

Sample High School Independent Practice Assignment Sheet: Algebra Unit

Essential Learning Standards

- I can explain how to write and solve systems of equations. (Section 1.1)
- I can solve systems of equations. (Section 1.1)
- I can solve a system of inequalities. (Section 1.2)

Skill Practice

Solve for x .

- $3x - 12 = 27$
- $\frac{1}{2}x + 8 = -2$
- $-2(x - 16) = 12$

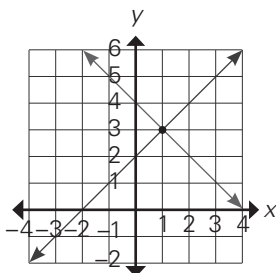
Solve for y .

- $4x + y = 10$
- $\frac{1}{2}x + 3y = -10$
- $-5(x - y) = 25$

Section 1.1

Why is $4x + 2y = 10$ equivalent to $y = -2x + 5$?

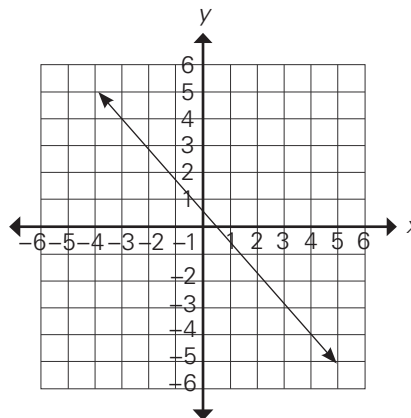
For her allowance last week, Tracie washed the dishes six times and made dinner four times and earned \$26. This week she washed dishes twice and made dinner four times to earn \$22. Determine how much she is earning washing dishes and making dinner. Justify your strategy.



Write equations for the lines in the preceding graph. What is the solution for this system of equations? Use another method to justify that the ordered pair described is a solution.

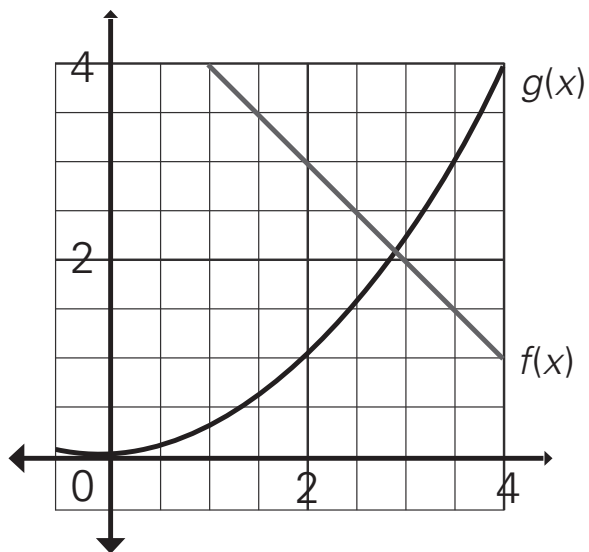
Look at the graph of the line below. Complete the following:

- a. Write the equation of the given line.
- b. Construct another line that intersects the given line.
- c. Write the equation of the line created in step b.
- d. Determine the solution of the system of equations.
- e. Prove that the ordered pair named in step d is a solution through a method other than graphing.



When does a system of equations have no solutions?
 In your response, include a graph and the functions to describe it. Explain how you know your solution is correct.

Consider the linear graph of $f(x)$ and the exponential graph of $g(x)$. Approximate the point of intersection.



You are opening a bank account and have the following options:

My Plan Checking	My Plan Plus Checking	My Plan Premium Checking
\$6.95 to open the account plus \$1.50 per transaction	\$14.95 to open the account plus \$0.50 per transaction	\$27.95 to open the account with no additional charges

- f. Create a linear equation for each checking plan. Identify the variable.
- g. Under what circumstances should you select:
 1. My Plan checking
 2. My Plan Plus checking
 3. My Plan Premium checking
- c. If you average about 15 transactions a month, which checking plan should you choose? Explain your reasoning.

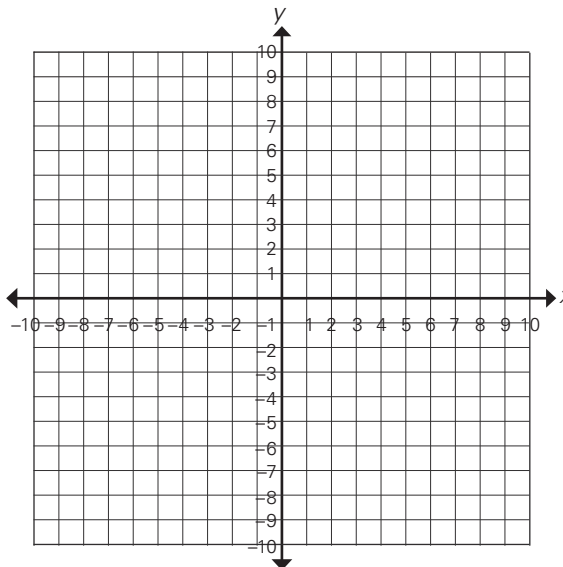
You and a friend go to Claire’s Accessory Boutique for the “After the Holidays” sale. All hair accessories are a set price during the sale and all earrings are on sale for the same price. You buy three hair accessories and three pairs of earrings and your total comes to \$11.25. Your friend’s total is \$10.00 for four hair accessories and two sets of earrings. How much does a hair accessory cost? How much does a pair of earrings cost?

Section 1.2

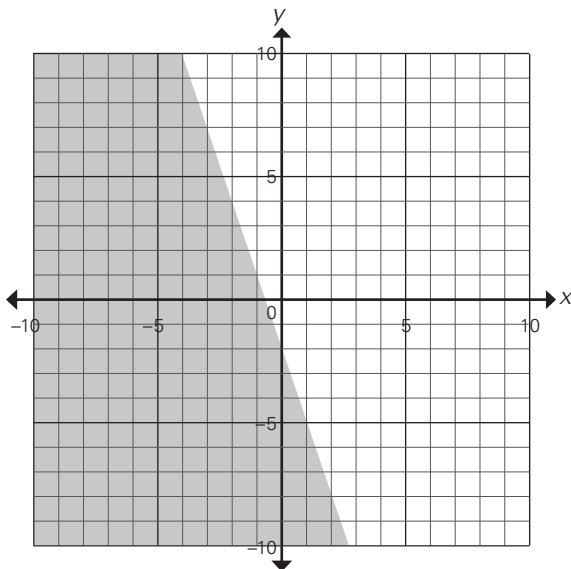
The number of medals won by an Olympic team is modeled by $y = 3x + 5$, where x is the number of athletes. The number of medals for another team is modeled by $y = 3x - 8$, where x is the number of athletes. For what number of athletes would both teams have the same number of Olympic medals? Is this a viable answer? Explain.

Graph the solution set to the system of inequalities.

$$\begin{cases} y \geq x - 5 \\ y \leq 3x \end{cases}$$



Which inequality does this graph represent?



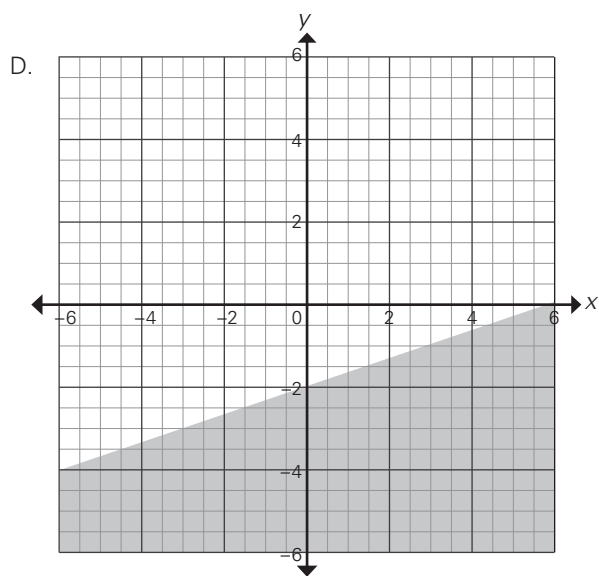
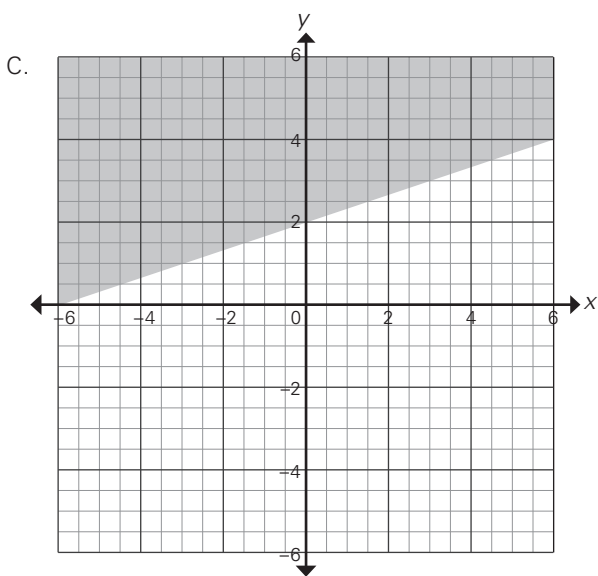
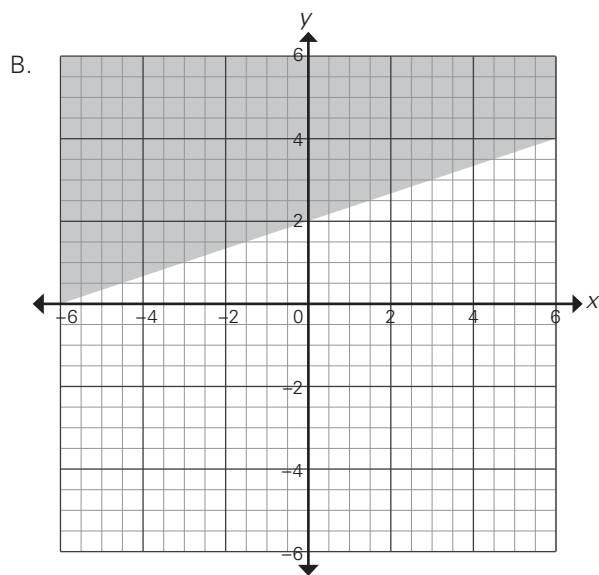
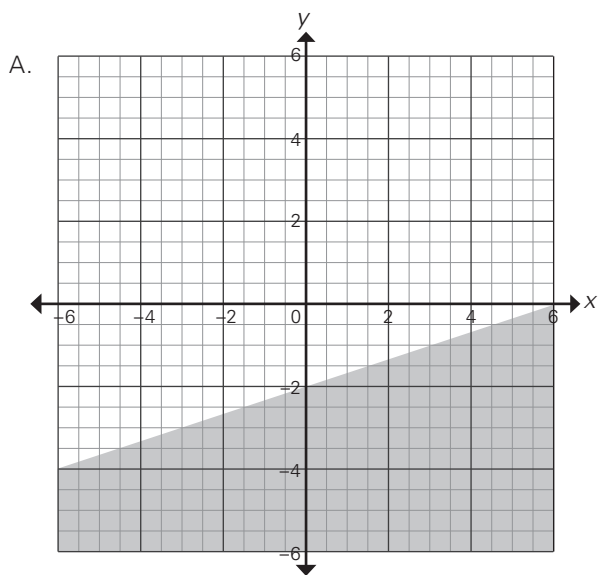
- A. $y > 3x + 2$
- B. $y > -3x - 2$
- C. $y < 3x - 2$
- D. $y < -3x - 2$

The A&F farm is a 500 square-yard free-range sheep and donkey farm. Each sheep needs 5 square yards of land, and each donkey needs 15 square yards. The county also limits the number of livestock to 50 animals per 500 square yards of land.

Analyze the combinations of sheep and donkeys the farmer could purchase. Be sure to include all limitations on the number of animals.

If the farmer decides to go with 40 of one type of animal, which type is possible given the constraints and why? Use mathematics to justify your solution.

Which is a graph of the solution set of the inequality $3y - x > 6$?



Source: Adapted from © 2015 by Howard County Public School System, Office of Mathematics.