

13-23: discount rate = 12%; tax rate = 40%; CCA class 43 (equipment) = 30%

			Assume \$50/unit for sales					
COGS	\$	640,000	20000	\$	32	CM old	36%	\$ 18.00
Materials	\$	224,000			22%	CM new	44%	\$ 22.03 \$ 26,438.40 \$ 50,622.27
DL	\$	268,800			27%			
OH	\$	147,200			15%			
					64%			

UCC Table

I.e.	Starting Balance	CCA	End Balance	Tax Saved	Present Value	
Jan. 1, 2012	0 \$	165,000	\$ 165,000	\$ -		* Don't take CCA on the day you buy the item
Jan. 1, 2012 - Dec. 31, 2012	1 \$	165,000 \$	24,750 \$	140,250 \$	9,900 \$	8,839 ** Take 50% of CCA in the first year
Jan. 1, 2013 - Dec. 31, 2013	2 \$	140,250 \$	42,075 \$	98,175 \$	16,830 \$	13,417
Jan. 1, 2014 - Dec. 31, 2014	3 \$	98,175 \$	29,453 \$	68,723 \$	11,781 \$	8,385
Jan. 1, 2015 - Dec. 31, 2015	4 \$	68,723 \$	20,617 \$	48,106 \$	8,247 \$	5,241
Jan. 1, 2016 - Dec. 31, 2016	5 \$	48,106 \$	- \$	48,106 \$	- \$	- ***Don't take CCA in the year of the asset sale
					\$ 35,882	A =actual tax shield of this asset since it is s

If the asset had not been disposed of:

Don't worry about minor rounding issues	5 \$	48,106 \$	14,432 \$	33,674 \$	5,773 \$	3,276
	6 \$	33,674 \$	10,102 \$	23,572 \$	4,041 \$	2,047
	7 \$	23,572 \$	7,072 \$	16,500 \$	2,829 \$	1,280
	8 \$	16,500 \$	4,950 \$	11,550 \$	1,980 \$	800
	9 \$	11,550 \$	3,465 \$	8,085 \$	1,386 \$	500
	10 \$	8,085 \$	2,426 \$	5,660 \$	970 \$	312
	11 \$	5,660 \$	1,698 \$	3,962 \$	679 \$	195
	12 \$	3,962 \$	1,189 \$	2,773 \$	475 \$	122
	13 \$	2,773 \$	832 \$	1,941 \$	333 \$	76
	14 \$	1,941 \$	582 \$	1,359 \$	233 \$	48
	15 \$	1,359 \$	408 \$	951 \$	163 \$	30
	16 \$	951 \$	285 \$	666 \$	114 \$	19
	17 \$	666 \$	200 \$	466 \$	80 \$	12
	18 \$	466 \$	140 \$	326 \$	56 \$	7
	19 \$	326 \$	98 \$	228 \$	39 \$	5
	20 \$	228 \$	69 \$	160 \$	27 \$	3
	21 \$	160 \$	48 \$	112 \$	19 \$	2
	22 \$	112 \$	34 \$	78 \$	13 \$	1
	23 \$	78 \$	24 \$	55 \$	9 \$	1
	24 \$	55 \$	16 \$	38 \$	7 \$	0
	25 \$	38 \$	12 \$	27 \$	5 \$	0
	26 \$	27 \$	8 \$	19 \$	3 \$	0
	27 \$	19 \$	6 \$	13 \$	2 \$	0
					\$ 19,237	\$ 8,735 B = Tax Shield Reversal using end UCC val
					\$ 44,617	A+B = PV of Tax Shield using formula

Tax shield new asset	$\frac{=C*d*t*(1+k/2)}{(1+k)*(k+d)}$	$= 165000*0.30*0.40*(1+0.12/2)$	\$ 20,988	$\frac{0.47}{(1+0.12)*(0.12+0.30)}$	= \$ 44,617 C
Tax shield reversal****	$\frac{=[C*d*t *C]/[(1+k)^n-1]}{[(k+d)]}$	$=48106*0.30*0.40/[(1+0.12)^5-1]$	\$ 5,773	$\frac{0.42}{(0.12+0.30)}$	\$ 8,735 D ****Note that the value of C in the reversal formula is equivalent to the beginning UCC of period 5 (end of = actual tax shield of this asset
					\$ 35,882 C-D

*****End UCC n (end for period 4) $=C*(1 - d/2)*(1 - d)^{(n-1)}$ = 165000*(1-0.3/2)*(1-0.3)^(4-1) \$ 48,106 ***** equivalent answers (see table above)

Beg UCC n (beg for period 5) $=C*(1 - d/2)*(1 - d)^{(n-2)}$ = 165000*(1-0.3/2)*(1-0.3)^(5-2) \$ 48,106

BUY NEW MACHINE OR NOT	Jan. 1, 2012	Jan. 1, 2012 - Dec. 31, 2012	Time					
			Jan. 1, 2013 - Dec. 31, 2013	Jan. 1, 2014 - Dec. 31, 2014	Jan. 1, 2015 - Dec. 31, 2015	Jan. 1, 2016 - Dec. 31, 2016		
Item	0		1	2	3	4	5	
Initial Investment	-165,000							-165,000
Tax savings from tax shield		9,900	16,830	11,781	8,247	0		35,882
Additional cash flow from machine		21,600	21,600	48,060	48,060	48,060		128,527
Salvage Value						25,000		14,186
Terminal loss						9242.3		5,244
								0
Sum	-165,000	31,500	38,430	59,841	56,307	82,302		18,839
Discount Factor	1.000		0.893	0.797	0.712	0.636	0.567	
Discounted Cashflow -	165,000		28,125	30,636	42,594	35,784	46,701	
Net Present Value		18,839						

<i>New sales</i>	1,000,000	1,000,000	1,100,000	1,100,000	1,100,000	1,100,000
<i>Materials COGS (22%)</i>	-220,000	-220,000	-242,000	-242,000	-242,000	-242,000
<i>DL COGS (27%)</i>	-270,000	-270,000	-297,000	-297,000	-297,000	-297,000
<i>DL COGS Savings</i>	81,000	81,000	89,100	89,100	89,100	89,100
<i>Additional labour costs</i>	-45,000	-45,000	-45,000	-45,000	-45,000	-45,000
<i>OH COGS (15%)</i>	-150,000	-150,000	-165,000	-165,000	-165,000	-165,000
<i>Tax (40%)</i>	-158,400	-158,400	-176,040	-176,040	-176,040	-176,040
<i>Net</i>	237,600	237,600	264,060	264,060	264,060	264,060
<i>Continuing sales</i>	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
<i>Materials COGS</i>	-224,000	-224,000	-224,000	-224,000	-224,000	-224,000
<i>DL COGS</i>	-268,800	-268,800	-268,800	-268,800	-268,800	-268,800
<i>DL COGS Savings</i>	0	0	0	0	0	0
<i>Additional labour costs</i>	0	0	0	0	0	0
<i>OH COGS</i>	-147,200	-147,200	-147,200	-147,200	-147,200	-147,200
<i>Tax (40%)</i>	-144,000	-144,000	-144,000	-144,000	-144,000	-144,000
<i>Net</i>	216,000	216,000	216,000	216,000	216,000	216,000
<i>Difference</i>	21,600	21,600	48,060	48,060	48,060	48,060