A carpenter in his spare time makes birdhouses and mailboxes. He wants to make and sell some in a few weeks at a craft fair.

It costs him $36 to make each birdhouse and $20 to make each mailbox. He wants to spend no more than $540 on materials. He's been pretty busy with his regular job so he's planning on making no more than 19 items for the craft fair.

He plans on selling each birdhouse for $75 and each mailbox for $45.

Write and graph a system of inequalities to find out how many of each he should make and sell in order to maximize his income.

B = # birdhouses
M = # mailboxes

$B \geq 0$

$M \geq 0$

$36B + 20M \leq 540$

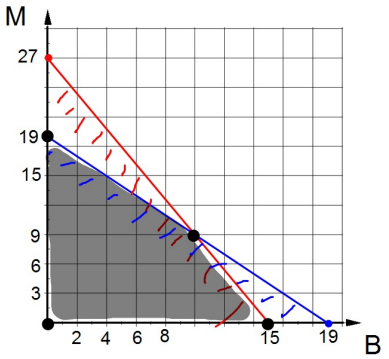
$B + M \leq 19$

B = # birdhouses
M = # mailboxes

$B \geq 0$ $M \geq 0$ These define the 1st Quadrant only.

$36B + 20M \leq 540$ B-int = 15, M-int=27

$B + M \leq 19$ B-int = 19, M-int =19



Corners of the feasible region:

(0,0) (0,19) (15,0) (10,9)

Objective Equation:

$75B + 45M = T$

(B,M)	75B + 45M = T
(0,0)	$0
(0,19)	$855
(10,9)	$1155
(15,0)	$1125

The carpenter should make and sell 10 birdhouses and 9 mailboxes in order to maximize their income at $1155