

Mother of God School

Summer Review for students who have completed Algebra.
Show your work. Use extra paper if needed and attach it to the packet.

Part I: Numeracy and Operation Skills (Should be able to complete **WITHOUT** a calculator) For numbers 1-13, simplify the following:

1. $0 \div 5.928$

2. $5.928 \div 0$

3. 9^3

4. -7^2

5. $-(-10)^2$

6. $(-3)^4$

7. $\left(\frac{5}{6}\right)^2$

8. $\sqrt{196}$

9. $\sqrt{169}$

10. $\sqrt{121}$

11. $-\sqrt{81}$

12. $8 + 3[3 - (1)^6]$

13. $3^4 + 12 \div 3 - (1 - 9)$

Part II: Algebraic Skills: Solving Equations

For numbers 14-26, solve the following variables:

14. $44 = 14 - 2a$

15. $33 = 17 - 2y$

16. $\frac{f}{45} - \frac{2}{9} = \frac{2}{9}$

17. $43a + 10 - 26a = 27$

18. $33d + 13 - 30d = 46$

19. $50q - 43 = 52q - 81$

$$20. 49p - 33 = 57p - 89$$

$$21. n - 8 + n = 1 - 4n$$

$$22. -3y + 3 - 2y = -1 + y$$

23. The formula for area of a circle, A , is $A = \pi r^2$ where r represents the radius. Solve for r .

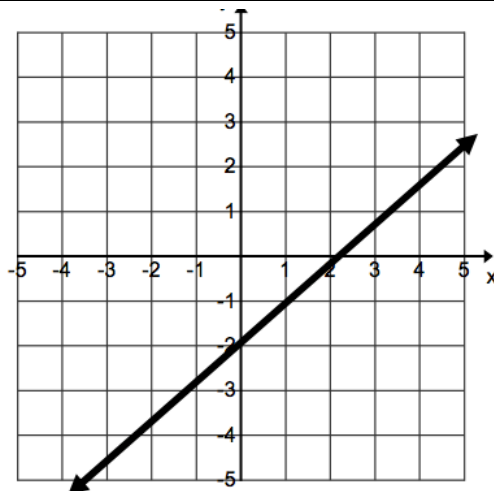
$$24. \text{Solve } 4x - z = y \text{ for } x.$$

$$25. \frac{5}{6} = \frac{x}{30}$$

$$26. \frac{3}{8} = \frac{x}{72}$$

Part III: Algebraic Skills: Slope/ Writing and Solving Linear Equations

27. Find the x- and y- intercepts.

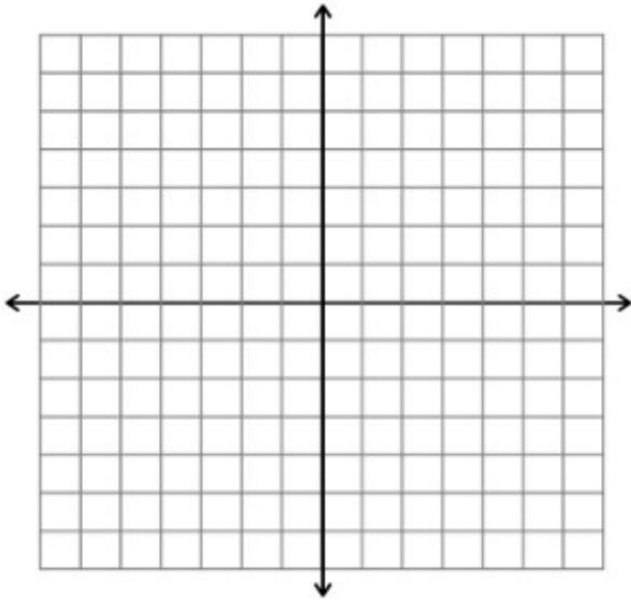


28. Find the x-and y-intercepts of:

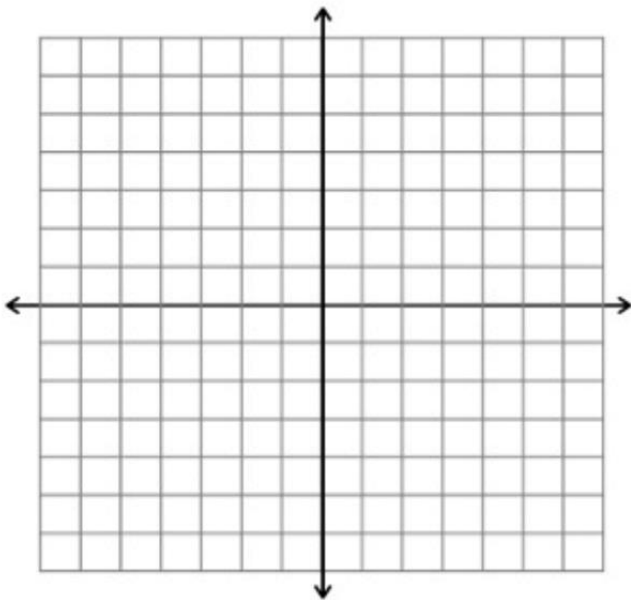
A. $2x - 4y = -12$

B. $-2x - y = 2$

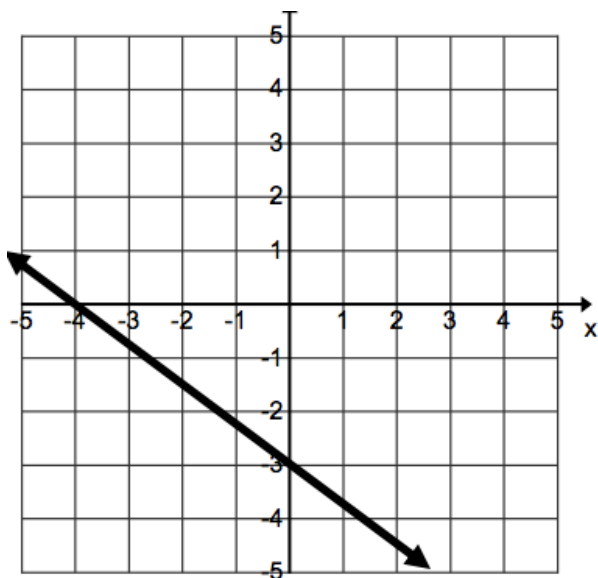
29. Use **intercepts to graph the line** described by the equation $3x + 2y = 6$.



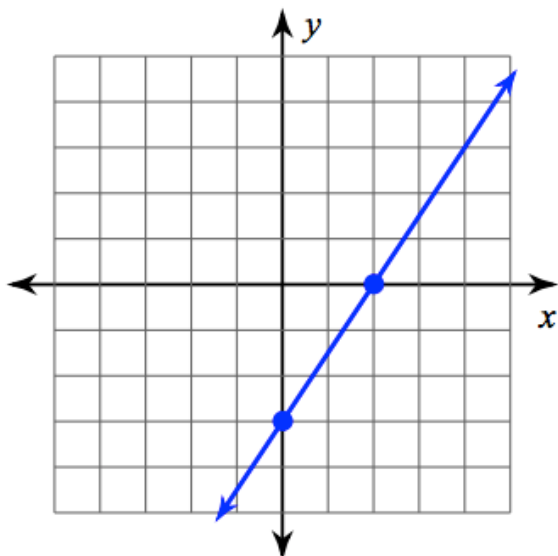
30. Use **intercepts to graph the line** described by the equation $-2x = 4 + 4y$



31. Given the graph below, find the slope of the line.



32. Given the graph below, find the slope of the line.



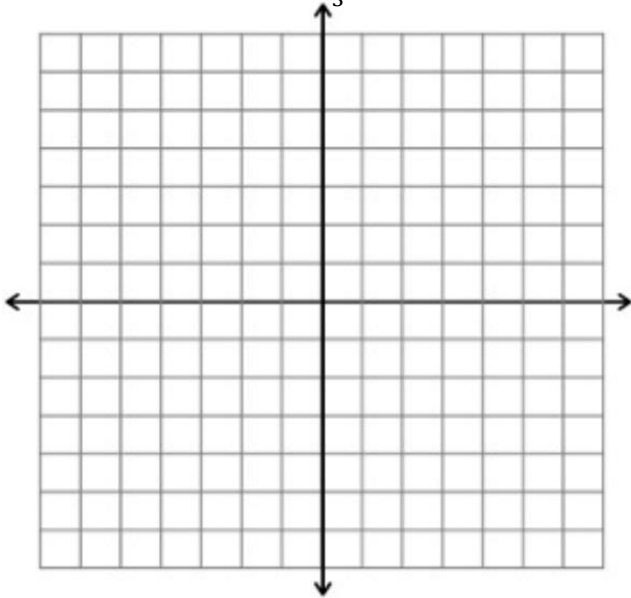
33. Describe what a graph looks like when a slope is positive, negative, zero, and undefined.

34. Find the slope of the line that contains $(1, 6)$ and $(10, -9)$.

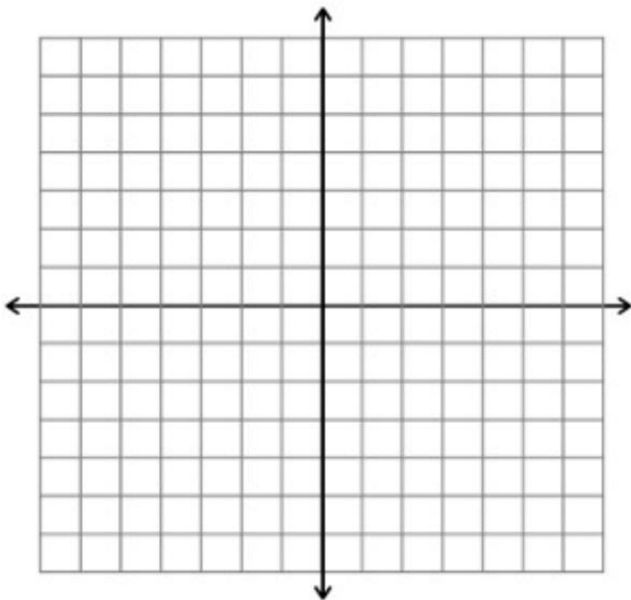
35. Find the slope of the line that contains $(-10, 0)$ and $(-2, -4)$

36. Find the slope of the line described by $x - 3y = -6$

37. Graph the line with slope $\frac{7}{3}$ and y-intercept -2.



38. Write the equation $4x + 8y = -24$ in slope-intercept form. Then graph the line described by the equation.



39. Write the equation that describes the line with slope =2 and y-intercept = $\frac{3}{2}$ in slope-intercept form.

40. Write the equation that describes the line that passes through (2,3) and is perpendicular to the line $y = \frac{1}{3}x - \frac{4}{3}$.

41. Write the equation that describes the line that passes through $(-5, -4)$ and is parallel to the line $y = 7x + 1$.

Part IV: Algebraic Skills: Systems of Equations

42. Solve $\begin{cases} 3x + y = -3 \\ y = x + 5 \end{cases}$ by using substitution. Express your answer as an ordered pair.

43. Solve $\begin{cases} 4x - 4y = -16 \\ x - 2y = -12 \end{cases}$ by using substitution. Express your answer as an ordered pair.

44. Solve $\begin{cases} 3x - 6y = 12 \\ 2x + 6y = -12 \end{cases}$ by using elimination. Express your answer as an ordered pair.

45. Solve $\begin{cases} 2x - 5y = -7 \\ 5x - 3y = 11 \end{cases}$ by using elimination. Express your answer as an ordered pair.

Part V: Algebraic Skills: Quadratics

For numbers 46-53, multiply the following:

46. $(n - 5)(n - 1)$

47. $(n + 2)(n + 4)$

48. $(z + 3)(z - 2)$

49. $(x + 4)(x + 2)$

50. $(p - 8)^2$

51. $(x - 4)^2$

52. $(r + 7)(r - 7)$

53. $(q + 6)(q - 6)$

For numbers 54-57, factor the following.

54. $x^2 + 101x + 100$

55. $a^2 + 14a + 48$

56. $p^2 + 3p - 18$

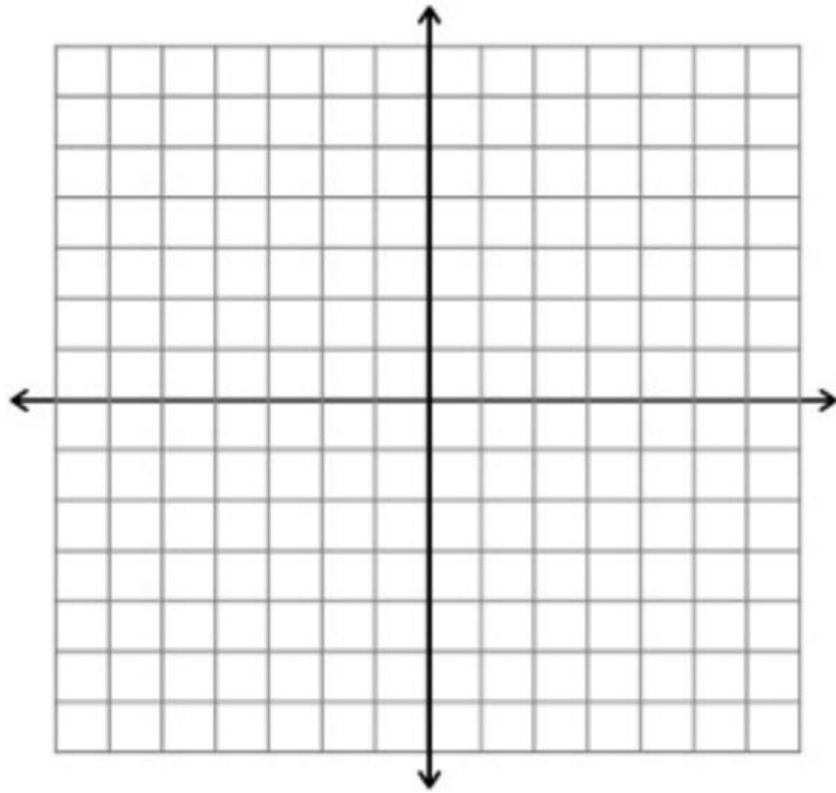
57. $3x^2 + 2x - 8$

58. Solve the quadratic by using the quadratic formula.

$$b^2 - 4b + 5 = 0$$

59. Graph the following quadratic. Then, answer the following questions.

$$y = x^2 + 2x + 1$$



A. State the x-intercepts: _____

B. State the y-intercept: _____

C. State the vertex: _____