

NOTE: "e. None of these answers" is a choice for all questions.

1. Find the quotient of the additive inverse of the multiplicative inverse of 4 and the multiplicative inverse of the additive inverse of $\frac{1}{4}$.
a. 16 b. 1 c. $\frac{1}{16}$ d. -1
2. In a survey of 7th grade girls, the favorite male singer was Nick Jonas . What statistical measure does this represent?
a. mean b. median c. mode d. range
3. Misaki drew a square with a diagonal of 10 inches. What is the area of the square?
a. 100 sq.in. b. 50 sq. in. c. 141.4 sq. in. d. 200 sq. in.
4. Hudson drew an octagon with side length of 7.2 cm. He found the measures of the central angles, the interior angles, and the exterior angles (one per side). What is the sum of all the angles Hudson measured?
a. 720° b. 900° c. 1080° d. 1800°
5. Which equation has a line with a slope of $\frac{2}{3}$ and an x-intercept of 2.
a. $y = \frac{2}{3}x + 2$ b. $3x - 2y = 4$ c. $2x - 3y = 4$ d. $y = \frac{2}{3}x + \frac{2}{3}$
6. Simplify: $\frac{(0.5)^{-0.5}(1.5)^{1/2}(27)^{0.5}}{2^{-1}}$
a. 18 b. 12 c. 14 d. 9
7. Mary Virginia's bicycle has 24-inch diameter wheels. If she rides for 5 miles, approximately how many times will each wheel rotate?
a. 5280 b. 10560 c. 4200 d. 6320
8. Which of the given problems has the largest remainder?
a. $22 \div 8$ b. $32 \div 6$ c. $248 \div 8$ d. $1333 \div 109$
9. Amaar wrote all 120 arrangements of the letters E, H, I, T and W in alphabetical order on the board. When Ivan entered the room, he noted that his favorite color, WHITE, was on the list. In which position was the word WHITE?
a. 84th b. 100th c. 106th d. 120th
10. What is the degree measure of the acute angle formed by the hands of a 12-hour clock when it is 1:15?
a. 75 degrees b. $52 \frac{1}{2}$ degrees c. $67 \frac{1}{2}$ degrees d. 65 degrees

11. David and Andrew together have \$1.35. David has only nickels while Andrew has only dimes. David has six more coins than Andrew. How many coins do they have together?

- a. 17 b. 18 c. 19 d. 20

12. Yousef noted on his 2015 calendar that each date in February is on the same day of the week as the equivalent date in March. In which of the given years will this not happen?

- a. 2016 b. 2017 c. 2018 d. 2019

13. Find the product $\left(1 - \frac{1}{2}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right) \dots \left(1 - \frac{1}{10}\right)$

- a. $\frac{1}{10}$ b. $\frac{1}{9}$ c. $\frac{10}{11}$ d. $\frac{1}{8064}$

14. Marcus still has some Easter candy: 12 pastel Kisses, 3 small bunnies, 1 large bunny (minus the ears), and 7 peppermints. If he closed his eyes and randomly selected a piece of candy, what is the probability that Marcus will choose the ear-less bunny?

- a. 1/16 b. 1/23 c. 1/4 d. 1/10

15. Give the common fraction equivalent to: $\frac{\frac{6}{10} \times \frac{24}{18} \times \frac{3}{36} \times \frac{48}{24} \times 3\frac{3}{4}}{4\frac{1}{3} - 2\frac{3}{5}}$

- a. $\frac{5}{6}$ b. $\frac{3}{10}$ c. $\frac{2}{15}$ d. $\frac{4}{9}$

16. Janna bought a new tablet at 65% discount. By what percent must the price she paid be raised to match the original price of the tablet?

- a. $165\frac{4}{7}\%$ b. $235\frac{6}{7}\%$ c. $335\frac{2}{7}\%$ d. $285\frac{5}{7}\%$

17. Sophie surveyed the 384 7th graders for their favorite math topics. 144 chose counting problems, 203 number bases, and 258 geometry. If 83 chose both counting problems and number bases, 92 chose both counting problems and geometry, 175 chose number bases and geometry, and 72 chose all three, how many of the surveyed students chose "None of these"?

- a. 57 b. 37 c. 78 d. none

18. $\begin{vmatrix} a & b \\ c & d \end{vmatrix} = ad - bc$. If $\begin{vmatrix} 5 & x \\ -2 & 6 \end{vmatrix} = 8$, what is the value of x?

- a. 11 b. 4 c. -11 d. -0.8

19. Jessica placed a dot at (-6,21). Natalie placed a dot at (14,6). MaryAlyce placed a dot at the point that is two-fifths of the way from Jessica's dot to Natalie's dot. What are the coordinates of MaryAlyce's dot?

- a. (1, 10) b. (2, 15) c. (-2, 10) d. (8, 6)

20. Consider the sum of ten numbers: $4 + 44 + 444 + \dots + 4444444444$. What number is formed by the last three digits of the sum?

- a. 480 b. 552 c. 600 d. 044

21. Find the sum: $1 + \frac{2}{1 + \frac{2}{1 + \frac{2}{1 + \frac{2}{1 + 2}}}}$

- a. $\frac{22}{21}$ b. $2\frac{1}{21}$ c. $\frac{21}{22}$ d. $1\frac{21}{22}$

22. Jack has a small fish tank with a base that measures 9 inches by 4.5 inches. He recently added a decorative rock and noticed that the height of the water in the tank went from 7 inches to 7.5 inches. What is the volume of the rock?

- a. 40.5 in^3 b. 30.3 in^3 c. 20.25 in^3 d. 42.25 in^3

23. A fair die is tossed. What are the odds that a multiple of 3 will be thrown?

- a. 1:3 b. 1:2 c. 2:5 d. 1:6

24. If $A = \begin{bmatrix} 2 & 4 \\ 3 & 6 \\ 4 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 5 \\ 2 & 7 \\ 3 & -6 \end{bmatrix}$, find $A - B$.

- a. $\begin{bmatrix} 1 & 9 \\ 5 & 13 \\ 7 & 2 \end{bmatrix}$ b. $\begin{bmatrix} -2 & 20 \\ 6 & 42 \\ 12 & -48 \end{bmatrix}$ c. $\begin{bmatrix} 6 & 4 \\ 9 & 9 \\ 12 & -3 \end{bmatrix}$ d. $\begin{bmatrix} 3 & -1 \\ 1 & -1 \\ 1 & 14 \end{bmatrix}$

25. Two pairs of positive numbers a and b exist such that $a^2 - b^2 = 104$. Find the sum of the four numbers.

- a. 78 b. 84 c. 137 d. 346

TIE-BREAKERS.

1. Find the sum of the digits that form the numbers 1 to 50.

2. Simplify: $(2015)(2015) - (2012)(2018)$

3. What is the greatest number divisible by 8, all of whose digits are distinct?