

Ch.9 - Inequalities

Practice Assessment

Name Exemplar PER _____ DATE _____**ARE1B3** - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

1. Solve the inequality below. Show your work and circle the correct answer.

$$3x - 8 > 4(x - 2)$$

- A. $x > 16$
 B. $x < 0$
 C. $x > 0$
 D. $x < 16$

$$3x - 8 > 4(x - 2) \quad \text{Distributive Property}$$

$$3x - 8 > 4x - 8 \quad \text{Addition PoE}$$

$$3x > 4x \quad \text{Subtraction PoE}$$

$$-3x > -3x$$

$$0 > x$$

$$\text{or } x < 0$$

2. Solve the inequality below. Show your work neatly and then graph its solution.

$$17 > -3(-x + 7) - 5x + 8 \quad \text{Distributive Prop}$$

$$17 > 3x - 21 - 5x + 8$$

$$17 > -2x - 13$$

Collect Like Terms

$$+13 \quad +13$$

Addition PoE

$$\frac{30}{-2} > \frac{-2x}{-2}$$

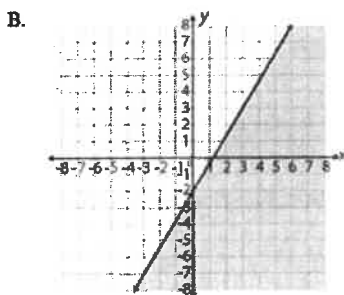
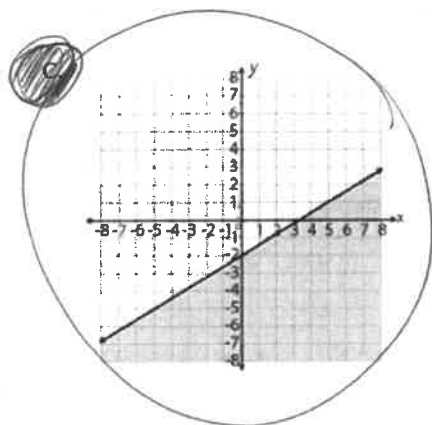
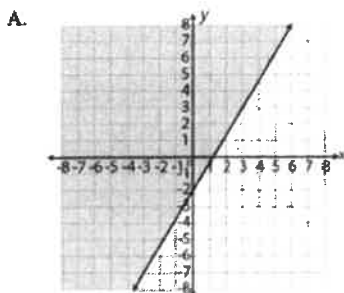
$$15 < x$$

Division PoE
(change sign!)

AREID12 Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables

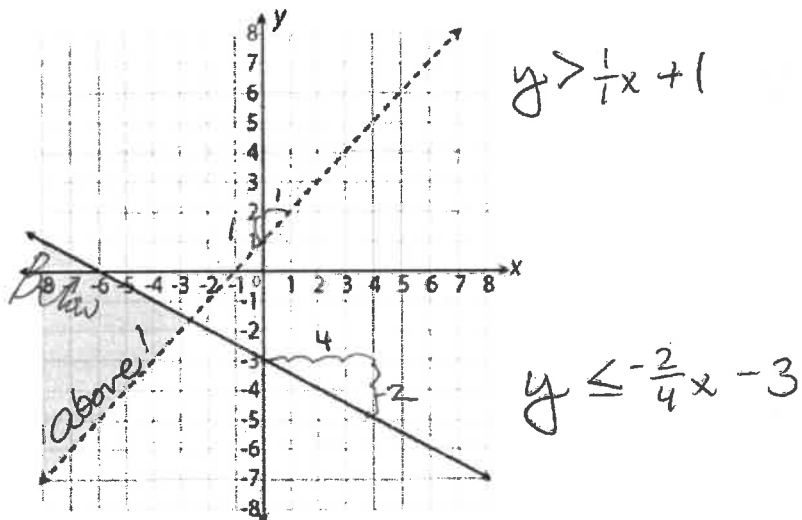
3. Which graph represents the solutions to the function below. Circle your choice and explain your answer in the space provided.

$$y \leq \frac{3}{5}x - 2$$



The inequality symbol implies that the shading should occur below the line. Also the slope implies that the line should rise 3 and run 5 units.

4. A system of linear inequalities is graphed below.



What are the linear inequalities for the system? Write them in the spaces below.

Inequality #1 $y \leq -\frac{1}{2}x - 3$

Inequality #2 $y > x + 1$

ACED1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

- 2/3 5. Meredith needs \$399 to buy a tablet computer. She wants to earn enough money babysitting to cover at least two-thirds the cost. If she earns \$8 an hour babysitting, write an inequality that can be used to solve for b , the number of hours she must babysit. Then, solve for b .

$$8b \geq \frac{2}{3}(399)$$

$$\frac{8b}{8} \geq \frac{266}{8}$$

$$b \geq 33.25$$

Meredith must babysit for at least

~~33.25~~ 33.25 hours to raise two-thirds the cost.

Write your answer in a complete sentence that explains its meaning with respect to the original story! of the tablet.

6. Marcus is responsible for maintaining the swimming pool in his community. He adds chemicals, when needed, to lower the pH of the pool.

- The maximum pH value allowed for the pool is 7.8.
- The pool currently has a pH value of 6.9. ← Starting value
- The pH value of the pool increases by 0.05 per hour. ← Rate of change

Write and solve an inequality that can be used to determine x , the number of hours before Marcus will need to add chemicals to maintain the pH for the pool.

$$\begin{array}{r} 6.9 + 0.05x \leq 7.8 \\ -6.9 \quad -6.9 \end{array}$$

$$\frac{0.05x}{0.05} \leq \frac{0.9}{0.05}$$

$$x \leq 18$$

To reach the maximum pH value, Marcus will need to add chemicals to the pool at most 18 more times.

Write your answer in a complete sentence that explains its meaning with respect to the original story!

