

Problem B 1. 2006 Ch. E. 453 Supplemental Project Problem

Solution Master David C. Drown

10/12/2006

Title : RX Drug Company - Pill capsulating machine DEPRECIATION

Given : \$ 390,000 Value = Purchased Cost
 25,000,000 Capsules = Useful Life 25,000,000 = (2*1+4*1.5+4*2+3*3)*1000000
 13 Years = Planned Useful Life = 2+4+4+3
 \$ - Salvage Value = neglect

Approach :

Determine annual depreciation and book value

- (a) Straight Line Method $d = \text{Value} / \text{Years}$ \$ 30,000 per year
- (b) Double Decline Method $f = 2 / \text{Years}$ 15.38% of Book Value
- (c) MACRS Tax Law Method $f = 2 / 7 \text{ Years}$ 28.57% of Book Value
 use Table for %'s of Original Value each year.
- (d) Unit-of-Production Method $d = \text{Value} / \text{Capsules}$ \$ 0.0156 per capsule

Observations :

Actual "Unit-of-Production" is slow in early years because of low production rates.
 Note - actual production rate does not use entire useful life capacity.
 MACRS is accelerated because of the short recovery period compared to actual useful life.

Computations :

x - axis	ANSWER		ANSWER		ANSWER		
	y-axis		y-axis		y-axis		
Year	a) Straight Line Deprec. St. Line	Book Value St. Line	b) Double Decline Deprec. Double Decline	Book Value Double Decline	c) MACRS Tax Law % Factor Deprec. MACRS	Book Value MACRS	
0		\$ 390,000		\$ 390,000		\$ 390,000	
1	\$ 30,000	\$ 360,000	\$ 60,000	\$ 330,000	14.29%	\$ 334,269	
2	\$ 30,000	\$ 330,000	\$ 50,769	\$ 279,231	24.49%	\$ 238,758	
3	\$ 30,000	\$ 300,000	\$ 42,959	\$ 236,272	17.49%	\$ 170,547	
4	\$ 30,000	\$ 270,000	\$ 36,350	\$ 199,923	12.49%	\$ 121,836	
5	\$ 30,000	\$ 240,000	\$ 30,757	\$ 169,165	8.93%	\$ 87,009	
6	\$ 30,000	\$ 210,000	\$ 26,025	\$ 143,140	8.92%	\$ 52,221	
7	\$ 30,000	\$ 180,000	\$ 22,022	\$ 121,118	8.93%	\$ 17,394	
8	\$ 30,000	\$ 150,000	\$ 18,634	\$ 102,485	4.46%	\$ -	
9	\$ 30,000	\$ 120,000	\$ 15,767	\$ 86,718	0.00%	\$ -	
10	\$ 30,000	\$ 90,000	\$ 13,341	\$ 73,377		\$ -	
11	\$ 30,000	\$ 60,000	\$ 11,289	\$ 62,088		\$ -	
12	\$ 30,000	\$ 30,000	\$ 9,552	\$ 52,536		\$ -	
13	\$ 30,000	\$ -	\$ 8,082	\$ 44,453		\$ -	
14	\$ -	\$ -	\$ 6,839	\$ 37,614		\$ -	
15	\$ -	\$ -	\$ 5,787	\$ 31,828		\$ -	
Total	\$ 390,000	ANSWER	\$ 345,547	ANSWER	100.0%	\$ 390,000	
Year 1 Formulas	=(G\$14)	=D31-C32	=(G\$15*F31)	=F31-E32	14.29%	=(C\$7*G32)	=I31-H32

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Approach : { continued from first page }

Determine annual depreciation and book value

(d) Unit-of-Production Method $d = \text{Value} / \text{Capsules}$ \$ 0.0156 per capsule

{ other methods not assigned in problem }

(e) historic ACRS Tax Law Method $f = 2 / 5 \text{ Years}$ 40.00% of Book Value

use Table for %'s of Original Value each year.

(f) Sum-of-Years Digits Method $f = (n-a+1)/(n/2)*(n+1)$ of Original Value

1st year $f = 13/91$ of Original Value

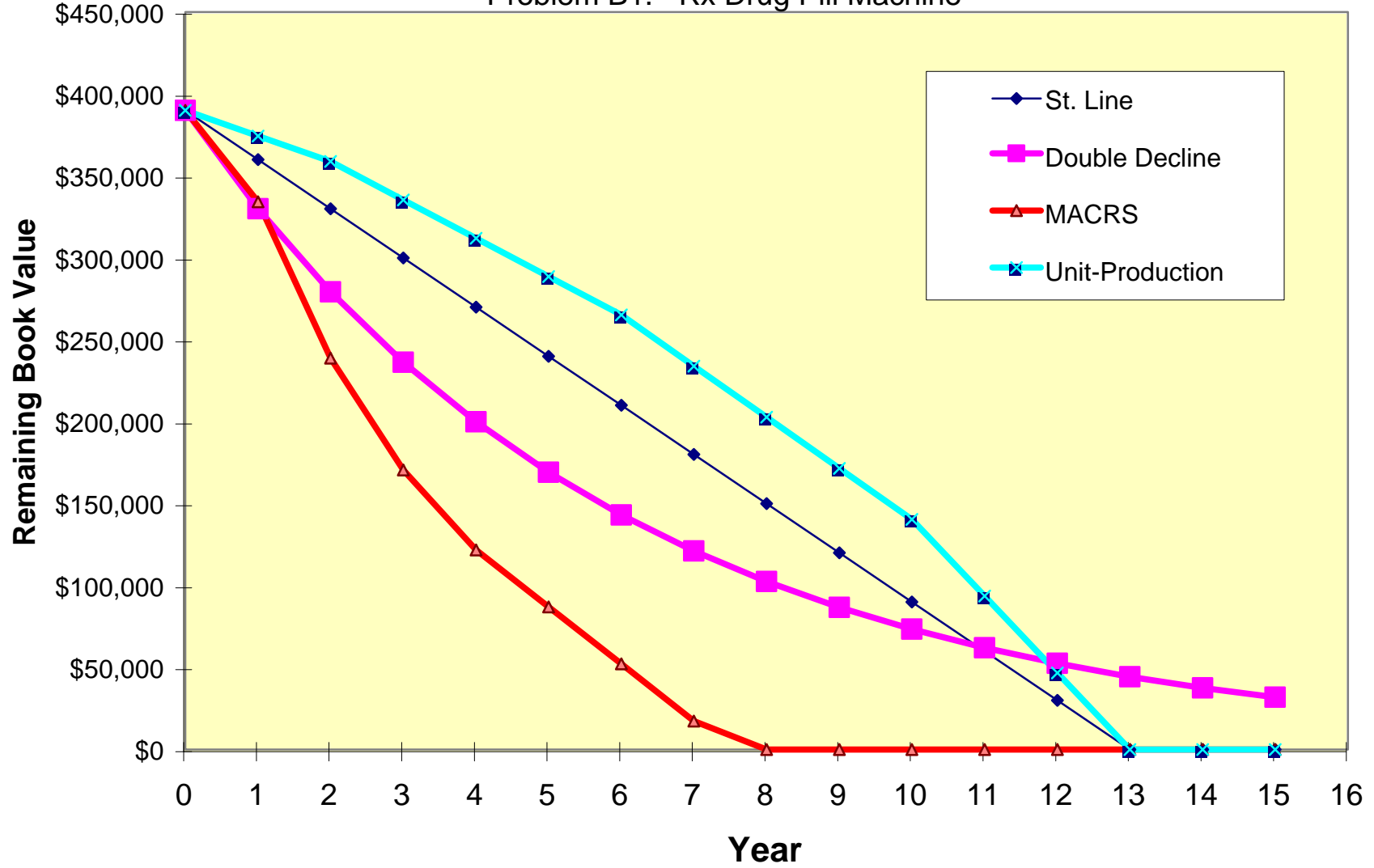
Sum-of-Years Digits = $13+12+11+10+9+8+7+6+5+4+3+2+1 = 91$

or $= (n/2)*(n+1) = (13/2) * (13 + 1) = 91$

		ANSWER				91			
		y-axis		y-axis				y-axis	
d) Unit of Production		e) ACRS Tax Law ('81-'87)		f) Sum-of-Years Digits					
Production	Deprec.	Book Value	% Factor	Deprec.	Book Value	Fraction	Deprec.	Book Value	
(millions)	Unit-Productio	Unit-Productio		ACRS	ACRS		soyd	soyd	
		\$ 390,000		\$ 390,000	\$ 390,000			\$ 390,000	
1.0	\$ 15,600	\$ 374,400	15.00%	\$ 58,500	\$ 331,500	0.1429	\$ 55,714	\$ 334,286	
1.0	\$ 15,600	\$ 358,800	22.00%	\$ 85,800	\$ 245,700	0.1319	\$ 51,429	\$ 282,857	
1.5	\$ 23,400	\$ 335,400	21.00%	\$ 81,900	\$ 163,800	0.1209	\$ 47,143	\$ 235,714	
1.5	\$ 23,400	\$ 312,000	21.00%	\$ 81,900	\$ 81,900	0.1099	\$ 42,857	\$ 192,857	
1.5	\$ 23,400	\$ 288,600	21.00%	\$ 81,900	\$ -	0.0989	\$ 38,571	\$ 154,286	
1.5	\$ 23,400	\$ 265,200	0.00%	\$ -	\$ -	0.0879	\$ 34,286	\$ 120,000	
2.0	\$ 31,200	\$ 234,000		\$ -	\$ -	0.0769	\$ 30,000	\$ 90,000	
2.0	\$ 31,200	\$ 202,800		\$ -	\$ -	0.0659	\$ 25,714	\$ 64,286	
2.0	\$ 31,200	\$ 171,600		\$ -	\$ -	0.0549	\$ 21,429	\$ 42,857	
2.0	\$ 31,200	\$ 140,400		\$ -	\$ -	0.0440	\$ 17,143	\$ 25,714	
3.0	\$ 46,800	\$ 93,600		\$ -	\$ -	0.0330	\$ 12,857	\$ 12,857	
3.0	\$ 46,800	\$ 46,800		\$ -	\$ -	0.0220	\$ 8,571	\$ 4,286	
3.0	\$ 46,800	\$ -		\$ -	\$ -	0.0110	\$ 4,286	\$ 0	
0.0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ 0	
0.0	\$ -	\$ -		\$ -	\$ -		\$ -	\$ 0	
25	\$ 390,000	ANSWER	100.0%	\$ 390,000		1.0000	\$ 390,000		
1.0		=L31-K32	15.00%	=(C\$7*M32)	=O31-N32		=(C\$7*P32)	=R31-Q32	
		=(1000000*\$G\$17*I32)					=(A\$46-A32+1)/\$P\$27		

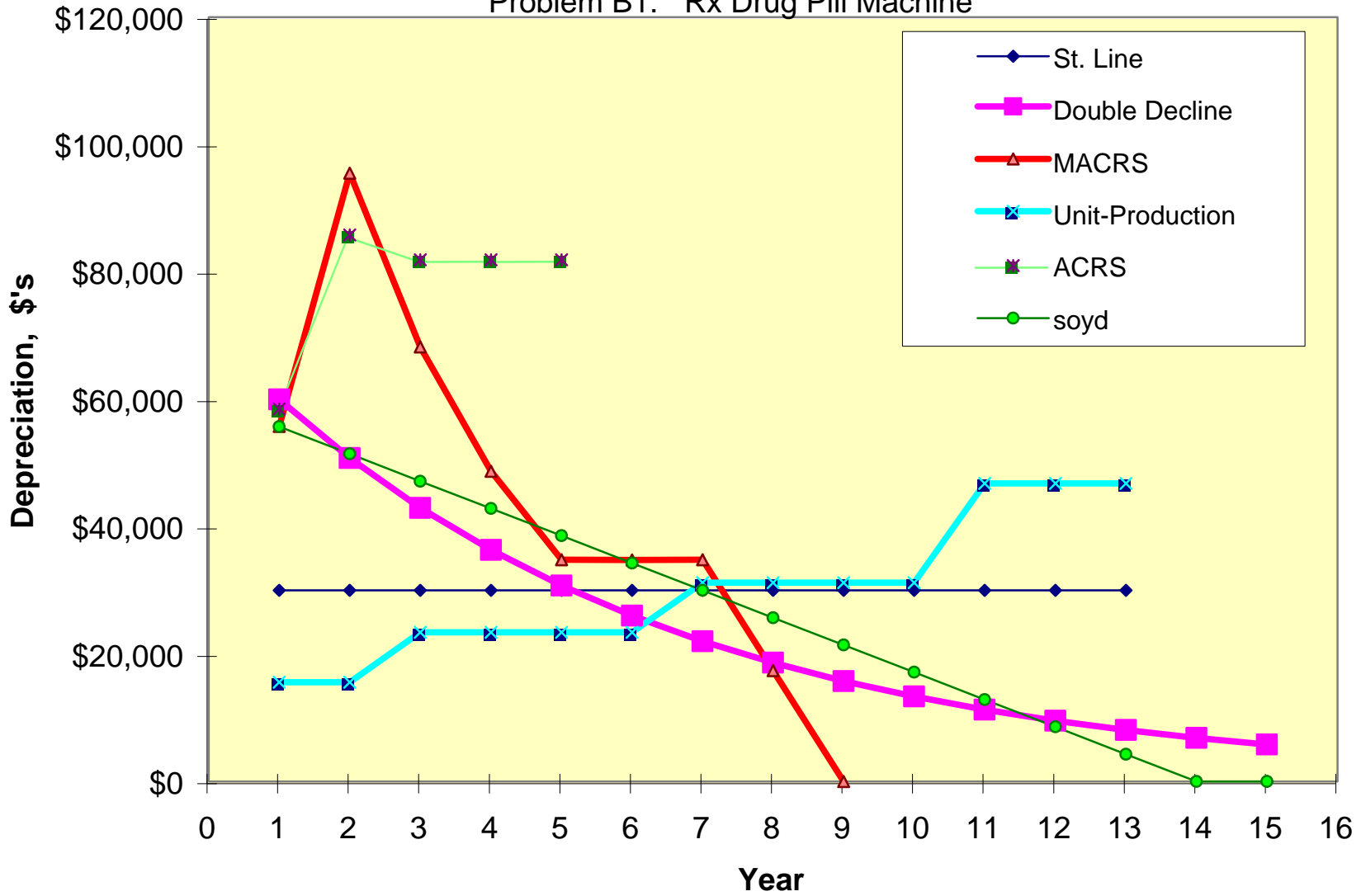
BOOK VALUE

Problem B1. Rx Drug Pill Machine



Annual Depreciation

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BOOK VALUE all methods

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