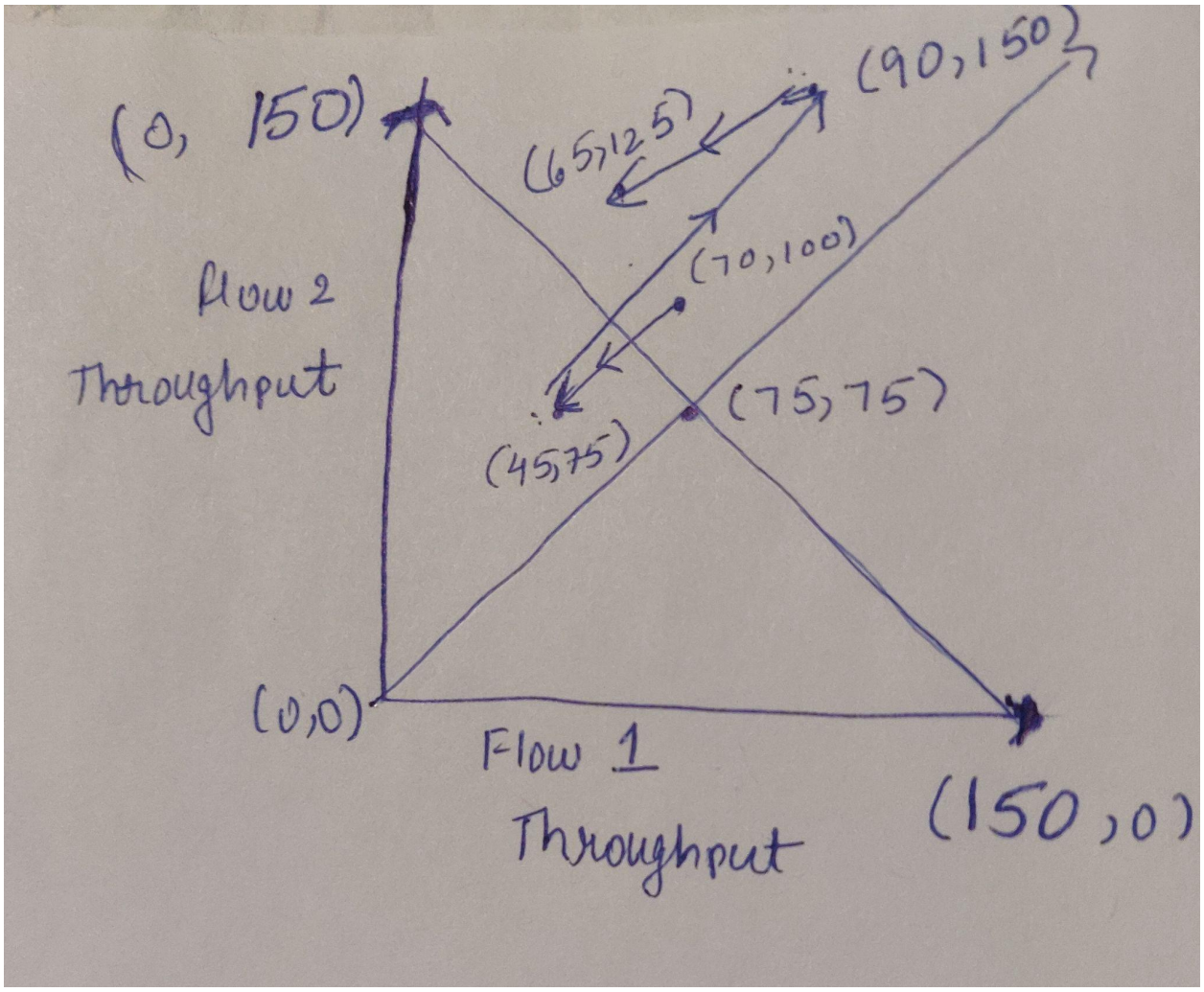
PART D

Multiplicative Increase Additive Decrease:

First, I have taken the middle point as (75,75). According to Fairness, both the flows should converge to the common fairness point (in my case, (75,75)).

For this congestion control technique:

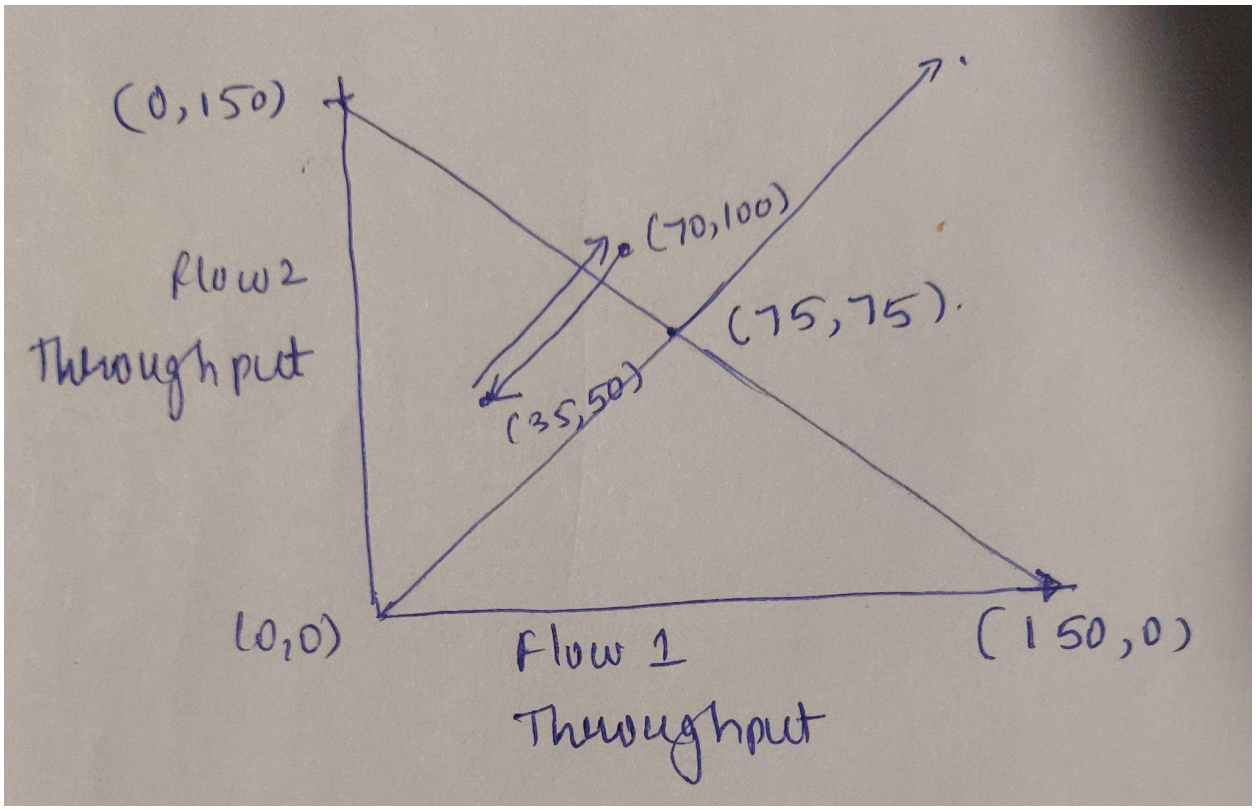
1. Let's say cwnd is at (70,100) and additive value be 25 and multiplicative factor be 2.
2. After the additive decrease, it goes to (45,75).
3. Next, we do the multiplicative increase, it goes to (90,150).
4. Again, after the additive decrease it goes to (65,125).
5. We can see that the value never converges to the middle point and starts to go in the opposite direction.



Multiplicative Increase Multiplicative Decrease:
According to Fairness, both the flows should converge to the common point (75,75).

For this congestion control technique:

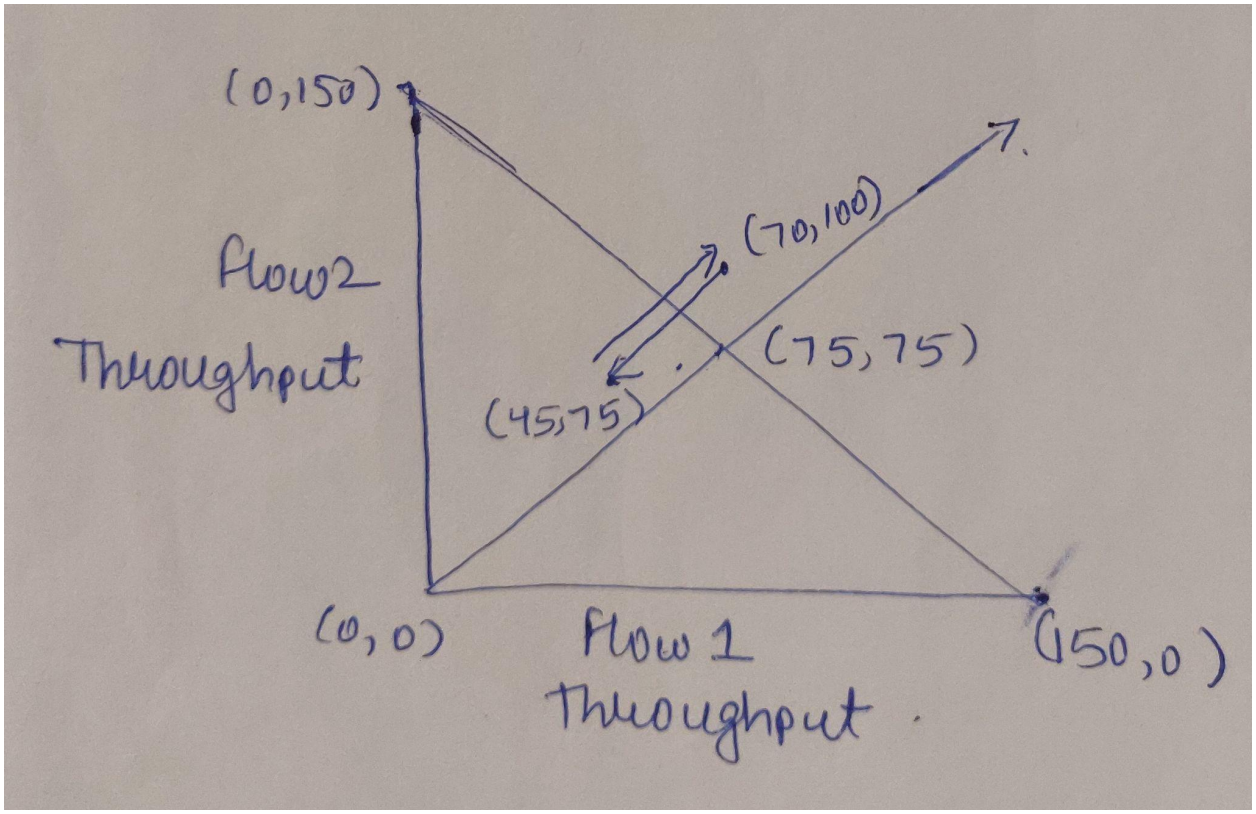
1. Let's say cwnd is at (70,100) and the multiplicative factor be 2.
2. After the multiplicative decrease, it goes to (35,50).
3. Next, we do the multiplicative increase, it goes to (70,100).
4. Again, after the additive decrease it goes to (35,50).
5. We can see that the value never converges to the middle point and keeps on oscillating between these 2 points.



Additive Increase Additive Decrease:
According to Fairness, both the flows should converge to the common point (75,75).

For this congestion control technique:

1. Let's say cwnd is at (70,100) and additive value be 25.
2. After the additive decrease, it goes to (45,75).
3. Next, we do the additive increase, it goes to (70,100).
4. Again, after the additive decrease it goes to (45,75).
5. We can see that the value never converges to the middle point and keeps on oscillating between these 2 points.



This shows that all 3 congestion control techniques are not fair.