

Summer Math Packet

Number Sense & Pre-Algebra Skills For Students Entering Algebra

During the first few days of Algebra 1, you will take an assessment covering the prerequisite skills included in this packet. While the packet itself will not be graded, you are expected to review and understand all of the material. The assessment will count as a full test grade in your first-quarter average.

Supplies Needed for Algebra 1:

- **TI-30X IIS, TI-84 Plus, TI-84 Plus Silver, or TI-84 Plus CE calculator**
- **1 inch 3-ring Binder(For use only in Algebra 1)**
- **4 Dividers Labeled: Spiral Review, Notes, Homework/Classwork, Extra paper**
- **Color pencils**
- **Loose leaf notebook paper**
- **Loose leaf graph paper**
- **Pencils (LOTS)**
- **Dry erase markers(LOTS)**

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. $9x - 7 = -7$

10. $9.4 - 0.25k = 8.6$

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.

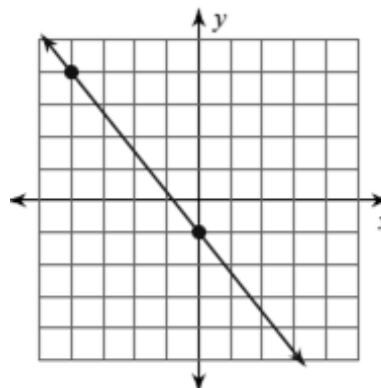
Derive the equation $y = mx + b$ for a line given two distinct non-vertical points.

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 $(5, 6)$

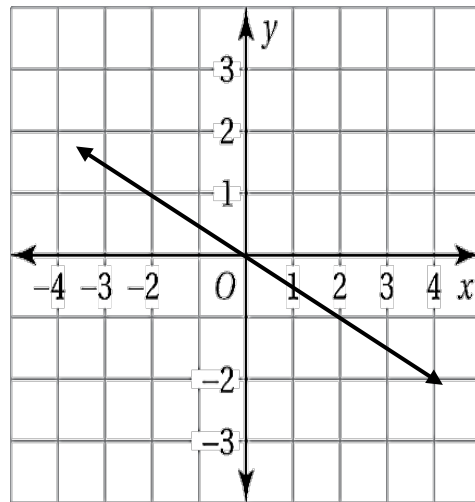
23. Find the slope of the line.



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

Slope: _____

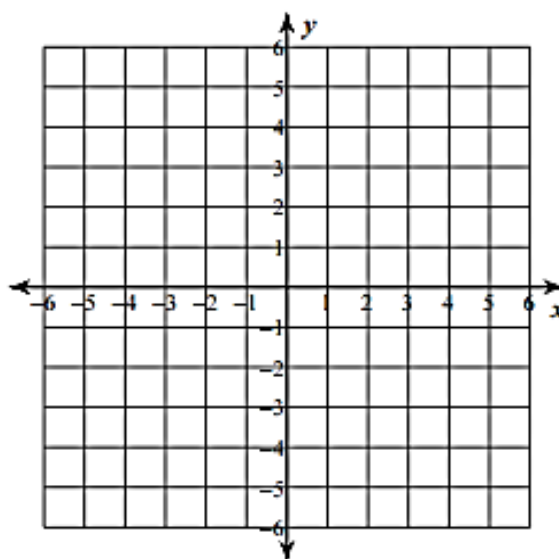
y-intercept: _____



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

Slope: _____

y-intercept: _____



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?

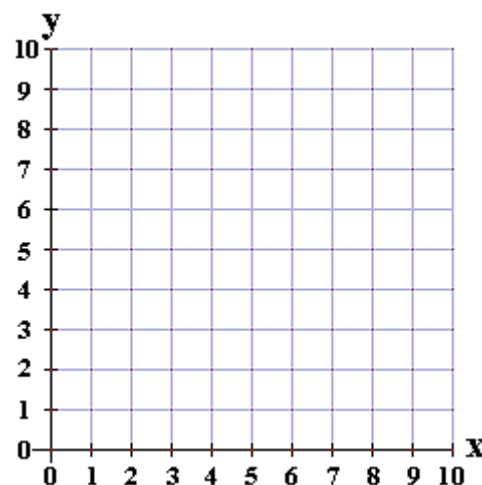
c. How many week will it take Phill to save \$200?

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.~~

10. $k = 3.2$

~~11.~~

12. 6 bagels

13. 50 minutes

14. $x = 0$

15. $x = 4$

16. $n = 4$

17. $x = 3$

18. $x = 9.6$

19. $x = 13.5$

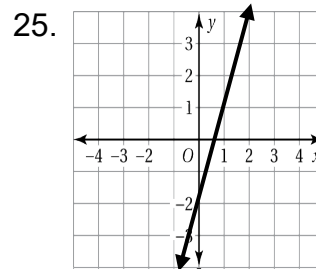
20. $x = -1.5$

21. $x = -6$

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

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

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

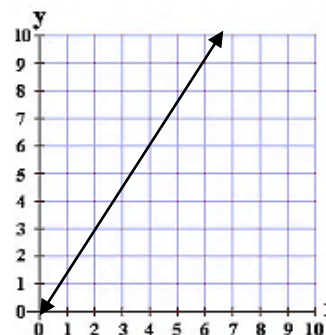


29. a.) $m = 15x + 65$

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)