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ALGEBRA WORD PROBLEMS

2012A

6. The product of two positive numbers is 9. The reciprocal of one of these numbers is 4 times the reciprocal of the other number. What is the sum of the two numbers?

(A) $\frac{10}{3}$ (B) $\frac{20}{3}$ (C) 7 (D) $\frac{15}{2}$ (E) 8

2012B

6. In order to estimate the value of $x - y$ where x and y are real numbers with $x > y > 0$, Xiaoli rounded x up by a small amount, rounded y down by the same amount, and then subtracted her rounded values. Which of the following statements is necessarily correct?

(A) Her estimate is larger than $x - y$.

(B) Her estimate is smaller than $x - y$.

(C) Her estimate equals $x - y$.

(D) Her estimate equals $y - x$.

(E) Her estimate is 0.

2012B

7. For a science project, Sammy observed a chipmunk and a squirrel stashing acorns in holes. The chipmunk hid 3 acorns in each of the holes it dug. The squirrel hid 4 acorns in each of the holes it dug. They each hid the same number of acorns, although the squirrel needed 4 fewer holes. How many acorns did the chipmunk hide?

(A) 30 (B) 36 (C) 42 (D) 48 (E) 54

2016A

6. Ximena lists the whole numbers 1 through 30 once. Emilio copies Ximena's numbers, replacing each occurrence of the digit 2 by the digit 1. Ximena adds her numbers and Emilio adds his numbers. How much larger is Ximena's sum than Emilio's?

(A) 13 **(B)** 26 **(C)** 102 **(D)** 103 **(E)** 110

2001

7. When the decimal point of a certain positive decimal number is moved four places to the right, the new number is four times the reciprocal of the original number. What is the original number?

(A) 0.0002 **(B)** 0.002 **(C)** 0.02 **(D)** 0.2 **(E)** 2

2004A

8. A game is played with tokens according to the following rule. In each round, the player with the most tokens gives one token to each of the other players and also places one token into a discard pile. The game ends when some player runs out of tokens. Players A, B, and C start with 15, 14, and 13 tokens, respectively. How many rounds will there be in the game?

(A) 36 **(B)** 37 **(C)** 38 **(D)** 39 **(E)** 40

2012A

8. The sums of three whole numbers taken in pairs are 12, 17, and 19. What is the middle number?

(A) 4 **(B)** 5 **(C)** 6 **(D)** 7 **(E)** 8

2010A

9. A *palindrome*, such as 83438, is a number that remains the same when its digits are reversed. The numbers x and $x + 32$ are three-digit and four-digit palindromes, respectively. What is the sum of the digits of x?

(A) 20 **(B)** 21 **(C)** 22 **(D)** 23 **(E)** 24

2013B

9. Three positive integers are each greater than 1, have a product of 27,000, and are pairwise relatively prime. What is the sum of these integers?

(A) 100 **(B)** 137 **(C)** 156 **(D)** 160 **(E)** 165

2010B

9. Lucky Larry's teacher asked him to substitute numbers for a, b, c, d, and e in the expression $a-(b-(c-(d+e)))$ and evaluate the result. Larry ignored the parentheses but added and subtracted correctly and obtained the correct result by coincidence. The numbers Larry substituted for a, b, c, and d were $1, 2, 3$, and 4, respectively. What number did Larry substitute for e?

(A) -5 **(B)** -3 **(C)** 0 **(D)** 3 **(E)** 5

2011A

10. A majority of the 30 students in Ms. Demeanor's class bought pencils at the school bookstore. Each of these students bought the same number of pencils, and this number was greater than 1. The cost of a pencil in cents was greater than the number of pencils each student bought, and the total cost of all the pencils was \$17.71. What was the cost of a pencil in cents?

(A) 7 **(B)** 11 **(C)** 17 **(D)** 23 **(E)** 77

2015B

10. What are the sign and units digit of the product of all the odd negative integers strictly greater than -2015?

(A) It is a negative number ending with a 1.

(B) It is a positive number ending with a 1.

(C) It is a negative number ending with a 5.

(D) It is a positive number ending with a 5.

(E) It is a negative number ending with a 0.