

Wando MAO Math Meet  
Spring 2010  
Algebra Team Test with Solutions

1. Work as a team to solve the following puzzle:

- If the slope of a line perpendicular to  $-x + 2y = 2$  is 2, cross out all I's below. If not, cross out all A's.
- If the multiplicative inverse for integers is 1, cross out all G's below. If not, cross out all L's.
- If  $(x + 1)$  is a factor of  $(x^2 + 6x + 5)$ , cross out all M's below. If not, cross out all T's.
- If  $\left(\frac{3(4-2)^5 + 18 \div 6}{4^3 - 3^4 \cdot 2 - 1}\right)^0 = 0$ , cross out all W's. If not, cross out all U's.

**ALWLE GOMATITRUIMAGLUHAT**

What message remains?

2. Find xyz if

$$\frac{1}{2}x + \frac{3}{4}x = 2\frac{1}{2}$$

$$0.24y + 0.76y = 8.10$$

$$3.6z + 4.4z - 2 = 8$$

3. Let

A = the sum of the first 10 prime numbers

B = the sum of the positive integral factors of 18

C = the sum of the first 10 positive odd integers

Express  $\frac{(A-C)}{B}$  as a reduced fraction

4. Chase has decided to try to earn some extra money by selling used items on e-Bay. To get his business started, he bought 2 used kayaks at a garage sale. He paid \$100 for each kayak. One week later, he sold the red kayak for \$110 to a friend because no one wanted to buy it on e-Bay. But then he thought that perhaps he would be able to sell it on Craigslist and he bought the red kayak back from his friend at a cost of \$120. After 2 days on Craigslist, Chase was able to sell the red kayak for \$130. Finally, one week later, Chase gave up on his business and sold the green kayak for 85% of its purchase price. How much money did Chase make or lose overall?

5. Frank has \$11.07 in pennies, nickels, dimes, and quarters. If he has an equal number of each coin, then how many coins does he have altogether?

6.

$$A = -225 \div (-15)$$

$$B = 17 + 8 \div 4 - 9$$

$$C = -12 \cdot \frac{1}{4} \div \left( \frac{-1}{5} \right)$$

$$D = (17 + 8) \div (4 - 9)$$

Find  $\frac{AB}{CD}$

7. What is the four digit number in which the first digit is one fourth of the second, the third digit is the sum of the first and second, and the last is two times the second?

8.

A line passes through the points  $(5, -1)$  and  $(4, -3)$ . Find **the ordered pair** of the x-intercept.

9. The length of a rectangle is 7 less than four times its width. If the perimeter is 116 cm, find the length of the rectangle.

10.

$$5a - 6 = 34$$

$$4b - 3(1 - b) = -17$$

$$2(c + 6) = -7c - 3(5 - 2c)$$

$$\frac{2}{3}(2d - 5) - \frac{5}{3}(4 - d) = 2$$

Find  $2a - b + c - d^2$

11.

Evaluate  $\frac{(a+b)^2}{a^2+b^2}$ , if  $a = \frac{2}{7}, b = -2$

12.

Name the sum of the 5 integers described below:

There are three consecutive integers such that twice the smallest is 51 more than the largest.

There are two consecutive odd integers such that 4 times the larger is 85 more than 5 times the smaller.

## Solutions

1. WE GOT IT RIGHT

2.  $\frac{81}{4}$  or 20.25

3.  $\frac{29}{39}$

4. \$5 (he made)

5. 108 coins

6. -2

7. 1458

8.  $\left(\frac{11}{2}, 0\right)$

9. 45 cm (units not necessary)

10. -7

11.  $\frac{18}{25}$

12. 10