Directions: Be sure to SHOW ALL WORK in the space provided for each problem.

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I. Finding SlopeDetermine the slope of the line through each pair of points.1. (5, 1) and (2, 7)2. (-4, 3) and (2, -3)

3.
$$\left(-\frac{1}{2}, -2\right)$$
 and $\left(-\frac{3}{2}, 1\right)$ 4. (2, -4) and (2, 6)

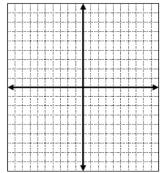
Find the slope of each line. 5. y = -2x + 5

6. 3x + 6y = 12

7. Give the slopes of the lines parallel and perpendicular to y = 32 x - 1. Parallel _____ Perpendicular _____

II. Graphing Linear Equations

Graph the following equations on the coordinate plane. 8. y = 3x - 2 9. 3



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9. 3x - 2y = 12

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11. y - 2 = 3(x + 4)

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Solve each equation for x. 12. 5x + 3 = -12

13. (6x - 8) - (5x + 9) = 3

14. 7x - 8x + 4 = 5x - 2 15. 3(x - 2) = 18

Solve each proportion for x.

16. $\frac{18}{x} = \frac{6}{5}$ 17. $\frac{x+2}{3} = \frac{8}{15}$

18. $\frac{5}{-}=$	10	19. $\frac{12}{10} = 48$
7	x-2	x

20. The ratio of faculty members to students at a college is 1:15. There are 675. How many faculty members are there?

21. A runner ran at a rate of 6 miles per hour. What is this speed in miles per minute?

IV. Finding Area and Perimeter

Find the area and perimeter of each figure described below. 26. A rectangle with length 11ft and width 4ft.

27. A square with sides of length 21m.

28. A circle with radius 4in.

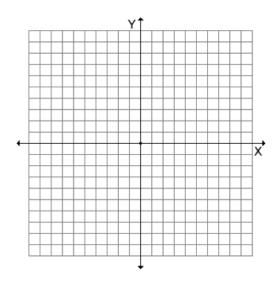
29. A triangle with height 5cm and base length 12cm.

30. A right triangle with a leg 3mi and hypotenuse 5mi.

V. Systems of Equations

Solve the system of equation by graphing.

31. y = x - 3y = -x + 1



Solve the system of equations by substitution.

32. x + 4y = 6x + y = 333. 3x - 2y = 12y = 5 - 4x

Solve the system of equations by elimination (or combination)

34. $\begin{array}{c} -x + 2y = 11 \\ 5x - 2y = 1 \end{array}$ 35. $\begin{array}{c} 2x + y = 3 \\ -x + 3y = -12 \end{array}$

VI. Polynomials Add or subtract the polynomials. 36. $(2x^2 - x) + (x^2 + 3x - 1)$

37.
$$(a^4 - 2a) - (3a^4 - 3a - 1)$$

Multiply polynomials.
38.
$$(3x+2)(2x+7)$$

39. $(5n+1)^2$

40.
$$(2x+7)(4x^2-3x+2)$$

41. $(2x+3)(3x^2+2x-5)$

VII. Factoring	
Factor	
42. $4x^2 - 3x$	43 . $x^2 + 6x + 8$

44. $x^2 - 10x + 16$ **45.** $x^2 + 7x - 18$

46. $x^2 + 12x + 36$ **47.** $25x^2 - 81$

48. $5x^2 - 14x + 8$ **49.** $4x^2 + 19x - 5$

Solve by factoring.	
50. $x^2 - 5x - 6 = 0$	51 . $v^2 - 4v = 0$

55. $(2^5)^6$

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VIII. Exponents	
Simplify.	

54. $2^5 \cdot 2^6$

56. $a^4 \cdot b^2 \cdot a^5$ **57.** $(4x^2y^6)(-2x^3y^4)^2$

59 ^{3⁵}	$6a^5$	b^9
58. $\frac{3}{3^2}$	59. $\frac{1}{2a^4}$	b^4

60.
$$\frac{5x^2}{2y^3} \cdot \frac{2y^5}{3y^2}$$
 61. $\left(\frac{a^4}{b^2}\right)^3$

62. $\frac{6xy^4}{4x^3}$ 63. $-4f^{-3}g^4h^0$

64. The function $f(x) = 2(3)^x$ models an insect population after x days. What will the population be on the 5th day?

IX. Radicals

Rewrite each of the following radicals in simple radical form.65. $\sqrt{24}$ 66. $\sqrt{17}$ 67. $\sqrt{75}$

68 . √50	69. $\sqrt{18} + \sqrt{32}$	70. $\sqrt{50} + \sqrt{32} - \sqrt{27}$
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