

NOTA = "None of the Above"

- The line containing the ordered pair $(-2, -3)$ and $(2, A)$ has a slope of $\frac{2}{3}$, find A.
A. $-\frac{1}{3}$ B. $\frac{1}{3}$ C. 3 D. -3 E. NOTA
- Simplify: $\frac{4x^2y^3z^{-6}}{2x^{-2}y^6z^6}$
A. $\frac{2y^4}{x^4}$ B. $\frac{2y^4}{x^3}$ C. $\frac{2x^4}{y^3z^{12}}$ D. $\frac{2x^3}{y^4}$ E. NOTA
- A peregrine falcon sights a sparrow three miles away. If the falcon's average speed is 180 miles per hour during the attack, how long will it take for the falcon to reach the sparrow? Your answer should be in minutes.
A. 1 B. 3 C. 10 D. 29 E. NOTA
- Solve the linear system: $3x + 2y = 10$ and $4x - y = -1$
A. $\left\{\frac{9}{7}, \frac{-11}{3}\right\}$ B. \emptyset C. $\left\{\frac{8}{11}, \frac{43}{11}\right\}$ D. $\left\{\frac{8}{11}, \frac{-86}{2}\right\}$ E. NOTA
- Simplify $\sqrt{605}$
A. $5\sqrt{11}$ B. $17\sqrt{2}$ C. $25\sqrt{2}$ D. $11\sqrt{5}$ E. NOTA
- What is the volume of a cube with edges of 5 inches?
A. 20in^3 B. 25in^3 C. 60in^3 D. 125in^3 E. NOTA
- The ratios by which Steve defeats Josh at each *MAΘ* competition are equal. At the first competition, Steve earns 110, and Josh earns a 66. At the next competition, Steve makes a 120. Find the difference between Steve and Josh's second scores.
A. 48 B. 69 C. 72 D. 104 E. NOTA
- Given the systems of equations:
$$\begin{cases} \frac{8}{9}x + \frac{2}{3}y = 12 \\ 2x + 2y = 24 \end{cases}$$
What is $3x + 4y$?
A. -30 B. 14 C. 30 D. 33 E. NOTA

9. Solve: $x^2 = 64$
- A. 8 B. 16 C. 4 D. ± 8 E. NOTA
10. $f(x) = x^2 - x + 14$, $g(x) = x^2 + 3x - 144$. Find $2g(f(4))$.
- A. 26 B. 392 C. 610 D. 1220 E. NOTA
11. Find the average of the next six numbers in the sequence 1, 4, 9, 16, 25, 36... Round your answer to the nearest whole number.
- A. 92 B. 93 C. 94 D. 95 E. NOTA
12. Eddie bought some pants on sale for 45% off. The original cost of the pants can be found using the fact that they cost \$81.60 when they were 15% off. How much did Eddie pay for the pants? (Assume tax is not charged)
- A. \$5.51 B. \$21.60 C. \$43.20 D. \$52.80 E. NOTA
13. Given $L(x) = x^2 + x - 64$. What is $L(x+1)$?
- A. $x^2 - x - 64$ C. $x^2 + 3x - 62$ E. NOTA
B. $x^2 + x - 62$ D. $x^2 - 3x + 63$
14. Given $\frac{x^2}{3} = 4z$. Solve for x in terms of z .
- A. $z\sqrt{3}$ B. $\pm 2\sqrt{3z}$ C. $\pm 4z\sqrt{3}$ D. 1 E. NOTA
15. Find the distance from point A ($\sqrt{5}, 5$) to point B (0, 10)
- A. $\sqrt{30}$ B. $2\sqrt{5}$ C. $\sqrt{5} - 15$ D. $\sqrt{6}$ E. NOTA
16. $(y^2 + 5y) \div (y+1) = ?$
- A. $y + 4 - \frac{4}{y+1}$ B. $y + 5$ C. $y^3 + 5y + 1$ D. $y + 6$ E. NOTA

17. Given $22^{x+4} = 484$. Find x .
- A. -2 B. 2 C. 0 D. 1 E. NOTA
18. Meghan plays baseball on a square field. She calculated the distance from first to second base to be 90 feet. How many feet (to the nearest foot) will she have to throw the ball from second base to home?
- A. 90 B. 127 C. 180 D. 360 E. NOTA
19. Solve for x if $\sqrt{x} - 8 = 0$
- A. ± 64 B. $\sqrt{8}$ C. 64 D. -64 E. NOTA
20. Simplify: $\frac{6\sqrt{2}}{\sqrt{10}}$
- A. 2.68 B. $6\sqrt{20}$ C. $\frac{6}{6\sqrt{5}}$ D. $\frac{6\sqrt{5}}{5}$ E. NOTA
21. You are making an acid solution in science class. Five liters of the 40% acid solution are obtained by mixing a 20% acid solution with a 60% acid solution. How much of each, respectively (20%-60%) must you use?
- A. 3 liters, 2 liters C. cannot be determined E. NOTA
B. 2.5 liters, 2.5 liters D. 0 liters, 5 liters
22. Find an equation of a line going through point $P(5, -6)$ with a slope of -4 .
- A. $4x + y = 14$ B. $y = 14x - 4$ C. $y = -6x + 20$ D. $y = -2x + 7$ E. NOTA
23. David drank a bottle of Fruitopia; it contained Kiwi, Berries, and Pineapple. There was twice the amount of Pineapple as there was Berries, and triple the amount of Kiwi as there was Berries. If the bottle contained 342 mL of fluid, how many mL of Pineapple did he drink?
- A. 57 B. 114 C. 171 D. 300 E. NOTA

Tampa Bay Technical Invitational
Algebra 1 Individual

March 31, 2001

24. Solve for x: $|3x + 4| = 13$

- A. $\{3\}$ B. $\left\{\frac{-17}{3}\right\}$ C. $\{4, 3\}$ D. $\left\{3, \frac{-17}{3}\right\}$ E. NOTA

25. Solve the inequality: $-x - 4 > 3x - 2$

- A. $x > \frac{1}{2}$ B. $x < \frac{1}{2}$ C. $x > -\frac{1}{2}$ D. $x < -\frac{1}{2}$ E. NOTA

26. Solve $\frac{5}{y+2} = \frac{y}{3}$

- A. -5 B. 3 C. -5, 3 D. 0 E. NOTA

27. A total of \$9000 is invested in two funds paying 5% and 6% annual interest. The combined annual interest is \$510. How much of the \$9000 is invested in the 5% fund?

- A. 1000 B. 2000 C. 3000 D. 6000 E. NOTA

28. Evaluate the expression: $\left(\frac{5}{3}\right)^{-3}$

- A. $\frac{-15}{9}$ B. $\frac{-125}{27}$ C. $\frac{27}{125}$ D. $\frac{-27}{125}$ E. NOTA

29. Simplify: $\left(\frac{-9x^5y^7}{x^2y^3}\right) \cdot \left(\frac{(2xy)^2}{-6x^2y^2}\right)$

- A. $6x^3y^4$ B. $3x^2y^3$ C. $6x^2y^4$ D. $\frac{-27x^3y^4}{2}$ E. NOTA

30. Solve for x: $(x-1)^2 + 2x = 4$

- A. $\sqrt{3}$ B. $\pm\sqrt{3}$ C. 1 D. 3 E. NOTA