

**CANDY SHOP PROBLEM**

**Variables**

- PP    peanuts to be sold as peanuts
- CC    cashews to be sold as cashews
- PBC   peanuts to be mixed as Bridge Club mix
- CBC   cashews to be mixed as Bridge Club mix
- HBC   hazelnuts to be mixed as Bridge Club mix
- PDU   peanuts to be mixed as Deluxe mix
- CDU   cashews to be mixed as Deluxe mix
- HDU   hazelnuts to be mixed as Deluxe mix

**Availability**

- Peanuts: 100 lb                      PP + PBC + PDU ≤ 100
- Cashews: 30 lb                      CC + CBC + CDU ≤ 30
- Hazelnuts: 50 lb                    HBC + HDU ≤ 50

**Technological constraints**

CBC	≥ 0,20 (PBC + CBC + HBC)
PBC	≤ 0,50 (PBC + CBC + HBC)
CDU	≥ 0,30 (PDU + CDU + HDU)
PDU	≤ 0,30 (PDU + CDU + HDU)

or, rather (previously), for CBC (cashew in Bridge Club mix),

$$\frac{CBC}{PBC + CBC + HBC} \geq 0,20$$

Not linear ! Hence,

$$CBC \geq 0,20(PBC + CBC + HBC)$$

$$CBC \geq 0,20 PBC + 0,20 CBC + 0,20 HBC$$

$$0,20 PBC + (0,20 - 1) CBC + 0,20 HBC \leq 0$$

$$\boxed{0,20 PBC - 0,80 CBC + 0,20 HBC \leq 0}$$

which is linear. Thus, the constraints become

	PP	CC	PBC	CBC	HBC	PDU	CDU	HDU	
[max] z =	0,8	2,2	1,2	1,2	1,2	1,8	1,8	1,8	
s. to									
	1	0	1	0	0	1	0	0	≤ 100
	0	1	0	1	0	0	1	0	≤ 30
	0	0	0,20	-0,80	0,20	0	0	0	≤ 0
	0	0	0,50	-0,50	-0,50	0	0	0	≤ 0
	0	0	0	0	0	0,30	-0,70	0,30	≤ 0
	0	0	0	0	0	0,70	-0,30	-0,30	≤ 0
Solution from Lindo	100	0	0	0	0	0	30	70	z* = 260

**Lindo:**

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max 0.8pp+2.2cc+1.2pbc+1.2cbc+1.2hbc +1.8pdu+1.8cdu+1.8hdu
st
pp+pbc+pdu<100
cc+cbc+cdu<30
0.2pbc-0.8cbc+0.2hbc<0
0.5pbc-0.5cbc-0.5hbc<0
0.3pdu-0.7cdu+0.3hdu<0
0.7pdu-0.3cdu-0.3hdu<0
end
    
```

