NAME: _____ PERIOD: _____ DATE: _____

Homework Problem Set

* when rearranging inequality all are the same except for inequality symbol. when solving for y
> shaded above
< shaded below

1. Match each inequality with its graph. Explain your reasoning.

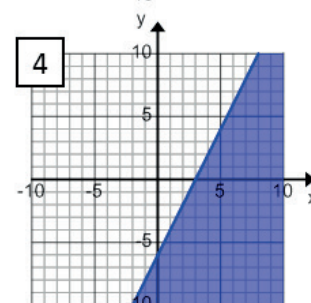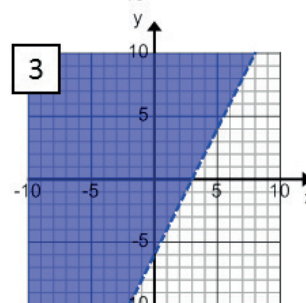   A. $2x - y > 6$

    GRAPH 2

    B. $y \leq 2x - 6$

    GRAPH 4

    C. $2x < y + 6$
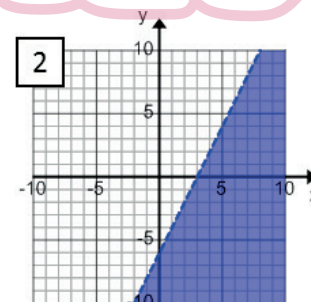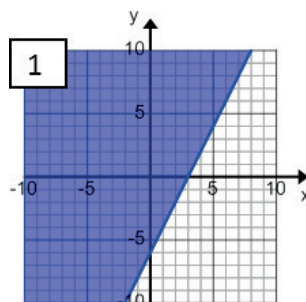
    GRAPH 3

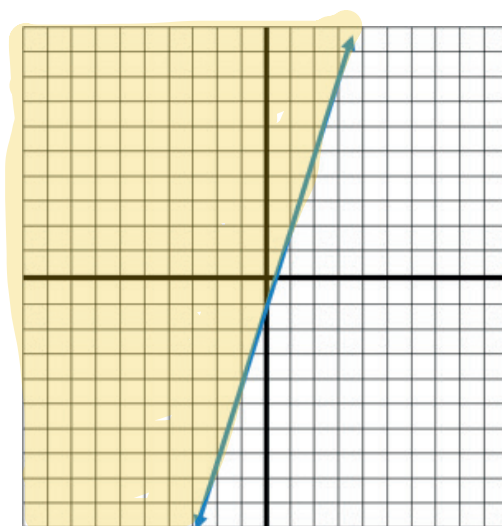   D. $2x - 6 \leq y$

    GRAPH 1

2. Ulli correctly graphed the line of the inequality $y \geq 3x - 1$, but she did not shade any region.

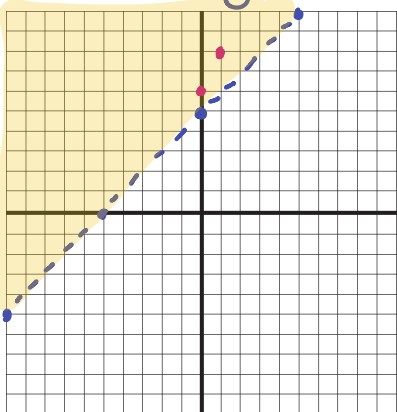   A. Circle the coordinates below that are in the solution of this inequality.

    (2, 4)   (−1, 5)   (0, −7)

    (−8, 2)   (7, 0)   (0, 0)

    B. Shade the correct region for Ulli.

Graph the solution set in the coordinate plane. Support your answer by selecting two ordered pairs in the solution set and verifying that they make the inequality true.
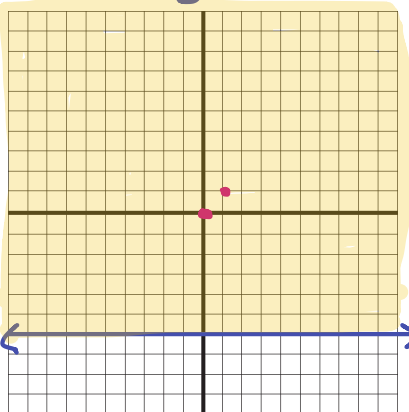
3. $-x + y > 5$ $\quad y > x + 5$	4. $-6 \le y$ $\quad y \ge -6$	5. $y \le -3x + 1$

3.
$\underline{(0,6)}$
$0 + 6 > 5 \checkmark$
$\underline{(1,8)}$
$1 + 8 > 5 \checkmark$

4.
$\underline{(0,0)}$
$0 \ge -6 \checkmark$
$\underline{(1,1)}$
$1 \ge -6 \checkmark$

5.
$(-3,0)$
$0 \le -3(3) + 1$
$0 \le +9 + 1$
$0 \le 10 \checkmark$
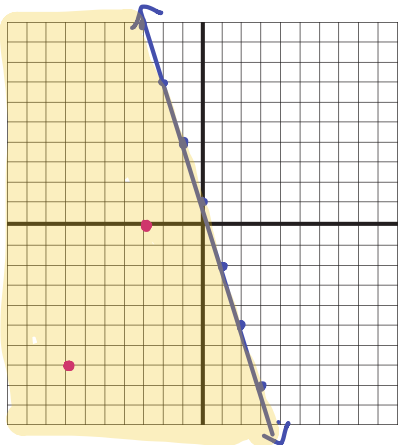
6. $2x - 24 \le 8y$	7. $3x < y$ $\quad y > 3x$	8. $2x > 0$ $\quad x > 0$
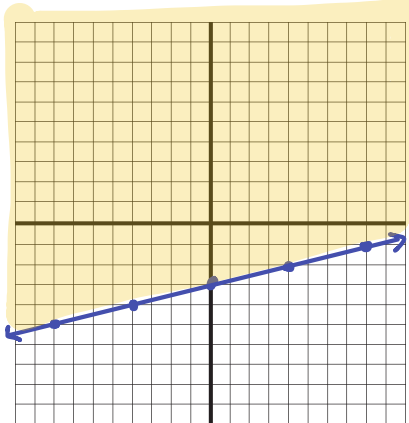
6.
$\dfrac{2x}{8} - \dfrac{24}{8} < \dfrac{8y}{8}$
$\frac{1}{4}x - 3 \le y$
$y \ge \frac{1}{4}x - 3$

9. $3x \le 6$ $x \le 2$

10. $3 < y + 4$ $-1 < y$ $y > -1$

11. $x + 3 > 0$ $x > -3$
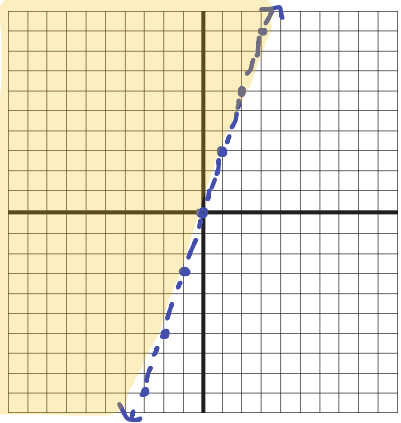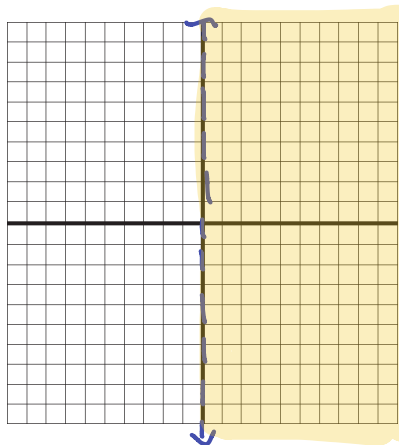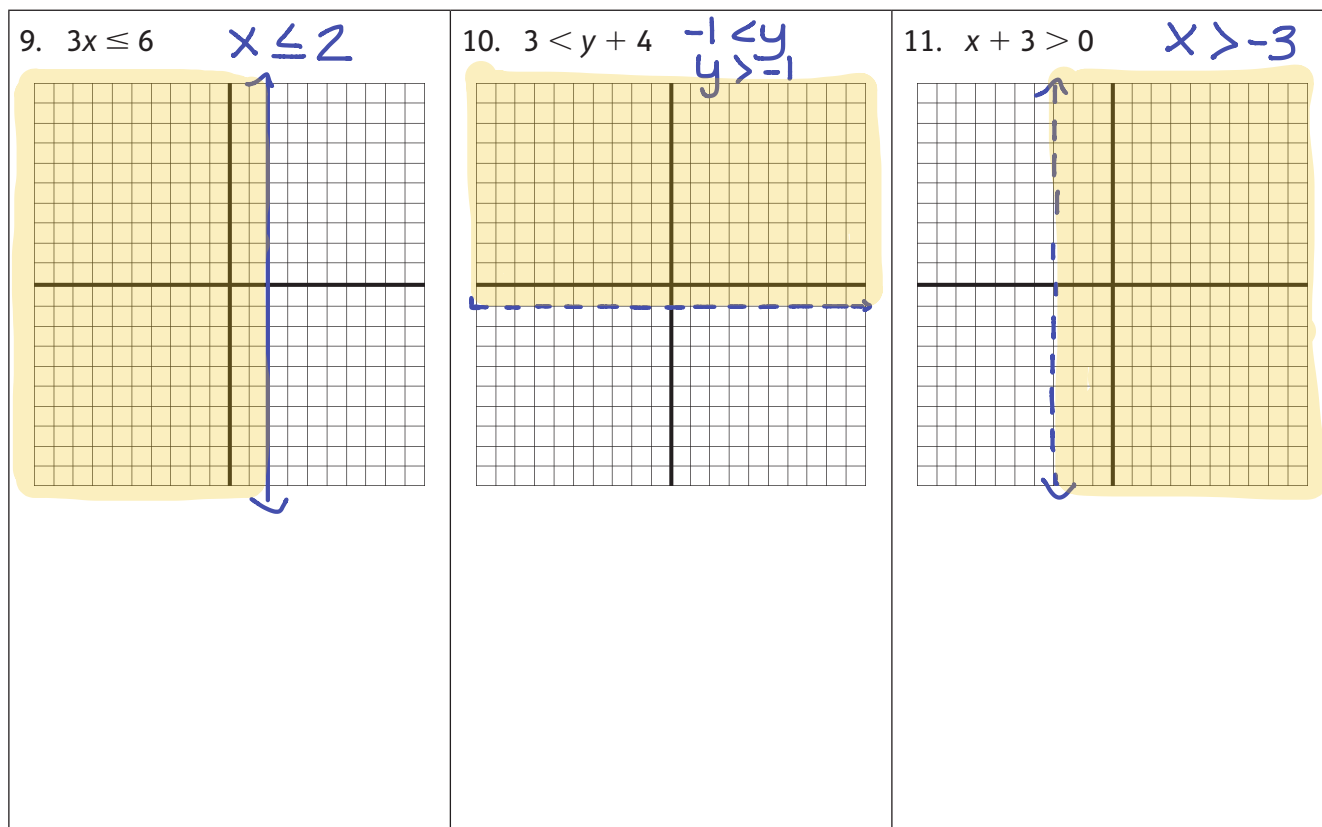
12. **Open Ended** Create 5 ordered pairs using the whole digits 0—9 exactly one time each. Then create a linear inequality such that:
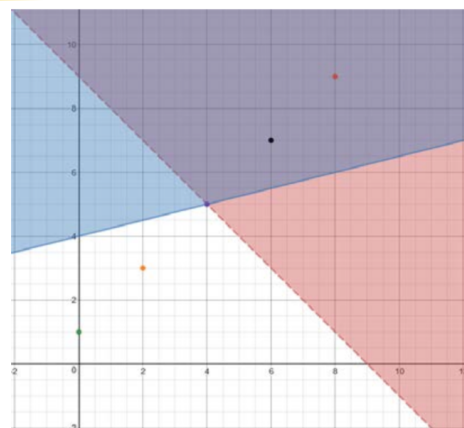
- Two of the ordered pairs are solutions to the linear inequality.

- Two of the ordered pairs are NOT solutions to the linear inequality.

- One of the ordered pairs is on the boundary line but NOT a solution to the linear inequality.

12. Answers will vary. Sample solution given at the right.

Hints:

- How can you tell if an ordered pair is a solution (or not a solution) for the linear inequality?
- When can an ordered pair be on the boundary line but not a solution?

$y > -x + 9$

$y \ge \frac{1}{4} x + 4$

(0, 1)

(2, 3)

(4, 5)

(6, 7)

(8, 9)

There are many answers that could work as long as:

(1.) Two of the ordered pairs are in the boundary region or solutions to the linear inequality.

(2.) Two of the ordered pairs are not in the boundary region or not solutions to the linear inequality.

(3.) The inequality is either less than or greater than but not or equal to.

Marti sells tacos and burritos from a food truck at the farmers market. She sells burritos for $3.50 each and tacos for $2.00 each. She hopes to earn at least $120 at the farmers market this Saturday.

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13. Identify three combinations of tacos and burritos that will earn Marti more than $120.

possible solutions to inequality:

$$3.5b + 2t > 120$$

shaded region

- 40 burritos, 6 tacos
- 10 burritos, 50 tacos
- 25 burritos, 30 tacos

14. Identify three combinations of tacos and burritos that will earn Marti exactly $120.

possible solutions to equation:

$$3.5b + 2t = 120$$

on line

- 0 burritos, 60 tacos
- 32 burritos, 4 tacos
- 20 burritos, 8 tacos

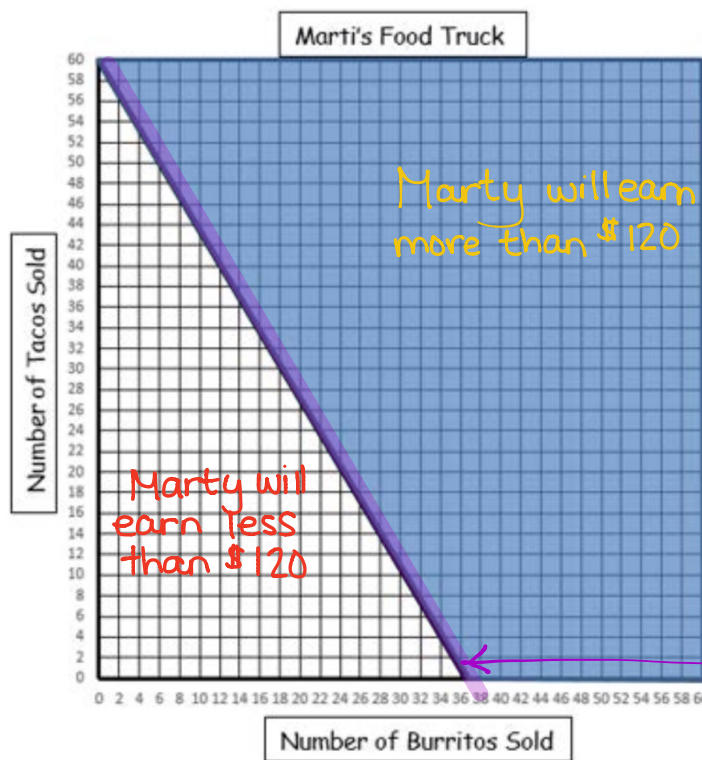15. Identify three combinations of tacos and burritos that will *not* earn Marti at least $120.

un-shaded region

possible answers.

- 2 burritos 5 tacos
- 14 burritos, 10 tacos
- 20 burritos, 8 tacos

16. Graph your answers to Problems 13 and 14 in the coordinate plane, and then shade a half-plane that contains all possible solutions to this problem.

Marti's Food Truck

Number of Tacos Sold

Marty will earn more than $120

Marty will earn less than $120

Number of Burritos Sold

marty will earn exactly $120

17. Create a linear inequality that represents the solution to this problem. Let *x* equal the number of burritos that Marti sells, and let *y* equal the number of tacos that Marti sells.

$$3.5b + 2t \geq 120$$

18. Is the point (10, 49.5) a solution to the inequality you created in Problem 17? Explain your reasoning.

b   t.

That point would not make sense in context of situation. You cannot sell a fraction of a taco.