Name: _____ Date: _____ Period: _____

Advanced Algebra Summer Packet: DUE FIRST DAY OF SCHOOL (Daily Grade)

This packet is required for all upcoming Advanced Algebra students and is a review of topics covered in your previous math courses. It is essential that you have mastered these skills PRIOR to taking Advanced Algebra.

During the first week of school, you will be given a **quiz** over the topics covered in this packet.

I have created a class in DeltaMath and have linked additional practice for your convenience. If you are struggling with a topic, find it in the DeltaMath assignment and look at the worked examples. You may also practice similar problems until you have mastered the skill. The DeltaMath assignment is not mandatory, it is simply there for you to use if needed.

DeltaMath code: 69LC-38H2

Below are some formulas that you may find useful:

Linear Functions

Slope Formula: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Point Slope Form: $y - y_1 = m(x - x_1)$

Slope Intercept Form: $y = mx + b$

Standard form: $ax + by = c$

Quadratic Functions

Difference of two squares: $a^2 - b^2 = (a + b)(a - b)$

Standard form of a quadratic: $y = ax^2 + bx + c$

Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

1. What is the value of the expression $9z - 1$ when $z = 9$?

2. What is the value of the expression $4w^2 + 6w + 4$ when $w = 2$?

3. Solve for y and simplify your answer.

$$\frac{2}{3}y = -6$$

4. Solve for t and simplify your answer.

$$16 = \frac{2}{3}t$$

5. Solve for x.

$$19 = -37 + 8x$$

6. Solve for b.

$$43 - \frac{b}{3} = 59$$

7. Solve. $2(3x + 9) = -6$

8. Solve. $2(4z + 8) = 48$

9. Solve for x.

$$-4(x - 1) - x - 5 = -26$$

10. Solve for x.

$$3(-5x - 5) - 4x - 1 = -35$$

11. Solve for x in simplest form.

$$12 = \frac{3}{4}(3x + 8)$$

© Copyright DeltaMath

12. Solve for x in simplest form.

$$15 = \frac{3}{2}(5x + 6)$$

13. Solve for x:

$$11x + 10 = 6x + 35$$

14. Solve for x:

$$-4x - 1 = -2x - 15$$

15. Solve for x.

$$-\frac{6}{5} = \frac{x}{15}$$

16. Solve for x.

$$-\frac{3}{10} = \frac{x}{20}$$

17. Solve for x and simplify the answer fully.

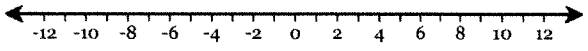
$$\frac{6}{x+4} = \frac{7}{x+5}$$

18. Solve for x and simplify the answer fully.

$$\frac{x-2}{x+6} = \frac{5}{4}$$

19. Solve the inequality and graph the solution on the line provided.

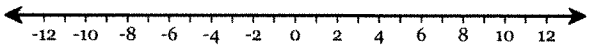
$$13 + 7x > 6$$



© Copyright DelraMath

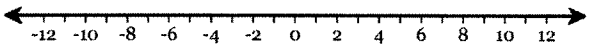
20. Solve the inequality and graph the solution on the line provided.

$$-8 + 3x < 4$$



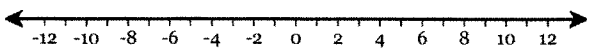
21. Solve the inequality and graph the solution on the line provided.

$$4x + 4 \leq -20$$



22. Solve the inequality and graph the solution on the line provided.

$$-38 - 2x \leq -26$$



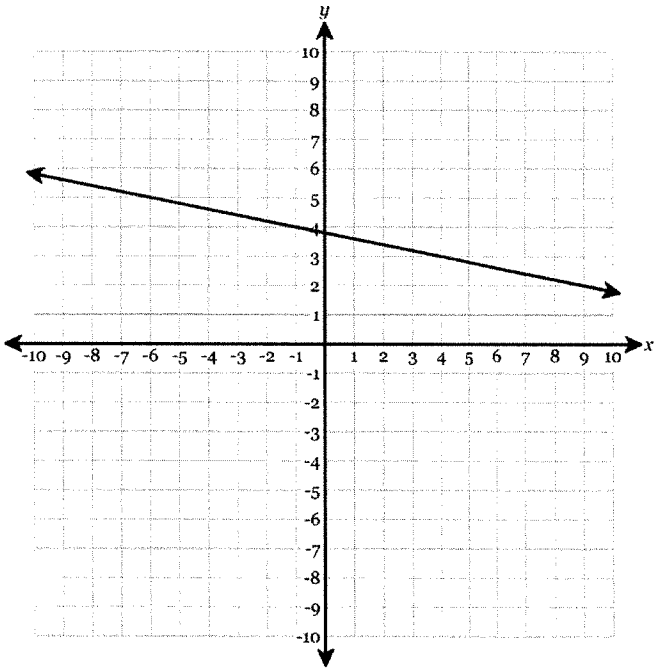
23. Put the following equation of a line into slope-intercept form, simplifying all fractions.

$$3y - x = -6$$

24. Put the following equation of a line into slope-intercept form, simplifying all fractions.

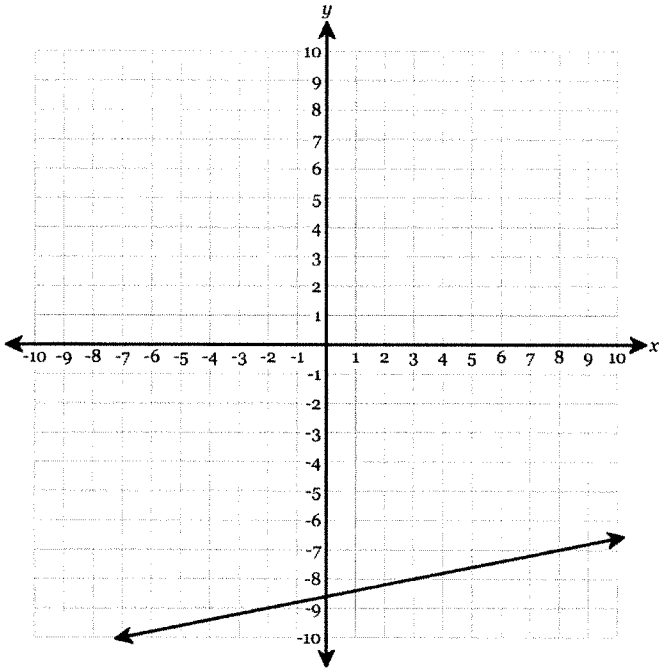
$$4y - 24x = -4$$

25. Draw a line representing the "rise" and a line representing the "run" of the line. State the slope of the line in simplest form.



© Copyright DeltaMath

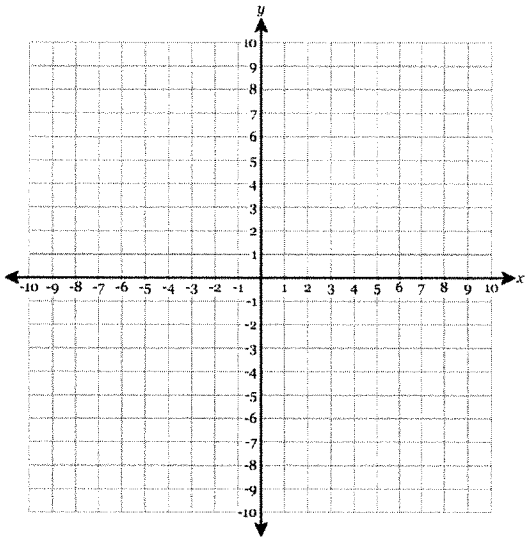
26. Draw a line representing the "rise" and a line representing the "run" of the line. State the slope of the line in simplest form.



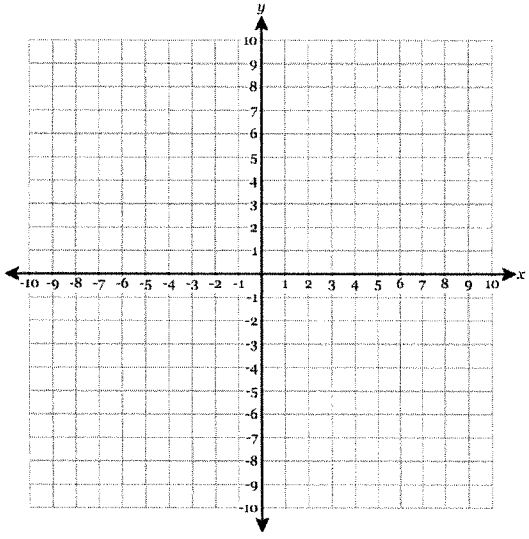
27. What is the slope of the line that passes through the points $(8, -3)$ and $(10, -3)$? Write your answer in *simplest form.*

28. What is the slope of the line that passes through the points $(-5, 4)$ and $(-1, -12)$? Write your answer in *simplest form.*

29. Graph the line with the equation $y = 4x - 1$.

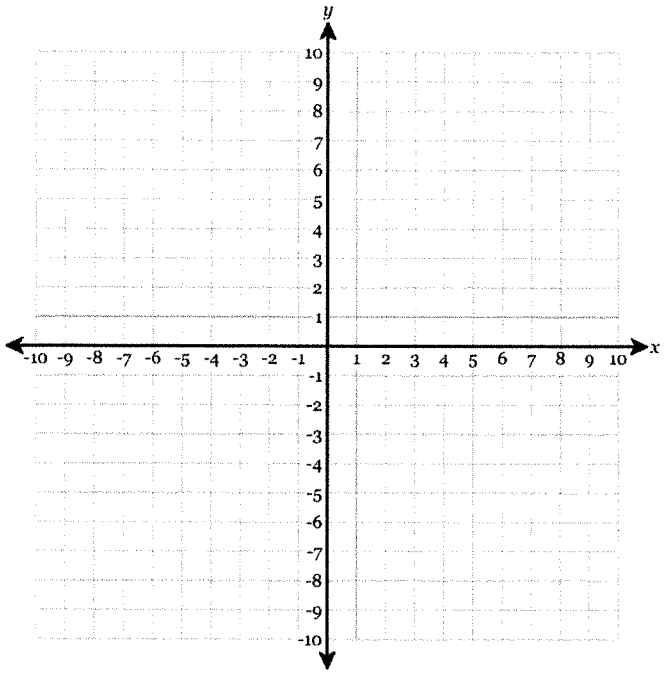


30. Graph the line with the equation $y = -x - 4$.

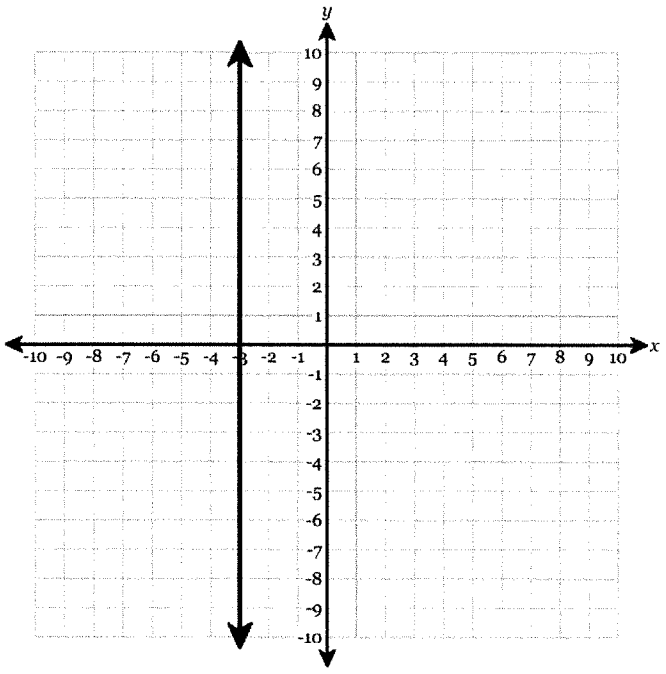


© Copyright DeltaMath

31. Graph the line $y = 2$ on the axes shown below.



32. Write the equation of the line graphed below in simplest form.



33. Perform the operation.

$$(3x^2 - 3) - (-10x^2 + 10x)$$

34. Perform the operation.

$$(-3x^2 - 7x - 9) + (4x^2 + 6x - 7)$$

35. Express as a trinomial: $(3x - 3)(2x + 10)$

36. Express as a trinomial: $(3x + 2)(x + 2)$

37. Factor the expression completely: $5x^2 - 7x$

38. Factor the expression completely: $15 + 18x$

39. Factor the expression completely: $12x + 30$

40. Factor the expression completely: $72 + 63x$

© Copyright DeltaMath

41. Express $(x-4)^2$ as a trinomial in standard form.

42. Express $(x+9)^2$ as a trinomial in standard form.

43. Factor $x^2+4x-12$

44. Factor x^2+x-30

45. Factor $x^2-2x-80$

46. Factor $x^2-14x+40$

47. Factor $x^2+8x+15$

48. Factor $x^2-3x-10$

49. Factor the trinomial: $5x^2+13x+6$

50. Factor the trinomial: $5x^2+26x+24$

51. Factor the trinomial: $2x^2+11x+5$

52. Factor the trinomial: $3x^2+22x+7$

53. Factor completely: $16-121x^2$

54. Factor completely: $49-4x^2$

55. Factor completely: $121-36x^2$

© Copyright DeltaMath

56. Factor completely: $16x^2 - 25$

57. Given $f(x) = -x^2 + 6x + 18$, find $f(7)$

58. Given $f(x) = -3x^2 + 2x - 18$, find $f(-5)$

59. Given $f(x) = -x^2 + 9x + 6$, find $f(-8)$

60. Use the quadratic formula to solve. Express your answer in simplest form.

$$12t^2 + 19t + 4 = -1$$

61. Use the quadratic formula to solve. Express your answer in simplest form.

$$6z^2 + 19z + 15 = 0$$

62. Solve the equation for all real solutions in simplest form.

$$2q^2 + 9q + 3 = 0$$

63. Solve the equation for all real solutions in simplest form.

$$3k^2 - 19k + 15 = -2k^2$$

Scan the QR code or visit deltamath.com/qr/G679S-Z5SX4 to view full solutions.

© Copyright DeltaMath