Dick Schaff Math Superbowl XLVI
Level 2 Huddle: 8th Grade Math - 2019

Directions: Select the most correct answer for each question and mark it on the Scantron® sheet. Note that N.O.T. means "None of These." No calculators of any sort are allowed.

1. If $f(x)=1-x$ then evaluate $f\left(f\left(f(2)+0\right)+1\right)+9$.

(A) 5 **(B) 6** **(C) 7** **(D) 8** **(E)** N.O.T.

2. Evaluate $\left(\left(-2^{0}\right)^{1}\right)^{9}$.

(A) 0 (B) -1 (C) 1 (D) 9 (E) N.O.T.

3. What is the product of two counting numbers whose Least Common Multiple is 114 and whose Greatest Common Factor is 19?

(A) 2019 (B) 2166 (C) 133 (D) 2286 (E) N.O.T.

4. If $f(x)=20x-19$, find a number, a, where $f(a)=a$.

(A) 1 (B) 2 (C) 19 (D) 20 (E) N.O.T.

5. How many positive factors does the number $2^2\cdot 3^3\cdot 5^5$ have?

(A) 3 (B) 6 (C) 10 (D) 72 (E) N.O.T.

6. If $-3x+2y=20$ and $4x-y=19$, then evaluate $x+y$.

(A) 380 (B) 20 (C) 19 (D) 38 (E) N.O.T.

7. If the equation of the line containing the points $(1,3)$ and $(-2,2)$ is written in slope-intercept form, (ie $y = mx + b$), then evaluate $m + b$.

(A) 3 (B) 4 (C) 5 (D) 6 (E) N.O.T.

8. What is the sum of the last three digits of 5^{2019}?

(A) 3 (B) 5 (C) 8 (D) 9 (E) N.O.T.

9. While both 500! and 499! end in a lot of zeros, 500! ends in more. How many more?

(A) 0 (B) 1 (C) 2 (D) 3 (E) N.O.T.

10. Twenty numbered cards average nineteen. After one card was removed, the remaining nineteen cards averaged twenty. What number was on the removed card?

(A) 0 (B) 1 (C) 19 (D) 20 (E) N.O.T.

11. What number represents 20.19×10^{-3} in standard form.

(A) 2.19×10^{-2} (B) 2.19×10^{-4} (C) 20190 (D) N.O.T.

12. If the measure of an acute angle is x degrees, what is the measure of the supplement of its complement, in degrees?

(A) 270+x (B) 180+x (C) 90+x (D) x (E) N.O.T.

13. The graph of $|x|+|y|=4$ is a basic geometric shape. Find its area in square units.

(A) 4 (B) 16 (C) 32 (D) 64 (E) N.O.T.

14. Ana has \$20 more than Nathan and \$19 more than Lee. If Lee has \$667, how much money do they have altogether?

(A) \$2017 (B) \$2018 (C) \$2020 (D) \$2021 (E) N.O.T.

15. The sum of the counting numbers from 1 to 1,000 is 500,500. What is the sum of the counting numbers from 1,001 to 2,000?

(A) 1,500,500 (B) N.O.T.

16. If $1^2+2^2+3^2+...+24^2+25^2=5525$, then evaluate

$2^2+4^2+6^2+...+48^2+50^2$

(A) 5,525 (B) 11,050 (C) 16,575 (D) 22,100 (E) N.O.T.

17. When certain numbers are placed in the empty squares, the sum of the numbers in each row, column, and diagonal is the same. What number should be in the center rectangle?

14		
		13
10		8

(A) 8 (B) 9 (C) 10 (D) 11 (E) N.O.T.

18. Ahren needs one hour to do a certain job. Joe needs only 30 minutes to do the same job. How many minutes will it take them to do the job if they work together at their given rates?

(A) 90 (B) 45 (C) 20 (D) 10 (E) N.O.T.

19. If x and y are whole numbers and $\frac{x}{20}+\frac{y}{19}=\frac{173}{380}$, then evaluate $x+y$.

(A) 8 (B) 9 (C) 10 (D) 11 (E) N.O.T.

20. How many nines are there in the numbers from 1 to 100?

(A) 20 (B) 21 (C) 22 (D) 23 (E) N.O.T.

21. A diagonal of a square connects the points $(-3,-1)$ and $(2,4)$. Find the perimeter of the square in units.

(A) $\sqrt{50}$ (B) $5\sqrt{2}$ (C) 25 (D) 20 (E) N.O.T.

22. What is the sum of the solutions to the equation $6x^3+4x^2=2x$?

(A) $\frac{-1}{3}$ (B) $\frac{-2}{3}$ (C) -1 (D) $-1\frac{1}{3}$ (E) N.O.T.

23. What is the product of the solutions to the equation $3|x|+10=25$?

(A) -5 (B) 0 (C) 5 (D) 25 (E) N.O.T.

24. One positive number is 25% of another number. The larger number is 12 more than the smaller number. What is the sum of the two numbers?

(A) 16 (B) 18 (C) 20 (D) 22 (E) N.O.T.

25. A buyer pays \$30 for a jacket that is then sold for \$60. This is a markup of what percent?

(A) 30 (B) 50 (C) 100 (D) 200 (E) N.O.T.

26. Evaluate the expression $(x-a)(x-b)(x-c)(x-d)...(x-y)(x-z)$.

(A) $x^{26}-(abc\cdot....\cdot yz)$ (B) $x^{26}+(abc\cdot....\cdot yz)$ (C) 0 (D) N.O.T.

27. The number 310 in base 5 is equal to the number 1100 in base x. What is x?

(A) 3 (B) 4 (C) 6 (D) 7 (E) N.O.T.

28. Art says Berry is lying. Berry says Christine is lying. Christine says that Art and Berry are lying. Who is telling the truth?

(A) Art (B) Berry (C) Christine (D) N.O.T.

29. What is the last digit of the product of two whole numbers most likely to be?

(A) 0 (B) 4 (C) 6 (D) 8 (E) N.O.T.

30. The sum of two numbers is 12 and their product is 3. What is the sum of the reciprocals of the two numbers?

(A) 1 (B) 2 (C) 3 (D) 4 (E) N.O.T.