Depreciation Worksheet

This worksheet allows the calculation of depreciation schedule using different depreciation methods and conventions:
- Straight line (SL).
- Sum-of-the-years-digits (SYD).
- Declining balance (DB).
- Declining Balance with Crossover to SL (DBX).
- Modified Accelerated Recovery System with SL or DB methods.

Depreciation Menu Actions	
[Cost]	Stores the cost of the asset at acquisition.
[Salvage]	Stores the salvage value of the asset at the end of its life.
[Life]	Stores the expected useful life of the asset in years.
[Table]	Shows a complete depreciation schedule of the asset.
[Method & Conv. ▶]	Menu to select the depreciation method and convention.
> Method	
SL: (Straight Line)	Select the Straight Line depreciation method.
SOYD: (Sum of the Years)	Select the Sum-Of-The-Years depreciation method.
DB: (Declining Balance)	Select the Declining Balance depreciation method.
DBX: (DB with crossover)	Select the Declining Balance with crossover to Straight Line depreciation method.
MACRS-SL: (Modified ACRS width SL)	Select the Modified Accelerated Recovery System with Straight Line depreciation method.
MACRS-DB: (Modified ACRS width DB)	Select the Modified Accelerated Recovery System with Declining Balance depreciation method.

Depreciation Menu Actions	
> Convention	
DAY: Count Every Day	Use the 'Starting Date' to calculate the actual number of days for the first year depreciation.
HM: Half-Month	Calculates the first year depreciation assuming the asset was placed in service at the midpoint of the 'Start Month'.
FM: Full-Month	Calculates the first year depreciation assuming the asset was placed in service at the beginning of the 'Start Month'.
HQ: Half-Quarter	Calculates the first year depreciation assuming the asset was placed in service at the midpoint of the 'Start Qtr.'.
FQ: Full-Quarter	Calculates the first year depreciation assuming the asset was placed in service at the beginning of the 'Start Qtr.'.
HY: Half-Year	Calculates the first year depreciation assuming the asset was placed in service at the midpoint of the year.
FH: Full-Year	Calculates the first year depreciation assuming the asset was placed in service at the beginning of the year.
[Start Date ▶]	In 'Count Every Day' convention, stores the date that the asset was placed in service.
[Start Month ▶]	In 'Mid-Month' & 'Full-Month' conventions, stores the month that the asset was placed in service.
[Start Quarter ▶]	In 'Mid-Quarter' & 'Full-Quarter' conventions, stores the quarter that the asset was placed in service.
[DB%]	Stores the declining-balance factor as a % of the straight-line rate.
[Year]	Stores the 'Year' to calculate depreciation.
[◀] [▶]	Calculate the Previous or Next 'Year' depreciation.
[DEP]	Enters the Depreciation of the current 'Year' in the calculator's stack.
[RBV]	Enters the Remaining Book Value at the end of the 'Year' in the calculator's stack.
[RDV]	Enters the Remaining Depreciable Value at the end of the 'Year' in the calculator's stack.

Example 1: 'SL' Depreciation Method with Half-Month convention

In June 25th, 2022 a company begins depreciation of a commercial building with a 31½ year life and with $50,000 salvage value. The building cost $1,000,000. Use the straight-line depreciation method to compute the depreciation expense, remaining book value, and remaining depreciable value for the first three years using the "Half-Month" convention.

Solution:

Keystroke	Description
1000000 **[Cost]**	Input the asset cost value.
50000 **[Salvage]**	Input the salvage value of the asset at the end of useful life.
31.5 **[Life]**	Stores the useful life of the asset.
> Model : SL **]**	Select the Straight Line depreciation method.
> Convention : HM	Select the Mid-Month depreciation convention.
[Start Month ▶ 6]	Select the Starting month to 6 (June).
1 **[Year]**	Set the first year to calculate depreciation.
[DEP]	Depreciation for year #1: **DEP = 16,335.98**
[RBV]	Remaining Book Value for year #1: **RBV = 983,664.02**
[RDV]	Remaining Depreciable Value for year #1: **RDV = 933,664.02**
[▶] [DEP]	Depreciation for year #2: **DEP = 30,158.73**
[RBV]	Remaining Book Value for year #2: **RBV = 953,505.29**
[RDV]	Remaining Depreciable Value for year #2: **RDV = 903,505.29**
[▶] [DEP]	Depreciation for year #3: **DEP = 30,158.73**
[RBV]	Remaining Book Value for year #3: **RBV = 923,346.56**
[RDV]	Remaining Depreciable Value for year #3: **RDV = 873,346.56**

Example 2: Depreciation Methods

For the asset of the previous example, What depreciation method maximize the depreciation expense of the first year? (Use a Declining Balance factor of 200%).

Solution:

Keystroke	Description
1 **[Year]**	Set the first year to calculate depreciation.
> Model : SL	Select the Straight Line depreciation method.
[DEP]	Depreciation for year #1: **DEP = 16,335.98**
> Model : SOYD	Select the Straight Line depreciation method.
[DEP]	Depreciation for year #1: **DEP = 31,186.87**
> Model : DB or DBX	Select the Declining Balance depreciation method.
200 **[DB%]**	Set Declining Balance factor.
[DEP]	Depreciation for year #1: **DEP = 33,854.17**
> Model : MACRS-SL	Select the Modified Accelerated Recovery System with Straight Line method.
[DEP]	Depreciation for year #1: **DEP = 17,195.77**
> Model : MACRS-DB	Select the Modified Accelerated Recovery System with Declining Balance method.
[DEP]	Depreciation for year #1: **DEP = 34,391.53**
	The best depreciation method to maximize the first year amount, as expected, is the "**MACRS-DB**" (Modified Accelerated Recovery System with Declining Balance) method.

Example 3: Depreciation Conventions

With the previous example solution find the convention to use to maximize, even more, the first year depreciation expense.

Solution:

Keystroke	Description
> Convention : DAY	Select the "Count Every Day" convention and set the **[Start Date]** to Jun 25th, 2022.
[DEP]	Depreciation for year #1: **DEP = 33,050.66**
> Convention : HM	Select the "Half-Month" convention.
[DEP]	Depreciation for year #1: **DEP = 34,391.53**
> Convention : FM	Select the "Full-Month" convention.
[DEP]	Depreciation for year #1: **DEP = 37,037.04**
> Convention : HQ	Select the "Half-Quarter" convention.
[DEP]	Depreciation for year #1: **DEP = 39,682.54**
> Convention : FQ	Select the "Full-Quarter" convention.
[DEP]	Depreciation for year #1: **DEP = 47,619.05**
> Convention : HY	Select the "Half-Year" convention.
[DEP]	Depreciation for year #1: **DEP = 31,746.03**
> Convention : FY	Select the "Full-Year" convention.
[DEP]	Depreciation for year #1: **DEP = 63,492.06**
The best convention option to maximize the first year amount, as obvious, is the "**Full-Year**" convention.	

Example 4: Crossover Depreciation

With the preceding examples result, "MACRS-DB" with "FY" convention, in what year occurs the change from DB to SL?.

Solution:

Keystroke	Description
> Model : MACRS-DB	Select the Modified Accelerated Recovery System with Declining Balance method.
> Convention : FY	Select the "Full-Year" convention.
[Table]	Shows the following depreciation schedule.

Depreciation Schedule

Year	DEP	RDV	RBV
0	0.00	950,000.00	1,000,000.00
1	63,492.06	936,507.94	936,507.94
2	59,460.82	877,047.12	877,047.12
3	55,685.53	821,361.59	821,361.59
4	52,149.94	769,211.65	769,211.65
5	48,838.83	720,372.82	720,372.82
6	45,737.96	674,634.86	674,634.86
7	42,833.96	631,800.90	631,800.90
8	40,114.34	591,686.56	591,686.56
9	37,567.40	554,119.16	554,119.16
10	35,182.17	518,936.99	518,936.99
11	32,948.38	485,988.61	485,988.61
12	30,856.42	455,132.19	455,132.19
13	28,897.28	426,234.91	426,234.91
14	27,062.53	399,172.38	399,172.38
15	25,344.28	373,828.10	373,828.10
16	23,735.12	350,092.98	350,092.98
17	22,586.64	327,506.34	327,506.34
18	22,586.64	304,919.70	304,919.70
19	22,586.64	282,333.06	282,333.06
20	22,586.64	259,746.42	259,746.42
21	22,586.64	237,159.78	237,159.78
22	22,586.64	214,573.14	214,573.14
23	22,586.64	191,986.50	191,986.50
24	22,586.64	169,399.86	169,399.86
Σ	1,000,000.00	---	---

| Copy | Method ▶ MACRS-DB | Conv. ▶ FY | Done |

Inspecting the schedule, scroll down until the DEP value becomes constant.
There, you can see that the crossover occurs in the year 17.