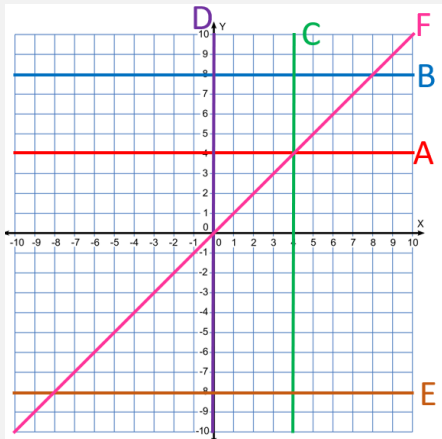


Lesson 20 – Shading Inequalities

Starter

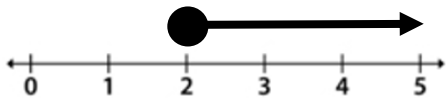
Write down the equation of each of these lines



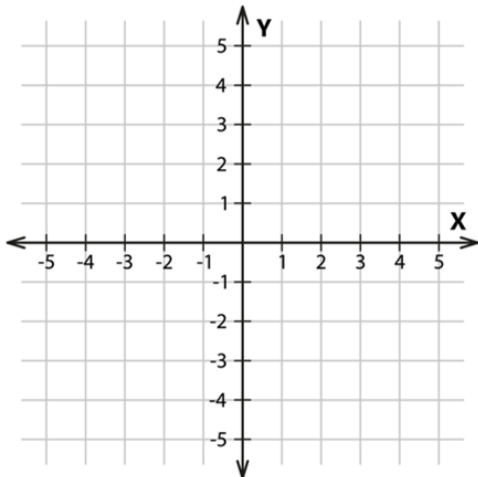
Starter Answers

A: $y = 4$ B: $y = 8$ C: $x = 4$ D: $x = 0$ E: $y = -8$ F: $y = x$

We have already seen how to show the inequality $x \geq 2$ on a number line in one-dimension.



How would we show the inequality on a 2-dimensional axes?

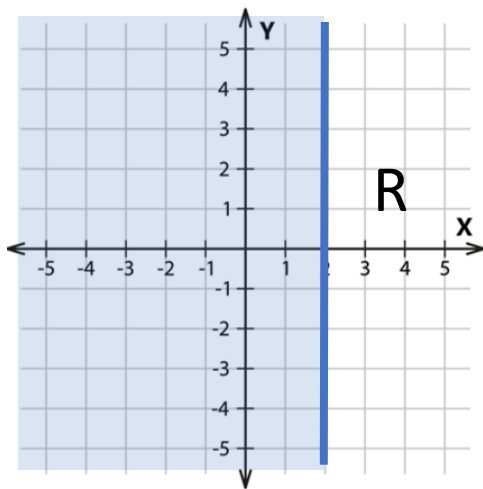


$x \geq 2$ means all of the points on the axes where the x-coordinates are greater than or equal to 2.

Example 1

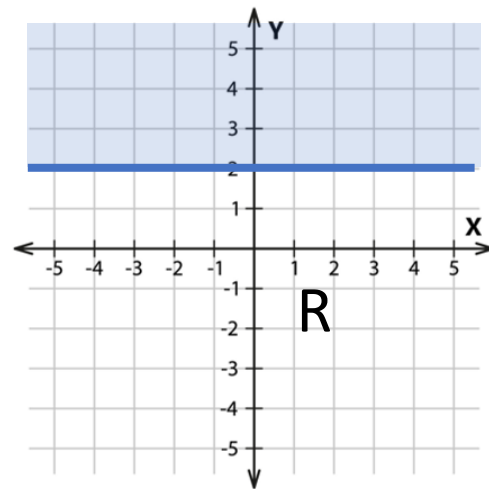
Using shading, label the correct region that represents the following inequalities with an R.

$$x \geq 2$$



First draw the line $x = 2$
The points on this line all have an x-coordinate of 2
The points to the left of this line have an x-coordinate that is less than 2.
The points to the right have an x-coordinate that is greater than 2.
We want the right hand side, so label this with an R and shade out the other side.

$$y \leq 2$$

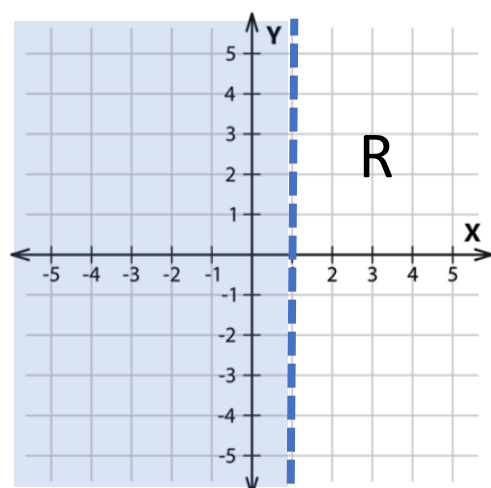


First draw the line $y = 2$
The points under this line all have a y-coordinate less than 2.
The points above this line all have a y-coordinate more than 2.
Since $y \leq 2$ means “less than or equal to 2”, we want the region under the line.

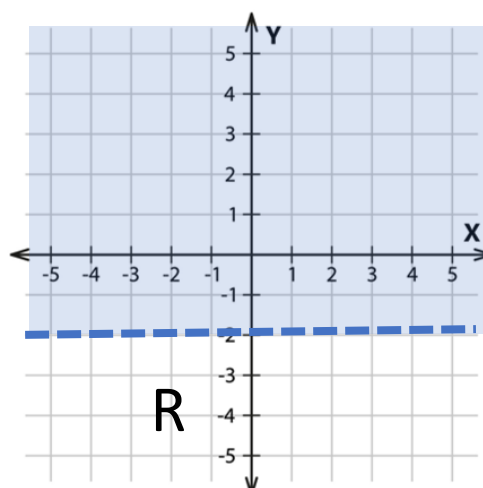
Example 2

Using shading, label the correct region that represents the following inequalities with an R.

$$x > 1$$



$$y < -2$$



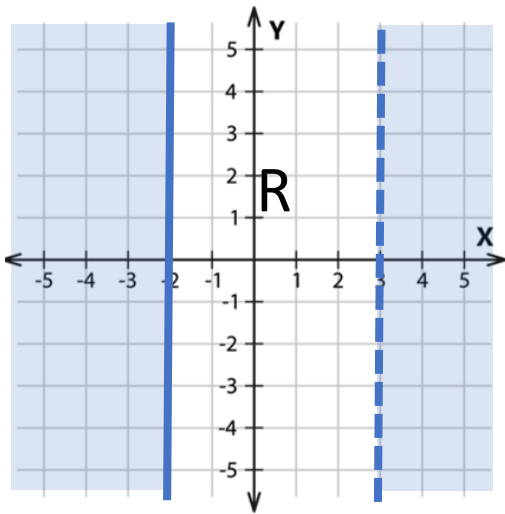
On the left one, x cannot equal 1, it is just greater than.
On the right, y can't Equal -2, it is just less than.
To show this, we use a dashed line.

Example 3

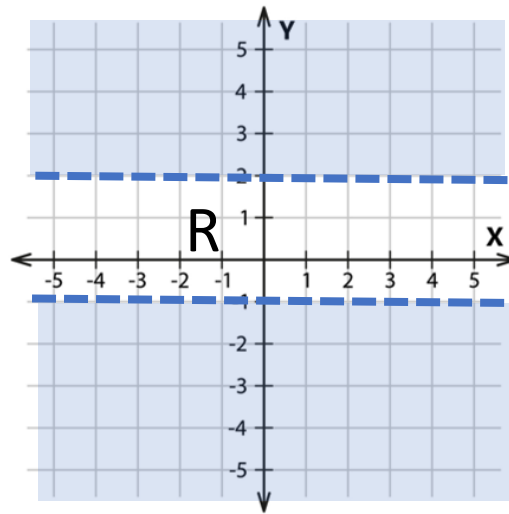
Using shading, label the correct region that represents the following inequalities with an R.

$$-2 \leq x < 3$$

$$-1 < y < 2$$



This means all of the points that have an x-coordinate between -2 and 3. It cannot equal 3 so use a dashed at $x = 3$. It can equal -2 so use a solid line for $x = -2$.



This means all the points that have a y-coordinate between -1 and 2. y cannot equal -1 or 2 so we use a dashed line for both.