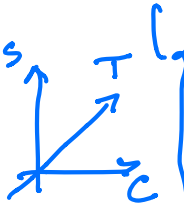


Furniture manufacturing expansion plan: Products



	Products			Avail. hours
Resources	Chair	Sofa	Table	
Carpentry (hrs)	6c + 3s + 8t			≤ 768
Finishing (hrs)	1c + 1s + 2t			≤ 144
Upholstery (hrs)	2c + 5s + 0t			≤ 216
Profit \$/item	p = 80c + 70s + 120t			(Leave blank)

$p - 80c - 70s - 120t = 0$

What new production plan will maximize their profit?

$$\begin{aligned} 6c + 3s + 8t + u &= 768 \\ c + s + 2t + v &= 144 \\ 2c + 5s + w &= 216 \\ -80c - 70s - 120t + p &= 0 \end{aligned}$$

	c	s	t	u	v	w	p	
u	6	3	8	1	0	0	0	768
v	1	1	2	0	1	0	0	144
w	2	5	0	0	0	1	0	216
p	-80	-70	-120	0	0	0	1	0

768/8 = 96

144/2 = 72 ←

216/0 = DNE

$$\begin{aligned} u &= 2 \\ t &= 1/2 \\ w &= 2 \\ p &= -20 \end{aligned}$$

	c	s	t	u	v	w	p	
u	2	-1	0	1	-4	0	0	192
t	1/2	1/2	1	0	1/2	0	0	72
w	2	5	0	0	0	1	0	216
p	-20	-10	0	0	60	0	1	8,640

192/2 = 96 ←

72/1/2 = 144

216/1 = 216

8,640/1 = 8,640

$$\begin{aligned} c &= 1 \\ t &= 3/4 \\ w &= 0 \\ p &= 0 \end{aligned}$$

	c	s	t	u	v	w	p	
c	1	-1/2	0	1/2	-2	0	0	96
t	0	3/4	1	-1/4	3/2	0	0	24
w	0	6	0	-1	4	1	0	24
p	0	-20	0	10	20	0	1	10,560

96/1/2 = -ve

24/3/4 = 32

24/6 = 4 ←

$$\begin{aligned} c &= 1 \\ t &= 0 \\ s &= 0 \\ p &= 0 \end{aligned}$$

	c	s	t	u	v	w	p	
c	1	0	0	5/12	-5/3	1/12	0	98
t	0	0	1	-1/8	1	-1/8	0	21
s	0	1	0	-1/6	2/3	1/6	0	4
p	0	0	0	20/3	33 1/3	10/3	1	10,640