

Dick Schaff Math Superbowl XLVI
Level 1: 7th Grade Blitz - 2019

- Directions:**
1. Select the most correct answer for each question.
 2. Use $\pi = 3.14$ if needed.
 3. NO CALCULATORS OR ELECTRONIC DEVICES MAY BE USED.
 4. Note that N.O.T. means "none of these"

1. Half of 4^{10} is:
a. 4^9 b. 2^{19} c. 4^5 d. 2^{10} e. N.O.T.
2. Kevin is planting vegetables in his garden. If the garden is the shape of a circle with a diameter of 10 feet, what is the area of the garden?
a. 15.7 ft^2 b. 31.4 ft^2 c. 78.5 ft^2 d. 314 ft^2 e. N.O.T.
3. If x , y , and z are odd integers, which of the following expressions must be an even integer?
a. $x + y + z$ b. $x(y + z)$ c. $xy + yz + xz$ d. $x(y + z + 1)$ e. N.O.T.
4. Simplify the following expression: $10^2 - (3^3 - 4^2)^2$
a. 75 b. -21 c. 16 d. -28 e. N.O.T.
5. What is the least common multiple of 15, 9, and 6?
a. 60 b. 180 c. 45 d. 30 e. N.O.T.
6. If 15% of x is 45, what is 20% of x ?
a. 55 b. 60 c. 66 d. 75 e. N.O.T.
7. A school has 500 students, 30 English teachers, and 20 math teachers. What is the ratio between the number of math teachers and the number of students of the school?
a. 25 b. $\frac{3}{50}$ c. $\frac{2}{3}$ d. $\frac{1}{25}$ e. N.O.T.
8. Let $x = 3$ and $y = 4$. Calculate the expression $(x - 1)^2 + 5(x - y)$
a. -1 b. 0 c. 1 d. 2 e. N.O.T.
9. A right circular cylindrical container with a radius of 2 feet has a height of 3 feet. Which of the following is the closest to the volume of the container?
a. 39.65 ft^3 b. 39.65 ft^2 c. 56.52 ft^3 d. 37.68 ft^3 e. N.O.T.

20. Appliances at a store are on sale for 70% of the original price. Bob has a coupon for an 18% discount on the sale price. If the original price of the microwave oven is \$500, how much will Bob pay for the oven before tax?

- a. \$440 b. \$287 c. \$240 d. \$123 e. N.O.T.

21. The numerical expression $\frac{5}{6} - \frac{2}{3} \left(6 - \frac{1}{2} \right) + \frac{3}{4}$ simplifies to

- a. $-\frac{25}{12}$ b. $-\frac{17}{12}$ c. $\frac{20}{12}$ d. $\frac{43}{12}$ e. N.O.T.

22. Mark is three times as old as his son Brian. In ten years, Mark will be 43 years old. In how many years will Mark be twice as old as Brian?

- a. 22 b. 11 c. 20 d. 17 e. N.O.T.

23. A jar costs \$6.00 and sales tax is 7%. How much would you have to pay for eight jars?

- a. \$48 b. \$6.42 c. \$59.92 d. \$3.36 e. N.O.T.

24. What is the value of $7\frac{1}{12} - 2\frac{3}{4}$?

- a. $5\frac{5}{6}$ b. $4\frac{1}{3}$ c. $5\frac{1}{3}$ d. $4\frac{5}{6}$ e. N.O.T.

25. Which of the following CANNOT be the sides of a right triangle?

- a. 6, 8, 10 b. 10, 24, 26 c. 3, 4, 5 d. 5, 12, 13 e. N.O.T.

26. Simplify the following expression: $4 \cdot 10 - 8(1 + 3)$

- a. 32 b. 8 c. 128 d. 56 e. N.O.T.

27. The sum of the reciprocals of all of the positive factors of 18 is

- a. $\frac{7}{6}$ b. $\frac{14}{9}$ c. $\frac{5}{3}$ d. $\frac{13}{6}$ e. N.O.T.

28. How many yards per minute is 300 feet per second?

- a. 15 b. 6,000 c. 600 d. 900 e. N.O.T.

29. As a mixed number, 280% is equal to

- a. 2.4 b. 4.4 c. $2\frac{4}{5}$ d. $4\frac{4}{5}$ e. N.O.T.

30. The ratio (by volume) of sand to clay in a certain sample of soil is 4 to 6. If the total volume of the soil is 180 cubic feet, what is the volume of the sand in the soil (in cubic feet)?
- a. 18 b. 20 c. 72 d. 80 e. N.O.T.
31. Simplify the following expression: $3(x + 4) - 2(x - 2)$
- a. $x + 16$ b. $x + 8$ c. $5x + 8$ d. $2x + 8$ e. N.O.T.
32. A circular mirror has a diameter of 16 inches. What is the area, in square inches, of the mirror?
- a. 50.24 b. 200.96 c. 25.12 d. 904.32 e. N.O.T.
33. Isabella purchases some scarves that cost \$5 each and three purses that cost \$10 dollars each. The cost of her total purchase is 45 dollars. What equation can be used to find n, the number of scarves that Isabella buys?
- a. $5 + 10n = 45$ b. $(5 + 10)n = 45$ c. $5n + 30 = 45$ d. $3n + 15 = 45$ e. N.O.T.
34. Josh was given a box of baseball cards. He put half of the cards in his room and the other half to Theodore's house. While there, Josh gave one fourth of the cards he had with him to Theodore. He then gave two of his remaining cards to his friend Scott. At that point, Josh had 22 cards with him while at Theodore's house. How many cards did Josh originally receive?
- a. 12 b. 64 c. 10 d. 60 e. N.O.T.
35. What is the decimal equivalent of $\frac{19}{8}$
- a. $2\frac{3}{8}$ b. 2.38 c. 2.375 d. 19.8 e. N.O.T.
36. Divide 4855 by 45
- a. 17.8 b. $17.\bar{8}$ c. 107.8 d. 107 e. N.O.T.
37. The greatest common factor of 2013 and ___?___ is 11.
- a. 231 b. 365 c. 418 d. 542 e. N.O.T.
38. Three times a certain number is 36. One-third of that certain number is
- a. 4 b. 12 c. 36 d. 108 e. N.O.T.
39. $\sqrt{49} - \sqrt{16} =$
- a. $\sqrt{33}$ b. $\sqrt{25}$ c. $\sqrt{9}$ d. $\sqrt{3}$ e. N.O.T.

40. Tiffany reads a prime number of books each month. If each prime is different, which of the following cannot be the total number of books she reads in 3 months?
- a. 10 b. 12 c. 13 d. 15 e. N.O.T.
41. The number halfway between 45,674,567 and 67,896,789 is
- a. 55,443,322 b. 55,556,566 c. 56,565,656 d. 56,785,678 e. N.O.T.
42. The number of nickels in \$3.00 plus the number of dimes in \$6.00 is half the number of quarters in
- a. \$12.00 b. \$15.00 c. \$30.00 d. \$60.00 e. N.O.T.
43. Apples cost \$0.65 each and oranges cost \$0.85 each. If I spend \$8.80 on apples and oranges, how many pieces of fruit did I buy all together?
- a. 11 b. 12 c. 13 d. 14 e. N.O.T.
44. Felicity loves pizza so much that 120 of her last 250 meals were pizzas. What percent of those last 250 meals were not pizzas?
- a. 40% b. 44% c. 48% d. 52% e. N.O.T.
45. The sum of the two smallest odd divisors of 120 is
- a. 4 b. 5 c. 8 d. 15 e. N.O.T.
46. If a case of water bottles contains 12 dozen water bottles, how many water bottles are in two crates of 12 cases each?
- a. 48 b. 144 c. 288 d. 3456 e. N.O.T.
47. 288 minutes = ? % of 1 day
- a. 10 b. 15 c. 20 d. 40 e. N.O.T.
48. The sum of 6 consecutive integers could be
- a. 105 b. 88 c. 92 d. 98 e. N.O.T.
49. Al the chimney sweep puts his hat down on a square the same size as the opening of a chimney. The circular brim touches each side of the square at a single point. The perimeter of the square is 4 feet. What is the radius, in inches, of the circular brim of his hat?
- a. 0.5 b. 1 c. 2 d. 4 e. N.O.T.
50. $\frac{1}{3} \cdot \frac{2}{4} \cdot \frac{3}{5} \cdot \frac{4}{6} \cdot \frac{5}{7} \cdot \frac{6}{8} \cdot \frac{7}{9} \cdot \frac{8}{10} = \frac{1}{10} \cdot \underline{\quad? \quad}$
- a. $\frac{3}{19}$ b. $\frac{2}{9}$ c. $\frac{1}{9}$ d. $\frac{1}{45}$ e. N.O.T.