



FAIRFIELD
PUBLIC SCHOOLS

Summer Packet for students entering Algebra 1

Welcome to Algebra 1. Algebra 1 is a fundamental course that will be the foundation for any future math course you take. You are expected to have a strong background in the skills reviewed in this packet. Resource links are listed within each section throughout the packet. This packet will be checked for completion and entered as formative Infinite Campus grade.

DUE: 1st week of school.

Need help on some of the topics? For each section a link to an instructional video has been provided!

Have a great summer and see you in the fall! 😊

Topics: Simplify expressions with numerical values and variables

Order of Operations: <https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-arithmetic-operations/cc-6th-order-of-operations/v/order-of-operations-1>

Simplifying Rational Numbers: <https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-negative-numbers-multiply-and-divide/cc-7th-mult-div-neg-fractions/v/multiplying-negative-and-positive-fractions>

Combining Like Terms: <https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-expressions-and-variables/cc-6th-combining-like-terms/v/combining-like-terms-1>

Simplify.

1. $4 - 2(3 - 2^2) + 2(3)^2$

2. $\left(\frac{20}{3}\right) \cdot \left(-\frac{1}{5}\right)$

3. $4x + 7x - 3x$

4. $10 - 2x - 6 + 8x$

Topics: Solve linear equations in one variable and solve linear equations with rational number coefficients where there is one solution, infinitely many solutions, or no solutions

Solving simple equations: https://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/equations_beginner/v/simple-equations

Solving equations: <https://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/basic-equation-practice/v/equations-3>

Number of solutions: <https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-solving-equations/cc-8th-equation-solutions/v/number-of-solutions-to-linear-equations>

Linear word problems: <https://www.khanacademy.org/math/algebra-basics/core-algebra-linear-equations-inequalities/core-algebra-linear-equation-word-problems/v/linear-equation-word-problem-example>

Solve for the given variable.

5. $2x + 4x = 18$

6. $1 + 2n = 8 + 4n$

7. $8x - 2 = -9 + 7x$

8. $9x - 7 = -7$

9. $p - 4 = -9 + p$

10. $9.4 - 0.25k = 8.6$

11. $\frac{1}{2}x + 3 = \frac{5}{4}x + 3 - \frac{3}{4}x$

12. Ann buys donuts and bagels for a morning at the park with friends. A donut costs \$1.17 and a bagel costs \$0.99. If Ann bought 8 donuts and the total cost was \$15.30, how many bagels did Ann buy? **Write and solve the equation to show your work.**

13. For a cell phone plan, Company A charges \$15 per month plus \$0.30 per minute used. Company B charges \$25 per month plus \$0.10 per minute used. **Write and solve an equation** to find the number of minutes you must talk to have the same cost for both calling plans.

Topic: Use the distributive property and collect like-terms when solving linear equations

Distributive Property: <https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-solving-equations/cc-8th-equations-distribution/v/equation-special-cases>

Solve for the given variable.

14. $12 = -4(-6x - 3)$ 15. $-8 = -(h + 4)$ 16. $5n + 34 = -2(1 - 7n)$ 17. $2(4x - 3) - 8 = 4 + 2x$

Topic: Solving proportions

Proportions: <https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-ratio-proportion/cc-7th-write-and-solve-proportions/v/find-an-unknown-in-a-proportion>

Proportions with Binomials (2 terms in the numerator or denominator): <https://www.youtube.com/watch?v=77Jm4Zcipwc>

Solve for the given variable.

18. $\frac{12}{5} = \frac{x}{4}$

19. $\frac{6}{x} = \frac{4}{9}$

20. $\frac{7}{x+5} = \frac{10}{5}$

21. $\frac{x}{x-3} = \frac{2}{3}$

Topics: Determine the rate of change (slope) and initial value (y-intercept) of a function from a description of a relationship or from two (x, y) values given graphically or numerically.

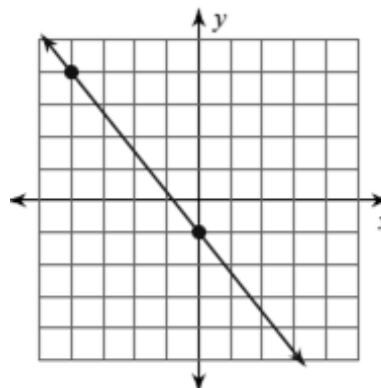
Derive the equation $y = mx + b$ for a line given two distinct non-vertical points.

Slope of a Line: <https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-linear-equations-functions/8th-slope/v/positive-and-negative-slope>

Slope-Intercept Form: <https://www.khanacademy.org/math/algebra/two-var-linear-equations-and-intro-to-functions/slope-intercept-form/v/graphing-a-line-in-slope-intercept-form>

22. Find the slope of the line containing the points $(0, -1)$ and $(5, 6)$

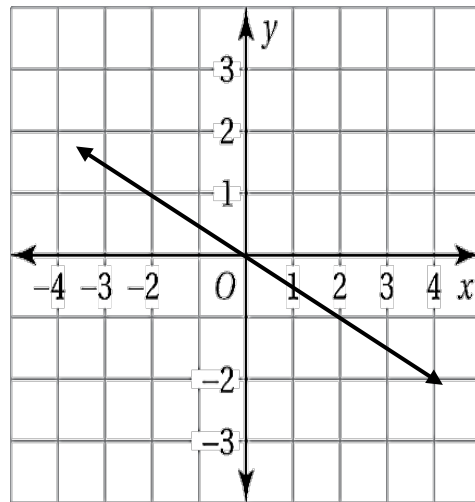
23. Find the slope of the line.



24. What is the slope of the line? What is the y-intercept?

Slope: _____

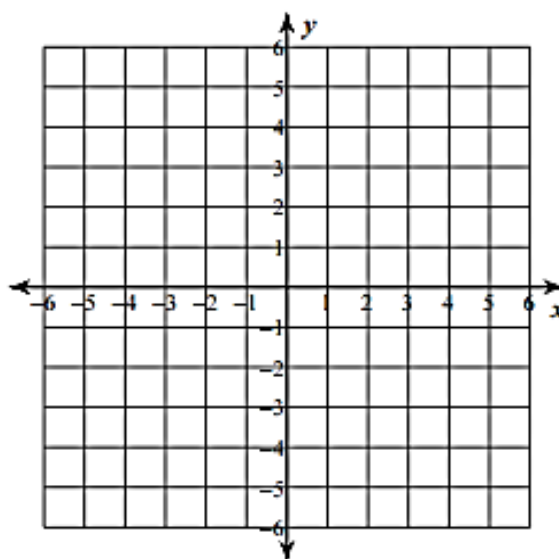
y-intercept: _____



25. Given the equation $y = 3x - 2$, determine the slope, y-intercept and create graph.

Slope: _____

y-intercept: _____



Write an equation in slope-intercept form ($y = mx + b$) of the line passing through the given points.

26. $(3, 5)$ and $(0, 4)$

27. $(2, -6)$ and $(-4, -2)$

28. $(\frac{1}{2}, -1)$ and $(3\frac{1}{2}, 14)$

29. When Phil started his new savings account, he deposited \$65. He is saving \$15 per week.

a. Write an equation that models the total money he has m after w weeks of saving.

b. How much money will Phil have in the savings account after 3 weeks?

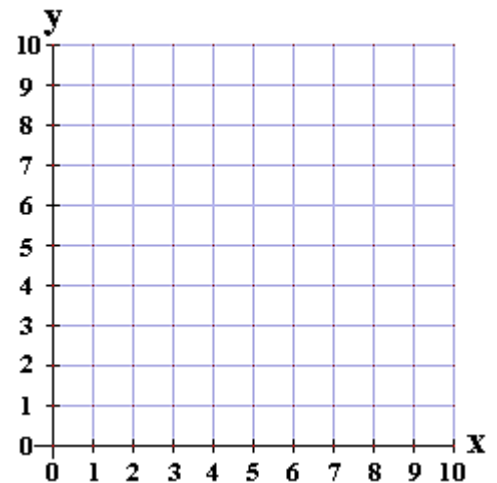
c. How many week will it take Phill to save \$200?

30. The table shows the cost y (in dollars) of x cold drinks.

a. Graph the data. Label the axes.

Drinks, x	0	2	4	6
Cost, y	0	3	6	9

b. What is the y -intercept of the linear function?
Interpret the y -intercept in context of the situation.



c. What is the slope of the linear function?
Interpret the slope in words in context of the situation.

ANSWERS:

1. 24

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

3. $8x$

4. $4 + 6x$

5. $x = 3$

6. $n = -\frac{7}{2}$

7. $x = -7$

8. $x = 0$

9. no solution

10. $k = 3.2$

11. infinitely many solutions

12. 6 bagels

13. 50 minutes

14. $x = 0$

15. $x = 4$

16. $n = 4$

17. $x = 3$

18. $x = 9.6$

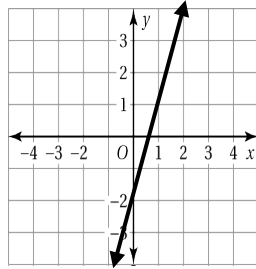
19. $x = 13.5$

20. $x = -1.5$

21. $x = -6$

22. $\frac{7}{5}$

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



24. slope = $-\frac{1}{2}$, y-intercept = 0

25. see graph to the right

26. $y = \frac{1}{3}x + 4$

27. $y = -\frac{2}{3}x - \frac{14}{3}$

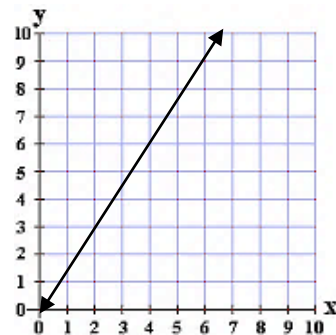
28. $y = 5x - \frac{7}{2}$

29. a.) $m = 15x + 65$

b.) \$110

c.) 9 weeks

30. a.)



b.) y-int = 0, The cost of 0 drinks is \$0.

c.) $m = \frac{3}{2}$ or 1.5

The cost increases \$3 per 2 drinks (or \$1.50 per drink)