

Problem 7-15

Goal: Determine National necessity depreciation using straight line compared to MACRS depreciation

Given: Asset Investment \$10,000,000 investment
 National necessity fraction 60%
 Salvage value \$0 negligible
 necessity straight line recovery period 5 n, years
 straight line recovery period 10 n, years
 MACRS recovery period 15 n, years

Approach: Determine MACRS % factor for first year 5% Table 7-9, 15-year property
Assumption - straight line necessity and non-necessity period occur simultaneously
 Determine straight line depreciation amount/year on necessity certificate investment
 Determine straight line depreciation amount/year on balance of investment

Calculations:

- (1) MACRS deduction **\$500,000** depreciation in first year = \$10,000,000 investment * 0.05 factor
- (2) Straight line necessity period: \$6,000,000 necessity investment = \$10,000,000 * 60%
 \$1,200,000 annual necessity depreciation = \$6,000,000 investment / 5 year life
 \$4,000,000 non-necessity investment = \$10,000,000 - \$6,000,000
 \$400,000 annual non-necessity depreciation = \$4,000,000 investment / 10 year life

Answer

\$1,600,000 total 1st year depreciation with straight line

Answer

\$1,100,000 increased 1st year depreciation with National Necessity certificate

prepared by: D. C. Drown
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Alternatively: construct MACRS depreciation table

year	%	depreciation	MACRS	BV _{st.line}	BV _{st.line alt.}
1	5.00%	\$500,000	\$9,500,000	\$8,400,000	\$8,800,000
2	9.50%	\$950,000	\$8,550,000	\$6,800,000	\$7,600,000
3	8.55%	\$855,000	\$7,695,000	\$5,200,000	\$6,400,000
4	7.70%	\$770,000	\$6,925,000	\$3,600,000	\$5,200,000
5	6.93%	\$693,000	\$6,232,000	\$2,000,000	\$4,000,000
6	6.23%	\$623,000	\$5,609,000	\$1,600,000	\$3,600,000
7	5.90%	\$590,000	\$5,019,000	\$1,200,000	\$3,200,000
8	5.90%	\$590,000	\$4,429,000	\$800,000	\$2,800,000
9	5.91%	\$591,000	\$3,838,000	\$400,000	\$2,400,000
10	5.90%	\$590,000	\$3,248,000	\$0	\$2,000,000
11	5.91%	\$591,000	\$2,657,000		\$1,600,000
12	5.90%	\$590,000	\$2,067,000		\$1,200,000
13	5.91%	\$591,000	\$1,476,000		\$800,000
14	5.90%	\$590,000	\$886,000		\$400,000
15	5.91%	\$591,000	\$295,000		\$0
16	2.95%	\$295,000	\$0		