CHAPTER 8 ACCOUNTING FOR PLANT ASSETS

Section 8.4

Other Methods of Depreciation

Declining-Balance Method of Depreciation

Do some assets decline more in the early years of their useful life than the later years?

Answer: Yes

Using the Declining Balance Method of Depreciation may be more accurate in these situations.

Declining-Balance Method of Depreciation

Multiplying the book value at the end of each fiscal period by a constant depreciation rate is called _____.

Answer: Declining-Balance Method of Depreciation

Even though the rate is the same each year, the annual depreciation expense _____ from year to year.

Answer: Declines

Declining-Balance Method of Depreciation

The declining-balance depreciation rate is based on the _____ rate.

Answer: Straight-line

Declining-balance method of depreciation is often referred to as the _____.

Answer: Double declining-balance method.

Declining-Balance Method of Depreciation

How to calculate the Declining-balance rate:

Total Depreciation Expense:	100%
Divide by Est. Useful Life	5 years
Equals the straight-line rate	20%
Double the rate	2
Equals the Declining-balance rate	40%

Declining-Balance Method of Depreciation

When the declining-balance method is used, the annual depreciation expense is calculated using the _____ value for each year.

Answer: Beginning book value

In the first year of service the beginning book value will equal the _____ cost of the plant asset.

Answer: Original cost

Afterwards, the beginning book value will equal the previous years ending book value.

Declining-Balance Method of Depreciation

Because you will never depreciate below a plant asset's estimated salvage value, the last year's depreciation amount will only be enough to reduce the book value to the salvage value.

Example on page 242.

Sum of the year'-digits method of depreciation

Based on a fraction derived from the year's digits for the useful life of a plant asset.

The fractions are determined as follows for a plant asset with a useful life of 5 years.

1+2+3+4+5 = 15

5	15	5/15
4	15	4/15
3	15	3/15
2	15	2/15
1	15	1/15

Sum of the year'-digits method of depreciation

5	15	5/15
4	15	4/15
3	15	3/15
2	15	2/15
1	15	1/15

The depreciation expense is calculated by multiplying the total depreciation expense times the fraction for that year.

See page 243.

Sum of the year'-digits method of depreciation

Page 243

Total depreciation	=	original cost		– estimated salvage value
$1825	=	$2000	_	$175

Excel…

Comparison of 3 methods

Will the total amount of depreciation expense differ depending on the depreciation method used?

Answer: No.

Straight-line method	Easy to calculate
	Same amount recorded each year
Double declining method	Relatively easy to calculate
	Larger depreciation in the early years
Sum-of-the years	Not as easy
	Larger depreciation in the early years

Which two methods are known as accelerated depreciation methods?

Production-unit method

Sometimes the useful life of a plant asset depends on how much the asset is used.

Example: Automobile

Production-unit method

How to calculate depreciation rate:

	Original Cost	$18,200
Minus	Est. Salvage Value	- 2,000
Equals	Est. Total Depreciation	$16,200
Divide by	Est. Useful Life	90,000
Equals	Depreciation Rate	$ 0.18 / mile

Production-unit method

Refer to page 245.

Beginning Book Value equals:	Original Cost
Miles driven:	Will be provided in the problem
Annual Depreciation:	Total miles driven X Depreciation Rate
Ending book value:	Beginning Book Value – Annual depreciation

Production-unit method

Refer to page 245.

PRO:

Easy to compute

CON:

Increases the work required to compute. Why?

Companies must collect the production units for each asset.

Calculating Depreciation Expense for Income Tax Purposes

Modified Accelerated Cost Recovery System

- Referred to as _____.

    Answer: MACRS

- Required by the IRS to be used on most plant assets placed in service after _____.

    Answer: 1986

- Has prescribed periods for ___ classes of useful life for plant assets.

    Answer: Nine

MACRS

How is a property assigned to a specific class?

Answer: Based on its characteristics and general life

Other than real estate, what are the two most common classes?

Answer:

1. 5-year
2. 7-year

MACRS

Five-year property class includes the following:

- Cars
- General purpose trucks
- Computers
- Manufacturing equipment
- Office machinery

MACRS

Seven-year property class includes the following:

- Office furniture
- Office fixtures

MACRS

Characteristics:

- The depreciation of these two property classes approximates the use of double-declining method.

- The IRS has prescribed methods that use annual percentage rates to determine depreciation for each class of plant asset.

- Rates are applied to the total cost of the plant asset without considering salvage value.

- All assets are placed in service in the middle of the year & taken out of service in the middle of the year

MACRS

Example Page 246

Table A-1. 3-, 5-, 7-, 10-, 15-, and 20-Year Property
Half-Year Convention

Year	Depreciation rate for recovery period					
	3-year	5-year	7-year	10-year	15-year	20-year
1	33.33%	20.00%	14.29%	10.00%	5.00%	3.750%
2	44.45	32.00	24.49	18.00	9.50	7.219
3	14.81	19.20	17.49	14.40	8.55	6.677
4	7.41	11.52	12.49	11.52	7.70	6.177
5		11.52	8.93	9.22	6.93	5.713
6		5.76	8.92	7.37	6.23	5.285
7			8.93	6.55	5.90	4.888
8			4.46	6.55	5.90	4.522
9				6.56	5.91	4.462
10				6.55	5.90	4.461
11				3.28	5.91	4.462
12					5.90	4.461
13					5.91	4.462
14					5.90	4.461
15					5.91	4.462
16					2.95	4.461
17						4.462
18						4.461
19						4.462
20						4.461
21						2.231

Table A-2. 3-, 5-, 7-, 10-, 15-, and 20-Year Property
Mid-Quarter Convention
Placed in Service in First Quarter

Year	Depreciation rate for recovery period					
	3-year	5-year	7-year	10-year	15-year	20-year
1	58.33%	35.00%	25.00%	17.50%	8.75%	6.563%
2	27.78	26.00	21.43	16.50	9.13	7.000
3	12.35	15.60	15.31	13.20	8.21	6.482
4	1.54	11.01	10.93	10.56	7.39	5.996
5		11.01	8.75	8.45	6.65	5.546
6		1.38	8.74	6.76	5.99	5.130
7			8.75	6.55	5.90	4.746
8			1.09	6.55	5.91	4.459
9				6.56	5.90	4.459
10				6.55	5.91	4.459
11				0.82	5.90	4.459
12					5.91	4.460
13					5.90	4.459
14					5.91	4.460
15					5.90	4.459
16					0.74	4.460
17						4.459
18						4.460
19						4.459
20						4.460
21						0.565

MACRS

Example Page 246

Refer back to page 242. When calculating the first year depreciation, what was the first step?

Answer: Divide 100% by the estimated useful life. We then multiplied by 2.

MACRS

Example Page 246

Refer back to page 246. MARCS is doing the same for the 1st year depreciation but since it is assumed all equipment is place into operation during the middle of the year, you divide the 40% by 2 = 20%.

Years 2-5 will provided in a table.

Even though this is a 5 year depreciation, we will have a 6th year. Why?

Depletion

Some Plant assets decrease in value because part of the plant asset has been physically removed.

What are some examples?

- Land with trees is worth more than land without trees.
- Land with coal mine. As coal is removed, the value of the land is depleted.
- Oil reserves
- Gravel pits

Depletion

Example Page 247

$$\frac{\text{Original Cost} - \text{Estimated Salvage Value}}{\text{Estimated Units to be recovered}} = \frac{\text{Depletion}}{\text{Rate per Unit}}$$

REMEMBER: The ending value of one year becomes the beginning value of the next.