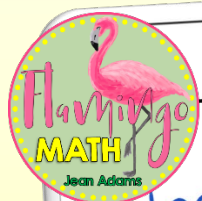


Algebra 2 Honors

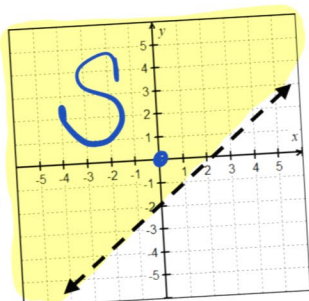
Two Variable Inequalities



WHEN AND HOW TO SHADE HALF-PLANES

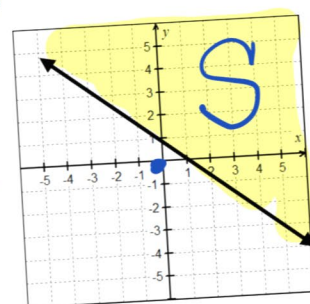
$$y > x - 2$$

dashed
true above
 $0 > -2$ true



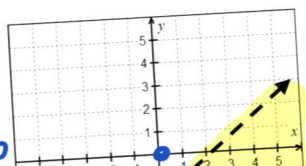
$$y \geq -\frac{2}{3}x + 1$$

solid
true above
 $0 \geq 1$ false



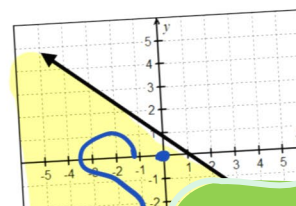
$$y < x - 2$$

dashed
true below
 $0 < -2$ false



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

solid
true below
 $0 \leq 1$ true



Completely Editable

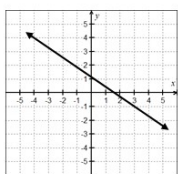
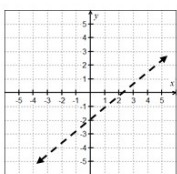
2.9

Lesson 9: Two-Variable Inequalities

- An inequality in two variables whose graph is a region of the coordinate plane that is bounded by a line is defined as a _____.
- The _____ is a line in the coordinate plane that separates the solutions of the inequality from the non-solutions. Points of the line itself may or may not be solutions.
- The set of points P in a coordinate plane that are on one side of the boundary of the graph of a linear inequality is called a _____.
- A _____ is a point that you pick on one side of the boundary of the graph of a linear inequality. If the test point makes the inequality true, then all points on that side of the boundary are solutions of the inequality. If the test point makes the inequality false, then all points on the other side are solutions.

Visual Vocabulary

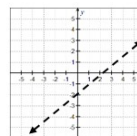
BOUNDARIES AND HALF-PLANES



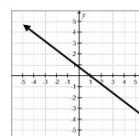
Using Test Points

WHEN AND HOW TO SHADE HALF-PLANES

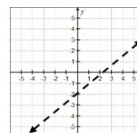
$$y > x - 2$$



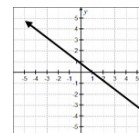
$$y \geq -\frac{2}{3}x + 1$$



$$y < x - 2$$



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

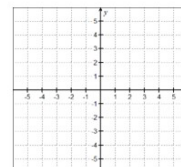


Graphing Linear Inequalities

EX #1: Graph $y \geq -2x + 1$

Boundary line:

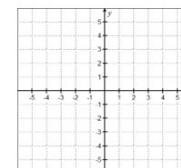
Test point:



EX #2: Graph $y < -2x + 1$

Boundary line:

Test point:



Using a Linear Inequality

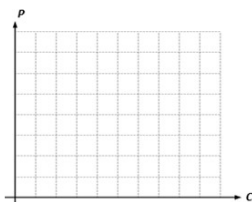
EX #3: Tina is going to buy P lbs of pasta salad and C lbs of chicken salad for a party. The pasta salad costs \$4 per pound and the chicken salad costs \$6 per pound. Tina has at most \$28 to spend. Write and graph an inequality that describes the relationship between P and C .

RELATE:

VARIABLES:

P = number of pounds of Pasta Salad
 C = number of pounds of Chicken Salad

SOLUTION:



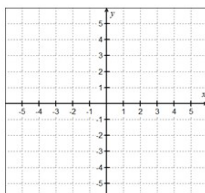
Graphing an Absolute Value Inequality

EX #4: Graph $y \geq -2|x - 1| - 3$

VERTEX:

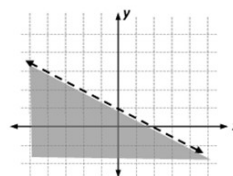
BOUNDARY:

SHADE:

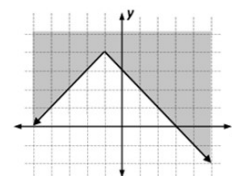


Writing an Inequality Given a Graph

EX #6: What inequality does this graph represent?



EX #7: Write the inequality for the graph shown.



Open-Ended Practice

EX #8: You want to buy your favorite candy bar that cost \$1.00 each and your favorite pepperoni snack that cost \$1.50 each. You have \$4.50 to spend.

A. Write an inequality to represent the situation, where C is the number of candy bars you buy and P is the number of pepperoni snacks.

B. Graph the inequality.



NOTES

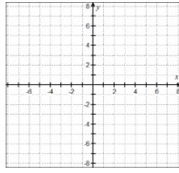
Name _____ Date _____

2.9

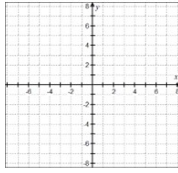
Two-Variable Inequalities Practice

Problems 1–3, graph each inequality.

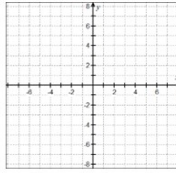
1. $y \leq 2x + 5$



2. $2x - 3y < 12$

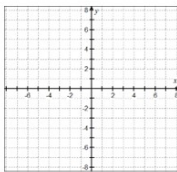


3. $x \geq -3$

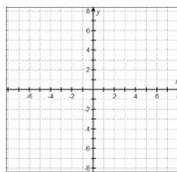


Problems 4–7, graph each absolute value inequality.

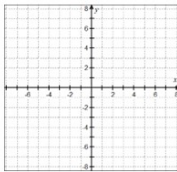
4. $y \geq |x - 2| - 4$



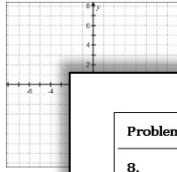
5. $y - 5 < -2|x + 3|$



6. $2 - y \leq \frac{1}{2}|x + 3|$

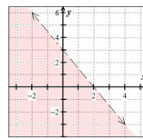


7. $5 + y < 3|2x + 4|$

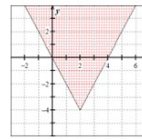


Problems 8–10, write an inequality for each graph.

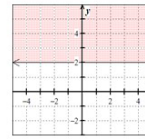
8.



9.



10.



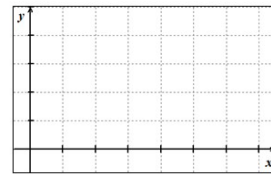
Problems 11–12, analyze applications.

11. A military cargo transport jet can carry as many as 18 vehicles. One large Hummer® style truck takes up the space of 3 regular Jeeps.®

A. Write an inequality to model the number of vehicles the cargo jet can transport at one time.

B. Describe the domain and range.

C. Graph the inequality



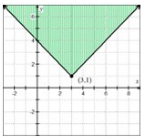
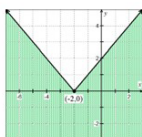
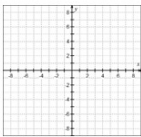
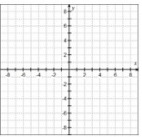
12. Sara volunteered to bring cookies and bottled water to the Mu Alpha Theta Induction ceremony. She doesn't want to spend more than \$30. She can purchase cookies for \$3 per dozen and a case of bottled water for \$4.

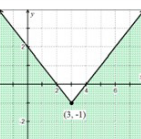
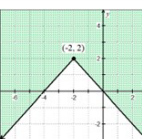
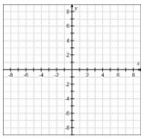
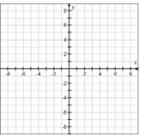
A. Write an inequality to model the number of cookies and water Sara can purchase within her budget.

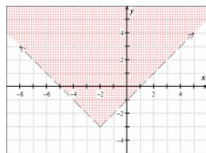
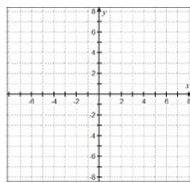
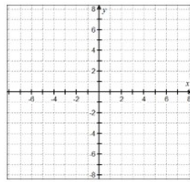


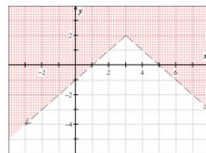
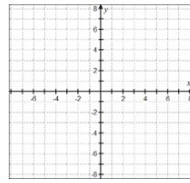
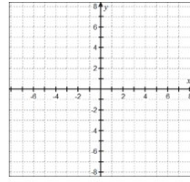
Practice Sets

Lesson Warm-Ups

Name _____ Date _____ Period _____			
Lesson 2.9 Two Variable Inequalities		Warm-Up #1	
1. Write an inequality for the graph. 	2. Write an inequality for the graph. 		
3. Graph $-2y > 2x - 4$ 	4. Graph $3y > 4x + 6$ 		

Name _____ Date _____ Period _____			
Lesson 2.9 Two Variable Inequalities		Warm-Up #2	
1. Write an inequality for the graph. 	2. Write an inequality for the graph. 		
3. Graph $-3y \leq 2x + 6$ 	4. Graph $3x + 2y > 8$ 		

2.9 Two-Variable Inequalities Form A	
Name _____	
Date _____ Period _____	
1. Write an inequality for the graph.	
	
2. Graph $2x + 3y \geq 6$	
	
3. Graph $-2y > 4x + 8$	
	
Grade: _____	

2.9 Two-Variable Inequalities Form B	
Name _____	
Date _____ Period _____	
1. Write an inequality for the graph.	
	
2. Graph $3x + 2y \leq -4$	
	
3. Graph $-4y < 2x - 8$	
	
Grade: _____	

Daily Lesson Quiz