$

Algebra I

Team Question # 5

MAO Regional

9 FEB 1991

Find the total fare for a 3.6 mile cab ride if the rates are as follows:

\$1.35 for the first mile

\$.80 for the next 1/2 mile

\$.35 for each additional 1/8 mile or fraction thereof

Algebra I Team Question # 6 MAO Regional 9 FEB 1991

Find the LCM of x and y .

$$x - y = 1$$

$$3x = 4y$$

Algebra I Team Question # 7 MAO Regional 9 FEB 1991

Solve: $|x - 3| + 3 < 5$

How many positive integers satisfy this inequality?

Algebra I Team Question # 8 MAO Regional 9 FEB 1991

The units digit of a 3-digit number is 2 times the hundreds digit and 6 times the tens digit. The sum of the digits is 10. Find the product of the digits of the number.

Algebra I Team Question # 9 MAO Regional 9 FEB 1991

If $3(9 - x) - 1 = 2(6 - 2x)$ and $-3(6 - 4y) = 3(5y - 1) + 6$, then find the value of $2x - 5y$.

Algebra I Team Question # 10 MAO Regional 9 FEB 1991

Find the sum of the slopes of the lines determined by each:

a. $(-2, 1)$ and $(4, 6)$

b. $2x + y = 4$

c. $y = -3x + 1$

d. $6y = x$

Algebra I Team Question # 11 MAO Regional 9 FEB 1991

The side of a square is 8 cm. If the perimeter of the square is increased by 8 cm, by how many square cm is the area of the square increased?

Algebra I Team Question # 12 MAO Regional 9 FEB 1991

Find the equation of the line through the points $(-1, 2)$ and $(-3, 5)$. Give the equation in $ax + by = c$ form.

Algebra I Team Question # 13 MAO Regional 9 FEB 1991

Solve for a : $s = vt + \frac{1}{2} at^2$

Algebra I Team Question # 14 MAO Regional 9 FEB 1991

Solve, then graph on a number line :

$$2x-1 < 3(x+1) < 2(x+2)$$

Algebra I Team Question # 15 MAO Regional 9 FEB 1991

Find the sum:

$$3\left(-\frac{1}{3}\right)^0 + 3\left(-\frac{1}{3}\right)^1 + 3\left(-\frac{1}{3}\right)^2 + 3\left(-\frac{1}{3}\right)^3 + 3\left(-\frac{1}{3}\right)^4$$

Express your answer as a mixed number in simplified form.