

Cherry Creek High School
Prerequisite Packet for Students Entering CP Accelerated Algebra 2

The following set of problems represents content your teachers will expect you to know and recall from Algebra 1 and Geometry. This is prerequisite content knowledge for students entering into the Accelerated CP Algebra 2 course.

It is expected that each student entering this class looks over this packet and ensures that they know and can demonstrate all the skills required to complete the problems in this packet.

This packet will NOT be collected, but there will be a **Prerequisite Assessment** within the first week of classes that will cover this content.

If a student DOES NOT pass the Prerequisite Assessment with an 80% or better, then they WILL be required to complete and submit the Prerequisite Packet and retake the Prerequisite Assessment until they show mastery of the content at 80% or greater.

Our recommendation is that every student reviews and completes this packet prior to the start of the school year.

Cherry Creek High School
Prerequisite Packet for Students Entering CP Accelerated Algebra 2

Strengthen your mental math skills by completing these **without a calculator**. Follow the order of operations (PEMDAS) and show ALL STEPS of work when appropriate.

1. $-\frac{2}{7} + \frac{3}{7}$

2. $-\frac{21}{4} - \left(-\frac{7}{4}\right)$

3. $\frac{3}{5} - \frac{3}{4}$

4. $\frac{\frac{2}{3}}{\frac{4}{9}}$

5. $48 - 2 \left[12 \div \left(\frac{3}{2} \right) \right]$

6. $\sqrt{3^2 - 4(2)(-5)}$

7. $4(4 - 6)^2 + 4 \cdot 3 - 2 \cdot 8 \div 4$

8. $3^4 + 25 \div (2 + 3)$

9. $16 + (12 \div 2) + 3 \times 15$

Simplify each expression by combining like terms **without a calculator**. Make sure to distribute first if necessary! Show all steps of work when appropriate.

10. $3x - 11x + 2x$

11. $(4x + 5) + (3x - 4)$

12. $5x - 2(3x + 1)$

13. $a - (2a - 5)$

14. $x^2 + 3x - (4x^2 - 5)$

15. $3x^3 - 3(2x^3 - 3x)$

Evaluate the expression given that $a = 2$, $b = -3$, $c = 5$, and $d = -1$. Show all work using order of operations.

16. $2a - 3b$

17. $d^2 + bc$

18. $ab - 4d$

19. $5d^2 - 4d + 7$

20. $3a(c - a)^2$

21. $\frac{4b-c}{d-a}$

Simplify completely using the properties of exponents. Reduce all fractions completely and only use positive exponents in your answer. Remember the following exponent rules, where a and b are real and $y \neq 0$:

$$x^a \cdot x^b = x^{a+b} \quad (x^a)^b = x^{a \cdot b} \quad \frac{x^a}{x^b} = x^{a-b} \quad \left(\frac{x}{y}\right)^a = \frac{x^a}{y^a} \quad x^{-a} = \frac{1}{x^a} \quad x^0 = 1$$

22. $x^3 \cdot x^5 \cdot x$

23. $5^3 \cdot 5^{-2}$

24. $a^5 \cdot a^{-8} \cdot a^0$

25. $(2xy^4)^3$

26. $(3x^4)^2 \cdot 4x^5$

27. $(5a^{-3}b^0c^7)^{-2}$

28. $\frac{24c^5d^3}{8c^2d^2}$

29. $\frac{100x^{3a}y^{-5}}{25x^{-a}y^6}$

30. $\left(\frac{2x^4y^{-3}}{3x^{-1}y^4}\right)^{-3}$

Solve the linear equation without a calculator. Show all algebraic work.

31. $y + 11 = 8$

32. $x - 9 = -20$

33. $5x + 3 = 18$

34. $\frac{x}{4} - 2 = 5$

35. $\frac{2}{3}x = 12$

36. $-4(x + 2) = 12$

37. $\frac{7}{2}x - 1 = 3 - \frac{5}{4}x$

38. $-\frac{1}{6}x - \frac{3}{4}x = -10$

39. $5x - 2 + \frac{1}{3}x = \frac{2}{9}x + \frac{3}{2}$

Solve the equation by factoring, using the example provided:

$$x^2 - 5x - 6 = 0 \rightarrow (x - 6)(x + 1) = 0 \rightarrow x - 6 = 0, \quad x + 1 = 0 \rightarrow x = 6, x = -1$$

40. $x^2 + 10x + 16 = 0$

41. $x^2 + 5x - 14 = 0$

42. Hint: Factor the GCF!
 $3x^2 - 15x = 0$

43. $x^3 - 9x^2 - 12x = 0$

44. $x^2 - 25 = 0$

45. Hint: Factor by Grouping!
 $3x^2 + 6x = 4x + 8$

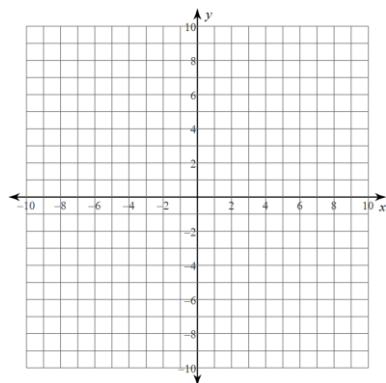
Graph each linear function. Some are in slope-intercept form, some are in standard form and some are in point-slope form. You are expected to graph it from the form given without rearranging it.

Slope Intercept Form: $y = mx + b$ where m = slope and the y-intercept is $(0, b)$

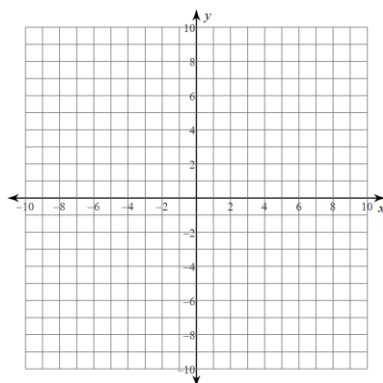
Standard Form: $Ax + By = C$ where the x-intercept is $(\frac{C}{A}, 0)$ and the y-intercept is $(0, \frac{C}{B})$

Point-Slope Form: $y - y_1 = m(x - x_1)$ where m = slope and the graph goes through the point (x_1, y_1)

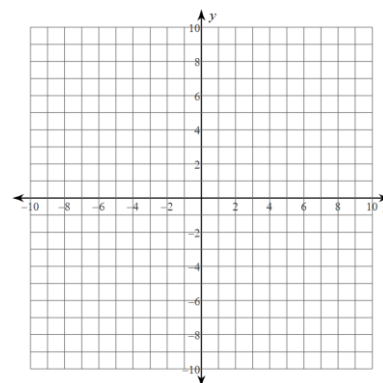
46. $y = 3x - 4$



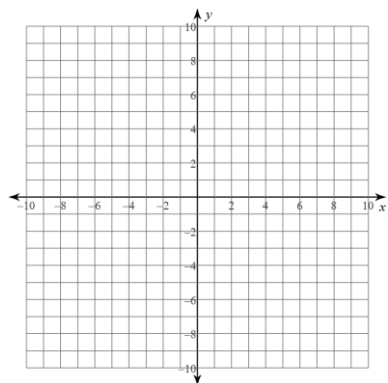
47. $f(x) = \frac{2}{3}x - 7$



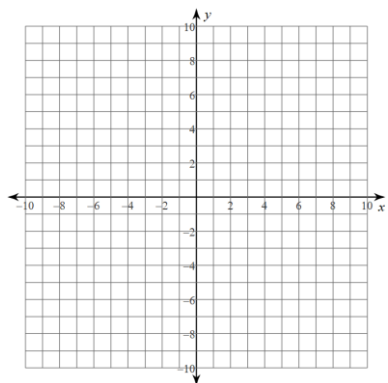
48. $y = -\frac{5}{3}x + 2$



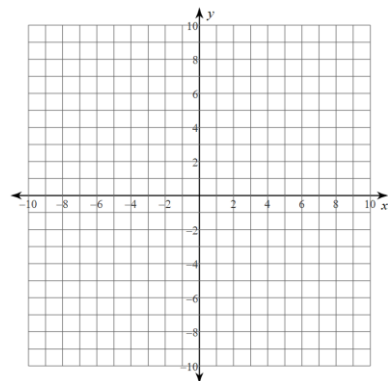
49. $y - 5 = -(x + 4)$



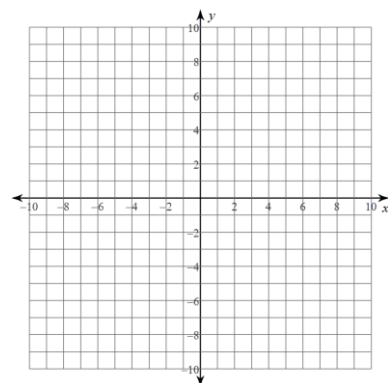
50. $f(x) = -5$



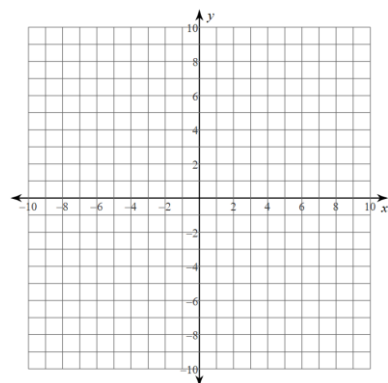
51. $y + 2 = \frac{1}{4}(x - 3)$



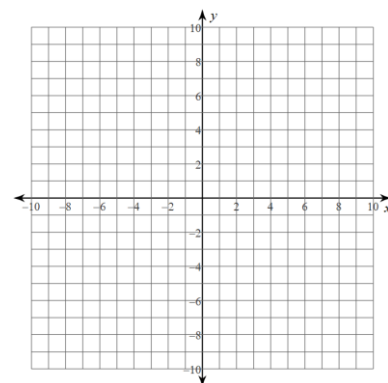
52. $3x + 4y = 12$



53. $6x - 2y = 18$



54. $x - 3y = 6$



Simplify each radical fully and apply correct operations to the radicals.

55. $\sqrt{120}$

56. $3\sqrt{32}$

57. $4\sqrt{5} - \sqrt{5}$

58. $(\sqrt{15})(\sqrt{60})$

59. $\frac{\sqrt{72}}{\sqrt{6}}$

60. $5\sqrt{12} - \sqrt{27} + 6\sqrt{20}$