

The example from § 13.1 - Adjusted Winner

1. Two players, several categories, each given 100 points to weight in their categories

Table 13.1 (Enhanced)

	Glaxowellcare	SKB	^{new column} ↓ <u>G/SKB ratio</u>
Name	5	10	$5/10 = .50$
HQ	25	10	$25/10 = 2.50$
Chmn	35	20	$35/20 = 1.75$
CEO	15	35	$15/35 = .43$
Layoffs	20	25	$20/25 = .80$
	<u>100</u>	<u>100</u>	

2. Reorder categories by weight (decreasing).

	GW	SKB	Ratio
HQ	25	10	2.50
Chmn	35	20	1.75
Layoffs	20	25	.80
Name	5	10	.50
CEO	15	35	.43

3. (Not in the book).

At each division point down the list, split and see how many points each player gets.

	GW	SKB		GW	SKB
HQ	25	10	2.50	0	100
Chmn	35	20	1.75	25	90
Layoffs	20	25	.80	60	70
Nano	5	10	.50	80	45
CEO	15	35	.43	85	35

~~should be 100~~ ~~0~~ ~~100~~ ~~0~~ ~~100~~

What does this mean? At the line with the asterisk, we assign HQ + Chmn to GW, which GW thinks is worth 60 points. We assign Layoffs, Nano, CEO to SKB, which SKB thinks is worth 70 points. (Note: $25 + 35 = 60$, $25 + 10 + 35 = 70$.)

If we go one step further, and assign Layoffs to GW, it has $25 + 35 + 20 = 80$ and SKB only gets $10 + 35 = 45$. The winner shifts!

4. The goal is to have the same amount to both players. This requires algebra. We want GW to get $1-X$ fraction of Layoffs and SKB to get X fraction. (This isn't the letter I'd use, but it's in the book.)

	HQ	Chmn	Fractnl Layoffs
Now GW gets	25 +	35 +	20(1-x)
SKB gets	CEO + Name +	Fractnl Layoffs	
	35 +	10 +	25x

Note: in each case, we use the weighting system of the player

$$25 + 35 + 20(1-x) = 35 + 10 + 25x$$

$$60 + 20 - 20x = 45 + 25x$$

$$80 - 45 = 20x + 25x = 45x$$

$$35 = 45x$$

$$x = \frac{35}{45} = \frac{7}{9}, \quad 1-x = 1 - \frac{7}{9} = \frac{9}{9} - \frac{7}{9} = \frac{2}{9}$$

5 So we give GW the choice of HQ, Chairman and $\frac{2}{9}$ of the layoffs, while SKB gets the CEO, the name and $\frac{7}{9}$ of the layoffs.

By GW's point of view, They've gotten

$$25 + 35 + 20 \cdot \frac{2}{9} = 60 + \frac{40}{9} = 64 \frac{4}{9} \text{ pts.}$$

By SKB's point of view, They've gotten

$$35 + 10 + 25 \cdot \frac{7}{9} = 45 + \frac{175}{9} = 45 + 19 \frac{4}{9} = 64 \frac{4}{9}$$

Both are equal and both are more than half.