

Quiz 18 Solutions!

1. After a glorious upset over the Trinity roosters (bantams? meh), the two ice hockey captains A and B celebrate by using the Adjusted Winner Method to divide a Neapolitan ice cream. Their values:

	Choc	Van	Straw
A	.3	.6	.1
B	.4	.2	.4
A-to-B val rat	$3/4$	3	$1/4$

(a) Compute the A -to- B valuation ratios and fill them out in the table above. (3 pts)

(b) On the hunt for a pareto-optimal and equitable division, we are going to make a threshold cut which splits the Chocolate between A and B .

i. What is the ratio associated to this threshold division? Ratio = $3/4$ (1 pt)

ii. Who will get the Vanilla in this threshold cut? Who will get the Strawberry? (2 pts)

Van: to A

Straw: to B

iii. Give A and B the Vanilla and Strawberry as above in Part 1(b)ii. Let x = the amount of the Chocolate component we will put in A 's slice.

Make equations in x that represent A 's and B 's values for their slices. (2 pts)

x = Choc in A 's slice

A 's value of A 's slice

$$.6 + .3x$$

B 's value of B 's slice

$$.4 + .4(1 - x) = .8 - .4x$$

iv. Use these equations to find an equitable, pareto-optimal division. (2 pts)

$$.6 + .3x = .8 - .4x$$

$$.6 + .7x = .8$$

$$.7x = .2$$

$$x = 2/7$$

Then the pareto-optimal, equitable division is:

Give to A : All the Van, $2/7$ of the Choc

Give to B : All the Straw, $5/7$ of the Choc