Graphing Inequalities

a) Graph $y \geq 5$

1) Graph the line $y=5$
   → solid line if $\leq$ or $\geq$
   → dashed line if $<$ or $>$

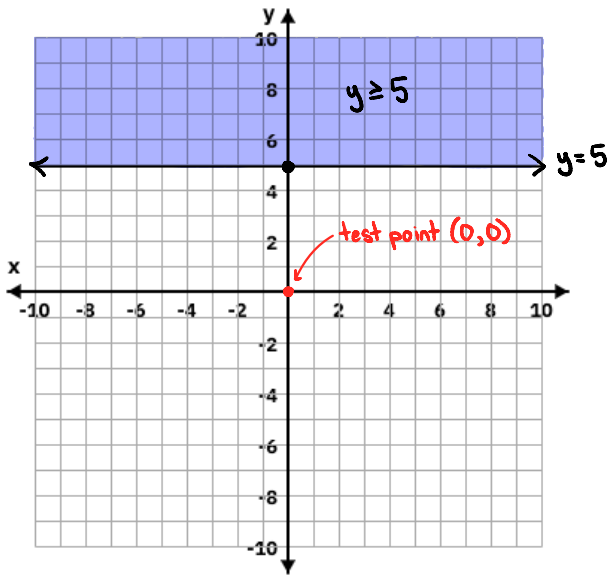
2) Use a test point and shade region that makes inequality true

Test point: (0, 0)

LS	$\geq$	RS
y		5
$=0$		

$0 \geq 5$ (not true)

∴ shade the region that does not contain test point (0,0).



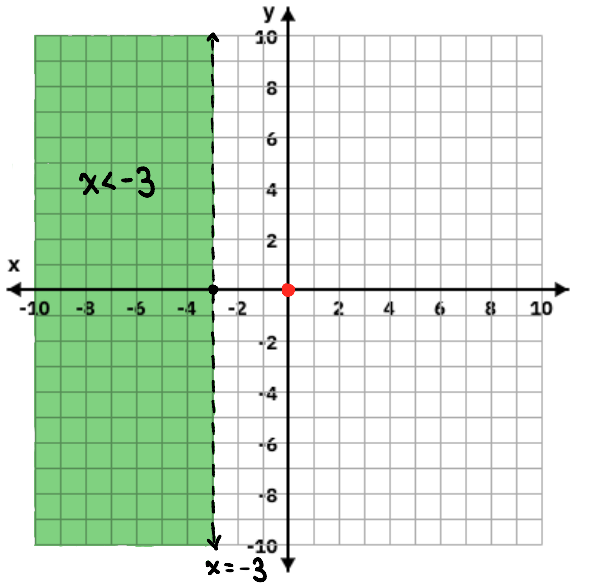
b) Graph $x < -3$

→ graph $x=-3$ (dashed line)

Test point: (0, 0)

LS	$<$	RS
x		-3
$=0$		

$0 < -3$ (not true)



c) Graph $x + y \leq 8$

$\longrightarrow$ solid line

Graph $x+y=8$:

x-int

$x+(0)=8$

$x=8$

$(8,0)$

y-int

$(0)+y=8$

$y=8$

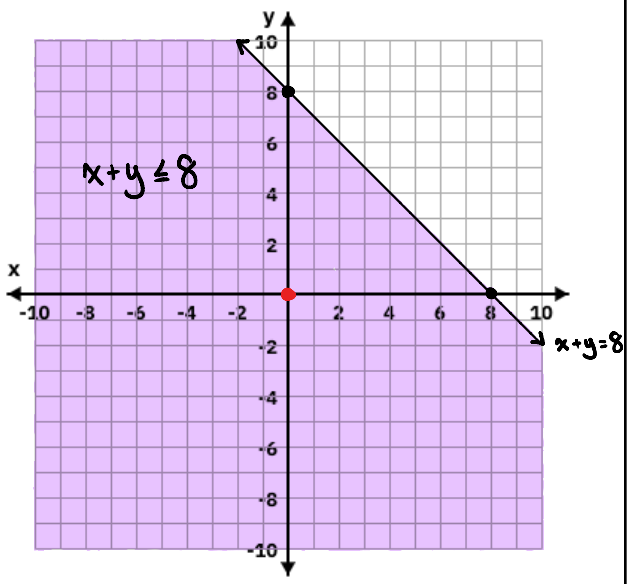
$(0,8)$

Test point: $(0,0)$

$\leq$

LS	RS
$x+y$ $=0+0$ $=0$	8

$0 \leq 8$ (true)



d) Graph $3x - 4y > 12$

$\longrightarrow$ dashed line

Graph $3x-4y=12$:

x-int

$3x-4(0)=12$

$3x=12$

$x=4$

$(4,0)$

y-int

$3(0)-4y=12$

$-4y=12$

$y=-3$

$(0,-3)$

Test point: $(0,0)$

$>$

LS	RS
$3x-4y$ $=3(0)-4(0)$ $=0$	12

$0 > 12$ (not true)