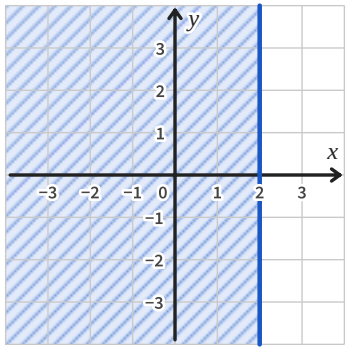
Inequalities and regions: one inequality

ANSWERS

1

Show $x \leq 2$ on the grid.



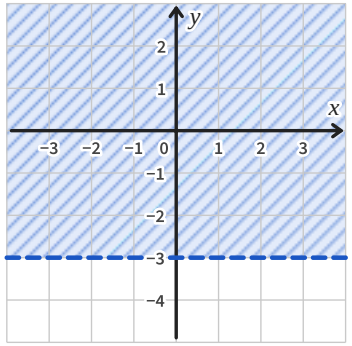
Solid

(0, 0): 0 ≤ 2. True.

the side with (0, 0): the left

2

Show $y > -3$ on the grid.



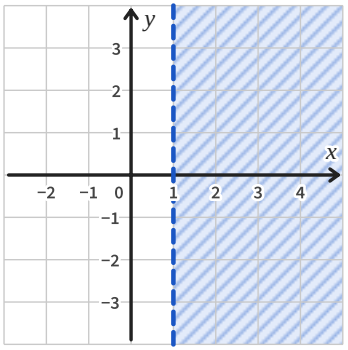
Dashed

(0, 0): 0 > −3. True.

the side with (0, 0): above

3

Show $x > 1$ on the grid.



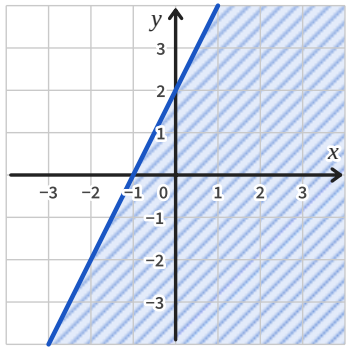
Dashed

(0, 0): 0 > 1. False.

the other side: the right

4

Show $y \leq 2x + 2$ on the grid.



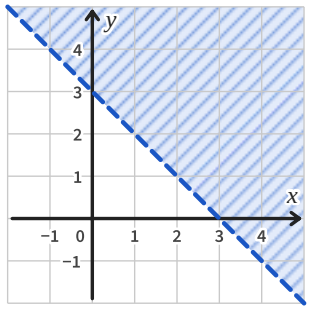
Solid

(0, 0): 0 ≤ 2. True.

the side with (0, 0): below

5

Show $y > 3 - x$ on the grid.

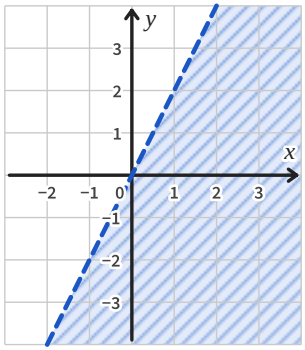


dashed; (0, 0): 0 > 3. False.

the other side: above

6

Show $y < 2x$ on the grid.

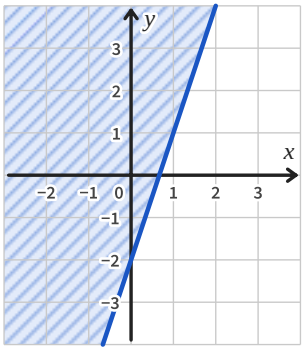


(1, 0)

0 < 2. True: the side with (1, 0)

7

Show $y \geq 3x - 2$ on the grid.

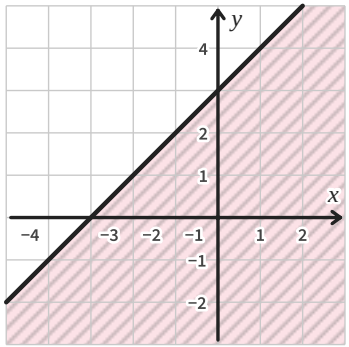


solid; (0, 0): 0 ≥ −2. True.

the side with (0, 0): above

8

Kai shows $y > x + 3$ with a solid line and shades the side with (0, 0).
Explain his two mistakes.



1: *the line should be dashed for >*

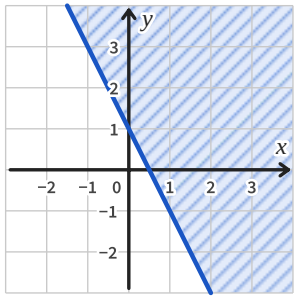
2: *(0, 0): 0 > 3 is false: the other side*

Inequalities and regions: one inequality *further practice*

ANSWERS

9

Show $y \geq 1 - 2x$ on the grid.

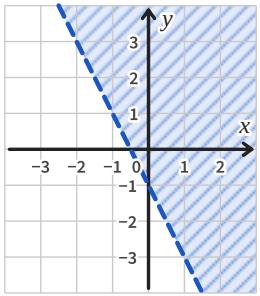


(0, 0): 0 ≥ 1. False: the other side

Answer *above the solid line*

10

Show $y > -2x - 1$ on the grid.

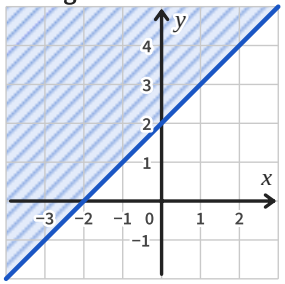


through (0, −1) and (−1, 1); (0, 0): 0 > −1. True.

Answer *the side with (0, 0)*

11

Ama tests the point (1, 3) to show $y \geq x + 2$. Why can she not use it? Shade the region.



1 + 2 = 3: (1, 3) is on the line

(0, 0): 0 ≥ 2. False.

Answer *the other side from (0, 0)*

12

Is the point (2, 5) in the region $y > 2x + 1$? Show how you know.

2 × 2 + 1 = 5; 5 > 5 is false

(2, 5) is on the dashed line

Answer *No*

13

Which of these points are in the region $x + 2y \leq 6$: (1, 2), (0, 3), (4, 2), (−2, 5)?

1 + 4 = 5 ≤ 6; 0 + 6 = 6 ≤ 6, on the solid line

4 + 4 = 8 and −2 + 10 = 8: too big

Answer *(1, 2) and (0, 3)*

14

Sam says the region $x > 3$ is above the line $x = 3$. Explain his mistake.

x = 3 is a vertical line

(4, 0): 4 > 3. True: the right

Answer *it is to the right*

15

Lena says the point (3, 2) is in the region $y \geq 2x - 4$ because it is above the line. Is she right? Explain.

2 × 3 − 4 = 2, so (3, 2) is on the line

the line is solid (≥), so it is in

Answer *In the region, but on the line*

16

Write down an inequality whose region contains (2, 1) but not (−1, 1).

2 > 0. True.

−1 > 0. False.

Answer *x > 0, for example*