An artist is going to make some coffee mugs and some flower vases to sell. It takes 4.5 hours to make a coffee mug and 3 hours to make a flower vase. The artist has only 36 hours to spend making these items. The artist also only has enough clay to make up to 10 items to sell.

1. Write a system of inequalities that models this situation.

m = # mugs
v = # of vases

$4.5m + 3v \leq 36$

$m + v \leq 10$

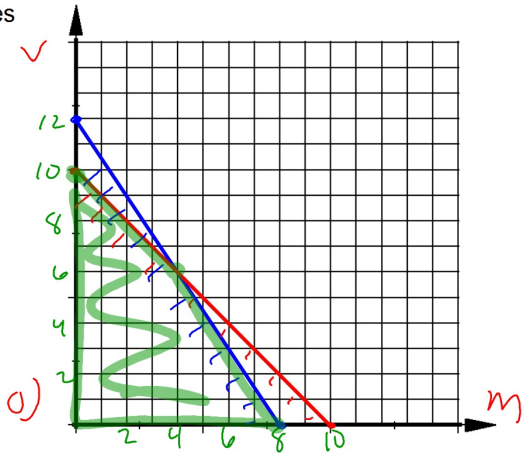
$m \geq 0$

$v \geq 0$

2. Graph this sytem of inequalities

$4.5m + 3v \leq 36$
m-int = 8 v-int = 12

$m + v \leq 10$
m-int = 10
v-int = 10



3. Find the coordinates of the corners of the feasible region.

(0,0) (0,10) (8,0) (4,6)

4. The artist is going to sell each coffee mug for $25 and each flower vase for $20.

a. Write the Objective Function $I = 25m + 20v$

b. How many of each item should the artist make in order to maximize their income?

(m, v)	25m + 20v
(0,0)	0
(0,10)	200
(8,0)	200
(4,6)	220

the artist should make and sell 4 mugs and 6 vases in order to maximize income.

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

$B \geq 0$

$M \geq 0$

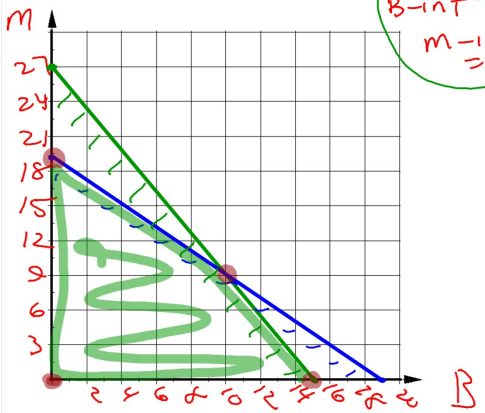
$36B + 20M \leq 540$

$B + M \leq 19$

$B \geq 0$ $M \geq 0$ $36B + 20M \leq 540$

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
15	0	$1125
10	9	$1155

the carpenter should make and sell 10 birdhouses and 9 mailboxes to maximize income.