

ALGEBRA 1
MIDTERM EXAM

1. If John is 4 years old now, write an expression for how old he will be in x years time. (2 pts)

2. Determine whether the following equations are equivalent: $x - 3y = 2$ and $2x - 6y = 4$. (2 pts)

3. Solve the formula $V = \pi r^2 h$ for h . (2 pts)

4. Determine one coordinate pair that makes the equation $4x + y = 9$ true. (2 pts)

5. Simplify the following expression: $-(-10 + x)$. (2 pts)

6. Write the decimal form of the rational number $\frac{3}{80}$. (3 pts)

7. An orchard contains 14 rows of trees with x trees in each row. Write an expression to determine how many trees there are in all. (2 pts)
8. Find the solution to the equation $x - 17 = -8$. (3 pts)
9. If $t = 7$ in the formula $v = 120 - 32t$, find v . (2 pts)
10. Determine whether the sum of two numbers is always larger than either number. If not, provide a counter-example. (2 pts)
11. Find the value of $x^2 + x - 1$ if $x = -4$. (3 pts)
12. What is the slope of the line $y = -x + 2$? (2 pts)
13. Write "The cube of a certain number x is more than twice the number" in symbols. (2 pts)

14. Simplify the expression $3(x - 7)$. (2 pts)

15. What is the answer to 0 divided by any positive or negative number? (2 pts)

16. Solve the following simultaneous equations: (4 pts)

$$x + 5y = 33$$

$$2x - 5y = 6$$

17. Simplify $\frac{8^5}{4^5}$ (3 pts)

18. Solve $5x - y = 1$ for y . (3 pts)

19. Where does the line $y = 3x$ cross the y -axis? (2 pts)

20. If a man runs a mile in six minutes, what is his average speed in miles per hour? (3 pts)

21. Simplify $y + y + y$. (2 pts)

22. Write a formula for the following function: (3 pts)

x	1	2	3	4	5
y	60	120	180	240	300

23. Write 2.1×10^3 in decimal form. (2 pts)

24. Write the equation of a line with a steeper slope than $y = 5x - 1$. (2 pts)

25. Simplify $2 + (x + 2)$. (3 pts)

26. Solve $3(y - 2) = 2y - x$ for y . (4 pts)

27. Find the distance between -3.6 and 7.6 on a number line. (3 pts)

28. Insert $>$, $<$ or $=$ to make the following equation true: $-x + 8$ _____ $-x - 8$. (2 pts)

29. Find the value of $(-1)^0$. (2 pts)

30. Solve for x : $3^x = 81$. (2 pts)

31. Write x^{-4} times x^2 as a single power. (2 pts)

32. Solve for x : $7 - 8x = 27$. (3 pts)

33. If land costs \$1000 an acre, write an expression for how many acres you can buy for x dollars. (2 pts)

34. Solve the following simultaneous equations: (4 pts)

$$2x + 3y = 8$$

$$y - x = 11$$

35. Is 3.5 an integer? (2 pts)

36. Simplify $\frac{x^6}{x^{-2}}$ (3 pts)

37. Find the slope of the line through the origin and the point (-6,-3). (3 pts)

38. Write the equation that results from subtracting $2x - y = 7$ from $x + 3y = -1$. (3 pts)

39. How many solutions does the equation $2(x + 5) = 2(x + 5)$ have? (3 pts)

40. Is the graph of the equation $x = -2$ a horizontal, vertical or diagonal line? (2 pts)