

Dick Schaff Math Superbowl XLIV  
Level 2: 8<sup>th</sup> Grade Huddle

- Directions: (1) Select the most correct answer for each question and bubble it in on your Scantron form.  
(2) No calculating devices of any sort are allowed.  
(3) N.O.T. stands for "None of these."

- Which of the following is an irrational number?  
a)  $-2$                       b)  $0.2$                       c)  $\frac{1}{2}$                       d)  $\sqrt{2}$                       e) N.O.T.
- Consider the system of equations  $\begin{cases} y = 2x + p \\ y = 2x + q \end{cases}$ , where  $p$  and  $q$  are different numbers.  
What must be true about the solution(s) to this system?  
a) The solution is exactly one ordered pair.  
b) The solution is exactly two ordered pairs.  
c) The solution is an infinite number of ordered pairs; the system is dependent.  
d) There is no solution; the system is inconsistent  
e) N.O.T.
- What is the complement of a  $23^\circ$  angle?  
a)  $23^\circ$                       b)  $77^\circ$                       c)  $157^\circ$                       d)  $167^\circ$                       e) N.O.T.
- A backyard swimming pool holds 34,000 liters of water. What is that in scientific notation?  
a)  $3.4 \times 10^4$                       b)  $3.4 \times 10^5$                       c)  $34 \times 10^4$                       d)  $34 \times 10^5$                       e) N.O.T.
- A sphere has a volume of  $36\pi \text{ cm}^3$ . What is the diameter of this sphere?  
a) 3 cm                      b) 4 cm                      c) 5 cm                      d) 6 cm                      e) N.O.T.
- A rectangular park is twice as long as it is wide, with an area of 5,000 square yards. Chris walks their dog around the perimeter of the park. How far did Chris walk?  
a) 450 feet                      b) 900 feet                      c) 1,800 feet                      d) 15,000 feet                      e) N.O.T.
- Which of the following functions is not linear?  
a)  $f(x) = 2x + 3$                       b)  $f(x) = 2x + \sqrt{3}$                       c)  $f(x) = 2x + \pi$                       d)  $f(x) = 2x^2 + 3$                       e) N.O.T.
- Which of the following is equivalent to  $\frac{8^5}{8^3}$ ?  
a)  $1^2$                       b)  $2^2$                       c)  $2^5$                       d)  $2^6$                       e) N.O.T.
- What is the solution set to the equation  $3(2x + 6) = 2(3x + 9)$ ?  
a)  $\{-3\}$                       b)  $\{0\}$                       c)  $\{\}$                       d)  $\mathbb{R}$                       e) N.O.T.

10. How many zeroes are at the end of  $1 \times 2 \times 3 \times \dots \times 50$  ?
- a) 5                      b) 10                      c) 12                      d) 50                      e) N.O.T.
11. What is the slope of the line  $0 = \frac{2}{3}x - 4$ ?
- a) 0                      b)  $\frac{2}{3}$                       c)  $\frac{3}{2}$                       d) 4                      e) N.O.T.
12. Simplify  $(-1)^1 + (-1)^2 + (-1)^3 + \dots + (-1)^{2017}$ .
- a) -1                      b) 0                      c) 1                      d) 2017                      e) N.O.T.
13. Solve for x:  $16^{x+1} = 8^{x+2}$ .
- a) -2                      b) -1                      c) 0                      d) 1                      e) N.O.T.
14. What is the product of two numbers whose GCF is 20 and whose LCM is 200?
- a) 10                      b) 2000                      c) 4000                      d) 8000                      e) N.O.T.
15. What is the slope of the line passing through  $(2, -3)$  and  $(-2, 3)$ ?
- a)  $-\frac{3}{2}$                       b)  $-\frac{2}{3}$                       c)  $\frac{2}{3}$                       d)  $\frac{3}{2}$                       e) N.O.T.
16. For the past few years the price of a ticket to watch a local baseball team has been going up at a fixed rate. The price was \$17.00 in 2013. Now, in 2017, the price is \$22.00. If the rate of increase stays the same, what will the price be in 2018?
- a) \$23.00                      b) \$23.20                      c) \$23.25                      d) \$27.00                      e) N.O.T.
17. For a particular function, when the input is 20, the output is 17. Which of the following MUST be true?
- a) An input of 20 has exactly one output.                      b) An input of 20 has infinitely many outputs.  
c) An output of 17 has exactly one input                      d) An output of 17 has infinitely many inputs.  
e) N.O.T.
18. A line parallel to the y-axis crosses the x-axis at 3.14. What is the equation of this line?
- a)  $y = 3.14$                       b)  $y = 3.14x$                       c)  $y = x + 3.14$                       d)  $x = 3.14$                       e) N.O.T.
19. The average of 20 numbers is 17. The average of 17 of those numbers is 20. What is the average of the remaining three numbers?
- a) 0                      b) 17                      c) 20                      d) 340                      e) N.O.T.
20. Simplify  $((-2^0)^3)^5$ .
- a) -1                      b) 0                      c) 1                      d)  $2^{15}$                       e) N.O.T.

21. Let  $f(x) = x^2 + 1$ . Find  $f(f(f(3)))$ .
- a) 10,102                      b) 10,202                      c) 10,302                      d) 10,402                      e) N.O.T.
22. What is the mean of  $6^2$  and  $6^3$ ?
- a)  $3^{2.5}$                       b)  $6^{2.5}$                       c)  $6^5$                       d) 252                      e) N.O.T.
23. Which of these numbers is the largest?
- a)  $3\sqrt{5}$                       b)  $5\sqrt{3}$                       c)  $2\sqrt{7}$                       d)  $7\sqrt{2}$                       e) N.O.T.
24. A circular fountain has a radius of twelve feet. Bobby runs around the fountain twelve times. How far did Bobby run?
- a)  $24\pi$  feet                      b)  $144\pi$  feet                      c)  $288\pi$  feet                      d)  $576\pi$  feet                      e) N.O.T.
25. Two adults take five children to a small zoo. They pay \$27.50 for tickets. Adult tickets cost \$5 each. How much does a child's ticket cost?
- a) \$3.00                      b) \$3.50                      c) \$4.50                      d) \$5.50                      e) N.O.T.
26. Alex earned a 92% on a 50-question test. How many questions did Alex get wrong?
- a) 92                      b) 46                      c) 8                      d) 4                      e) N.O.T.
27. Simplify  $(2.5 \times 10^{-3})(4.8 \times 10^5)$ . Write your answer in scientific notation.
- a)  $12 \times 10^2$                       b)  $1.2 \times 10^1$                       c)  $1.2 \times 10^2$                       d)  $1.2 \times 10^3$                       e) N.O.T.
28. Which of the following fractions represents  $0.\overline{81}$ ?
- a)  $\frac{81}{100}$                       b)  $\frac{8}{9}$                       c)  $\frac{9}{11}$                       d)  $\frac{9}{8}$                       e) N.O.T.
29. What is the last digit of  $3^{2017}$ ?
- a) 1                      b) 3                      c) 7                      d) 9                      e) N.O.T.
30. What is the solution to the system of equations  $\begin{cases} x + 4y = 4 \\ 3x - 2y = 5 \end{cases}$ ?
- a) (4, 5)                      b) (0, 4)                      c)  $(\frac{1}{2}, 2)$                       d)  $(2, \frac{1}{2})$                       e) N.O.T.