

FALL 2012 McNABB GDCTM CONTEST
PRE-ALGEBRA

NO Calculators Allowed

1. Which of these quantities is the greatest?

- (A) $\frac{3}{7}$ (B) $\frac{1}{2}$ (C) $\frac{7}{15}$ (D) $\frac{11}{19}$ (E) $\frac{13}{27}$

2. How many millions are in a trillion?

- (A) 3 (B) 10^2 (C) 10^3 (D) 10^5 (E) 10^6

3. How many numbers are in the list

$$21, 13, 5, -3, -11, \dots, -203, -211$$

where each number is 8 less than the one before it?

- (A) 20 (B) 23 (C) 28 (D) 29 (E) 30

4. If each of 32 boys and 32 girls receives 32 gifts then how many gifts in total were received?

- (A) 2^{10} (B) 2^{11} (C) 2^{12} (D) 2^{13} (E) 2^{15}

5. A gas tank went from $\frac{3}{8}$ ths full to $\frac{2}{3}$ rds full by adding seven gallons of gas. How many more gallons must now be added to completely fill the tank?

- (A) 6 (B) 7 (C) 8 (D) 11 (E) 24

6. What is the largest possible value of the greatest common factor of six different two-digit whole numbers?

- (A) 10 (B) 12 (C) 15 (D) 16 (E) 19

7. If $a = 5$ and $b = 3$, then the value of $4 - b(3 - a)$ is

- (A) -2 (B) 3 (C) 5 (D) 10 (E) 21

8. On Black Friday a store reduced its price on a camera by 30%. Two weeks later, the item still not having sold, the store reduced the Black Friday sale price by 50%. The final price on the camera is what per cent of its original price?

- (A) 20 (B) 35 (C) 50 (D) 65 (E) 80

9. The smallest prime greater than 120 is equal to

- (A) 127 (B) 129 (C) 131 (D) 133 (E) 137

10. In the sequence of numbers

$$a, b, 1, -1, 0, -1, -1, -2, \dots$$

each number after the second is the sum of the previous two numbers. Find the value of a .

- (A) -1 (B) 3 (C) 0 (D) 4 (E) 1

11. If $\frac{a}{b} = \frac{17}{4}$, $\frac{b}{c} = \frac{3}{7}$, $\frac{c}{d} = \frac{8}{17}$, and $\frac{d}{e} = \frac{7}{6}$, what is the value of $\frac{a}{e}$?

- (A) $1/34$ (B) $1/2$ (C) 1 (D) 2 (E) 14

12. In how many ways can the letters in CHEETAH be arranged so that no two consecutive letters are the same?

- (A) 660 (B) 540 (C) 1260 (D) 720 (E) 330

13. In Hezy's piggy bank, the value of all the pennies equals the value of all the nickels; the value of all the dimes is twice the value of all the nickels. If Hezy has only pennies, nickels, and dimes, and he has 210 coins total in his piggy bank, how much are all those coins worth?

- (A) \$5.45 (B) \$6.00 (C) \$7.60 (D) \$8.00 (E) \$10.50

14. What is the smallest positive integer n that satisfies $17n - 31m = 1$ if m must also be a positive integer?

- (A) 44 (B) 17 (C) 15 (D) 13 (E) 11

15. Sixty points are equally spaced entirely around a circle. How many regular polygons can be formed using these and only these points as vertices?
- (A) 60 (B) 68 (C) 78 (D) 88 (E) 89
16. The integer 8027 is the product of exactly two primes. What is the sum of the digits of the larger of these two primes?
- (A) 10 (B) 13 (C) 16 (D) 17 (E) 18
17. Cheryl and Matthew take turns removing chips from a pile of 101 chips. On each turn they must remove 1, 2, 3, 4, or 5 chips (which of these number of chips is up to them and can change or not from turn to turn). The winner is the person who removes the last chip or chips. If Cheryl goes first, how many chips should she remove to guarantee that she will win with best play, no matter how Matthew moves?
- (A) 1 (B) 2 (C) 3 (D) 4 (E) 5
18. A frog is on a number line and can jump either one unit to the left or one unit to the right. If it starts at the origin and jumps randomly 6 times, what is the probability it is back at the origin at the end of those 6 jumps?
- (A) $\frac{1}{64}$ (B) $\frac{1}{4}$ (C) $\frac{1}{2}$ (D) $\frac{17}{32}$ (E) $\frac{5}{16}$