Name: KEY

Chapter 8 Notes
Accounting for Plant Assets

8.1: Buying Plant Assets

- **Current Assets** – *cash and other assets expected to be exchanged for cash or consumed within one year*
- **Plant Assets** - assets that will be used for more than one year in the operation of a business (aka: fixed or long-term)
  - Examples: land, buildings, + equipment
- **Plant Asset Record** - accounting form on which a business records info about each plant asset

Practice Problem

Depreciate all plant assets using the straight-line method. Plant asset records, a general journal, and a cash payments journal are provided below. Source documents are abbreviated as: check, C; memorandum, M.

1. Journalize the transactions completed during January. General ledger accounts are: Office Equipment, 1225 and Warehouse Equipment, 1245. *(Application Problem 8.1)*

   Jan. 3 Paid cash for scanner (plant asset no. 162), $600; no estimated salvage value; estimated useful life, three years; serial no. V2GR34. C310.

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CASH PAYMENTS JOURNAL

	DATE	ACCOUNT TITLE	CK. NO.	POST. REF.	GENERAL DEBIT	GENERAL CREDIT	ACCOUNTS PAYABLE DEBIT	PURCHASES DISCOUNT CREDIT	CASH CREDIT	
1	2015 Jan 3	Office Equipment	310		600 -				600 -	1
2										2

   Jan. 5 Bought freight scale (plant asset no. 163) on account from Trent, Inc. $2,800; estimated salvage value, $400; estimated useful life, five years; serial no. GY52232B. M61.

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GENERAL JOURNAL

	DATE	ACCOUNT TITLE	DOC. NO.	POST. REF.	DEBIT	CREDIT	
1	2015 Jan 5	Warehouse Equipment	M61		2800 -		1
2		AP/Trent, Inc.				2800 -	2

2. Complete section 1 of a plant asset record for new asset purchases. *(Application Problem 8.1)*

PLANT ASSET RECORD No. 102 General Ledger Account No. 1225

Description scanner General Ledger Account Office Equipment

Date Bought Jan. 3, 20X1 Serial Number V2GR34 Original Cost $600

Estimated Useful Life 3 years Estimated Salvage Value $0 Depreciation ~~$600~~ Straight-Line

Disposed of: Discarded Sold Traded

Date Disposal Amount

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE

PLANT ASSET RECORD No. 103 General Ledger Account No. 1245

Description Freight scale General Ledger Account Warehouse Equip.

Date Bought Jan. 5, 20X1 Serial Number GY522326 Original Cost $1,800

Estimated Useful Life 5 years Estimated Salvage Value $400 Depreciation ~~$1,400~~ Straight-Line

Disposed of: Discarded Sold Traded

Date Disposal Amount

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE

Calculating and Paying Property Tax

- In most states, businesses have to pay taxes on plant assets. For tax purposes, state and federal governments define two kinds of property:
  1. **Real Property** - land and anything attached to it (aka real estate)
  2. **Personal Property** - All property not classified as real property
- *Assessed Value of Property*
  - **Assessed Value** - value of an asset determined by tax authority for the purpose of calculating taxes

- Assessed value is usually based on the judgment of persons referred to as assessors. An asset's assessed value may not be the same as the book value on the business's or individual's records. It is used for tax purposes only. However, many persons and businesses use the assessed value to estimate the market value of an asset.

- *Calculating Property Tax on Plant Assets*
  - Most governmental units with taxing power have a tax based on the value of real property; used on buildings and land. Some governmental units also tax personal property such as cars, boats, trailers, and airplanes.
  - The tax rate is multiplied by an asset's assessed value, not the book value recorded on a business's records.
- *Paying Property Tax on Plant Assets*
  - Payment of property taxes is necessary if a firm is to continue in business. Therefore, property tax is classified as an operating expense.

Practice Problem

A cash payments journal is provided below. Source document is abbreviated as: check, C.

1. Journalize the transaction completed in February. *(Application Problem 8.2)*

   Feb. 5 Paid property taxes on real property with an assessed value of $215,000. The tax rate in the city where the property is located is 3.5% of assessed value. C389.

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CASH PAYMENTS JOURNAL

	DATE	ACCOUNT TITLE	CK. NO.	POST. REF.	GENERAL DEBIT	GENERAL CREDIT	ACCOUNTS PAYABLE DEBIT	PURCHASES DISCOUNT CREDIT	CASH CREDIT	
1	2015 Feb. 5	Property Tax Expense	389		7525 -				7525 -	1
2										2

8.2: Calculating and Journalizing Depreciation Expense

- Plant assets may wear out, may no longer be needed in the operation of a business, or may become outdated by new models. To match revenue with expenses incurred to earn it, the cost of a plant asset should be allocated to an expense account over the useful life of the plant asset.
- **Depreciation Expense** - the portion of a plant asset's cost that is transferred to an expense account in each fiscal period during its useful life.
- Because of its permanent nature, land is not subject to depreciation. Increases or decreases in land value are usually recorded only when land is sold or otherwise disposed of.
- Three factors are used to calculate a plant asset's annual depreciation expense:
  1. **Original Cost** - includes all costs paid to make asset usable to a business, includes purchase price, delivery costs, & any necessary installation costs
  2. **Estimated Salvage Value** - amount the owner can expect to receive when a plant asset is removed from use

3. **Estimated Useful Life** - number of years a plant asset is expected to be useful to a business

- **Straight-Line Depreciation** - charging an equal amount of depreciation expense for a plant asset in each year of its useful life
  - Example: On January 2, 20X1, Appliance Center bought a computer for $2,000 with an estimated salvage value of $175 and an estimated useful life of five years.

	Original Cost	$2,000
-	Estimated Salvage Value	- 175
=	Estimated Total Depreciation Expense	$1,825
÷	Years of Estimated Useful Life	÷ 5
=	Annual Depreciation Expense	$365

	Beginning Book Value (Year 1)	$2,000
-	Annual Depreciation	- 365
=	Ending Book Value (Year 1)	$1,635

Practice Problem

Use the plant asset records from the Practice Problem in Section 8.1. Depreciation tables are provided below.

1. Complete the depreciation table for each asset using the straight-line depreciation method. If the asset was not purchased beginning of 20X1, compute depreciation expense for the part of 20X1 that the company owned the asset. *(Application Problem 8.3)*

Plant asset: Scanner
Depreciation method: Straight-line
Original cost: $600
Estimated salvage value: none
Estimated useful life: 3 years

600÷3

YEAR	BEGINNING BOOK VALUE	ANNUAL DEPRECIATION	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE
1	$600	$200	$200	$400
2	400	200	400	200
3	200	200	600	0

Plant asset: Freight Scale
Depreciation method: Straight-line
Original cost: $1,800
Estimated salvage value: $400
Estimated useful life: 5 years

1800-400=1400÷5

YEAR	BEGINNING BOOK VALUE	ANNUAL DEPRECIATION	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE
1	$1800	$480	$480	$1,320
2	1320	$480	960	1840
3	1840	480	1440	1360
4	1360	480	1920	880

- *Recording Depreciation on Plant Asset Records*
  - Annual depreciation expense is recorded in two places for each plant asset:
    1. On the plant asset record
    2. As part of the adjusting entries that are posted to general ledger accounts
  - **Book Value of a Plant Asset** - original cost minus accumulated depreciation
  - At the end of the estimated useful life, the plant asset should be depreciated down to its estimated salvage value.
  - A plant asset's *actual* useful life may exceed the estimated useful life. If a plant asset is used longer than the estimated useful life, depreciation is not recorded once the book value equals the estimated salvage value.

Practice Problem

Plant asset records are provided below.

1. Complete each plant asset record for 20X1 through 20X4. *(Application Problem 8.3)*

PLANT ASSET RECORD No. 162 — General Ledger Account No. 1225

Description Scanner — General Ledger Account Office Equipment

Date Bought Jan. 3, 20X1 — Serial Number V2GR34 — Original Cost $600.00

Estimated Useful Life 3 years — Estimated Salvage Value none — Depreciation Straight—line method

Disposed of: Discarded ____ Sold ____ Traded ____

Date ____ Disposal Amount ____

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE
20X1	$200	$200	$400
20X2	200	400	200
20X3	200	600	0

PLANT ASSET RECORD No. 163 — General Ledger Account No. 1245

Description Freight Scale — General Ledger Account Warehouse Equipment

Date Bought Jan. 5, 20X1 — Serial Number GY52232B — Original Cost $2,800.00

Estimated Useful Life 5 years — Estimated Salvage Value $400.00 — Depreciation Straight—line method

Disposed of: Discarded ____ Sold ____ Traded ____

Date ____ Disposal Amount ____

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE
20X1	$480	$480	$2320
20X2	480	960	1840
20X3	480	1440	1360
20X4	480	1920	880

- *Journalizing Annual Depreciation Expense*
  - After depreciation expense is recorded on the plant asset records, depreciation amounts for the year are totaled.
  - An adjusting entry is made to record total depreciation expense for the fiscal year for each category of plant assets.
- *Calculating Depreciation Expense for Part of a Year*
  - A plant asset may be placed in service at a date other than the first day of a fiscal period. In such cases, depreciation expense is calculated to the nearest first of a month.

	Annual Depreciation Expense	$120
÷	Months in a Year	÷ 12
=	Monthly Depreciation Expense	$10
x	Number of Months Asset is Used	x 5
=	Partial Year's Depreciation Expense	$50

Practice Problem

A general journal is provided below.

1. Journalize the adjusting entries to record depreciation expense for 20X1. *(Application Problem 8.4)*

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GENERAL JOURNAL

	DATE		ACCOUNT TITLE	DOC. NO.	POST. REF.	DEBIT	CREDIT	
1	2015		Adjusting Entries					1
2	Dec	31	Depreciation Exp - Office Equip.			200 -		2
3			Accum. Depr. - Office Equip.				200 -	3
3		31	Depr. Exp. - Warehouse Equip.			480 -		3
4			Accum. Depr. - Warehouse Equip.				480 -	4

8.3: Disposing of Plant Assets

- A business usually disposes of a plant asset in one of three ways:
  1. The plant asset is discarded because no useful life remains.
  2. The plant asset is sold because it is no longer needed even though it might still be usable.
  3. The plant asset is traded for another plant asset of the same kind.
- *Discarding a Plant Asset with No Book Value*
  - If a plant asset has a salvage value of zero and its total accumulated depreciation is equal to the original cost value, the plant asset has no book value. The journal entry to discard this plant asset removes the original cost of the plant asset and its related accumulated depreciation as shown below.
    - Example: Discarded storage cabinet: original cost, $275; total accumulated depreciation through December 31, 20X5, $275. M72.
      - Debit: Accumulated Depreciation – Office Equipment, $275
      - Credit: Office Equipment, $275

- *Discarding a Plant Asset with a Book Value*
  - A plant asset may be disposed of at any time during its useful life. When a plant asset is disposed of, its depreciation expense from the beginning of the current fiscal year to the date of disposal is recorded as shown below, in two entries.
    - Example: Discarded office table: original cost, $200; total accumulated depreciation through December 31, 20X5, $140; additional depreciation to be recorded through June 30, 20X6, $20. M92.
      - Entry 1: Remove the original cost of the plant asset and its related accumulated depreciation.
        - Debit: Depreciation Expense – Office Equipment, $20
        - Credit: Accumulated Depreciation – office Equipment, $20
      - Entry 2: Recognize the loss on disposal of the asset.
        - Debit: Accumulated Depreciation – Office Equipment, $160
        - Debit: Loss on Plant Assets, $40
        - Credit: Office Equipment, $200
- *Selling a Plant Asset*
  - When a plant asset is sold, a journal entry is recorded to:
    - Remove the original of the plant asset and its related accumulated depreciation.
    - Recognize the cash received.
    - Recognize the gain or loss on disposal of the asset.
  - Example: Received cash from sale of fax machine, $185: original cost, $600; total accumulated depreciation through December 31, 20X5, $400. R60.
    - Debit: Accumulated Depreciation – Office Equipment, $400
    - Debit: Loss on Plant Assets, $15
    - Debit: Cash, $185
    - Credit: Office Equipment, $600
- *Trading a Plant Asset*
  - When an old plant asset is traded for a new plant asset, the journal entry:
    1. Removes the original cost of the old plant asset and its related accumulated depreciation.
    2. Recognizes the cash paid.
    3. Records the new plant asset at its original cost.
  - Example: Paid cash, $650, plus old counter for new store counter: original cost of old counter, $1,000; total accumulated depreciation through June 27, 20X6, $765. M130 and C154.
    - Debit: Store Equipment, $1,085
    - Debit: Accumulated Depreciation – Store Equipment, $765
    - Credit: Store Equipment, $1,000
    - Credit: Cash, $850
- *Selling Land and Buildings*
  - Land is considered to be a permanent plant asset. Therefore, its useful life is not estimated and annual depreciation is not recorded for it. The book value of land is the original cost.
  - Land is seldom discarded. Usually land is sold at the same time that the buildings on it are sold. A separate plant record is maintained for the land and the building. Each record is updated when a sale is made. The journal entry:

1. Removes the original cost of the land and building and the building's related accumulated depreciation.
2. Recognizes the cash received.
3. Recognizes the gain on disposal of the plant assets.

- Example: Fidelity Company sold land with a building for $97,000 cash; original cost of land, $25,000; original cost of building, $250,000; total accumulated depreciation on building through December 31, 20X5, $85,000. R105.
  - Debit: Accumulated Depreciation – Building, $85,000
  - Debit: Cash, $97,000
  - Credit: Land, $25,000
  - Credit: Building, $150,000
  - Credit: Gain on Plant Assets, $7,000

Practice Problem

Use the plant asset records from the Practice Problem in Section 8.2. The following transactions occurred in 20X5. A general journal, cash receipts journal, and plant asset records are provided below. Source documents are abbreviated as follows: check, C; memorandum, M; receipt, R.

1. Journalize additional depreciation, if needed. Journalize the disposal of each plant asset. *(Application Problem 8.5; Application Problem 8.6 for Dec. 30)*
2. Make appropriate notations in the plant asset records.

① 480 ÷ 12 = 40 × 3 = 120

✓ Jan. 3 Discarded scanner, no. 162. M65.

✓ Mar. 30 Received cash for sale of freight scale, no. 163, $600. M125 and R145. ① ② ②

1920 + 120 = 2040

✓ June 26 Received cash for sale of a desk, no. 127, $500. M151 and R273.

✓ Dec. 28 Paid cash, $30,000, plus old truck, no. 116, for new truck, no. 172. M222 and C671. 2800 − 600 − 2040 = 160

Dec. 30 Sold land, no. 105, and a building, no. 106, for $110,000. M224 and R663. R

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GENERAL JOURNAL

DATE		ACCOUNT TITLE	DOC. NO.	POST. REF.	DEBIT	CREDIT
20X5 Jan	3	Accum. Depr. - Office Equip.	M65		600 -	
		Office Equip.				600 -
Mar	30	~~Accum.~~ Depr. Expense - Warehouse Equip.	M125		120 -	
		Accum. Depr. - Warehouse Equip.				120 -
June	26	Depr. Expense - Office Equip.	M151		50 -	
		Accum. Depr. - Office Equip.				50 -
Dec.	28	Depr. Expense - Warehouse Equip.	M222		7000 -	
		Accum. Depr. - Warehouse Equip.				7000 -
	30	Depr. Expense - Building	~~M224~~ M224		2000 -	
		Accum. Depr. - Building				2000 -

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CASH RECEIPTS JOURNAL

DATE	ACCOUNT TITLE	DOC. NO.	POST. REF.	GENERAL DEBIT	GENERAL CREDIT	ACCOUNTS RECEIVABLE CREDIT	SALES CREDIT	SALES TAX PAYABLE DEBIT	SALES TAX PAYABLE CREDIT	SALES DISCOUNT DEBIT	CASH DEBIT
20X5 Mar 30	Accum. Depr.-Warehouse Equip.	R145		2040 -							600 -
	Loss on Plant Assets			160 -							
	Warehouse Equip				2800 -						
June 26	Accum. Depr.-Office Equip.	R173		325 -							500 -
	Gain on Plant Assets				125 -						
	Office Equipment				700 -						
Dec. 30	Accum. Depr.-Building	R403		18000 -							110000 -
	Land				40000 -						
	Building				60000 -						
	Gain on Plant Assets				28000 -						

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CASH PAYMENTS JOURNAL

DATE	ACCOUNT TITLE	CK. NO.	POST. REF.	GENERAL DEBIT	GENERAL CREDIT	ACCOUNTS PAYABLE DEBIT	PURCHASES DISCOUNT CREDIT	CASH CREDIT
20X5 Dec 28	Warehouse Equipment	671		36500 -				30000 -
	Accum. Depr.-Warehouse Equip.			31500 -				
	Warehouse Equipment			[illegible] -	38000 -			

PLANT ASSET RECORD No. 162 General Ledger Account No. 1225

Description Scanner General Ledger Account Office Equipment

Date Bought Jan. 3, 20X1 Serial Number V2GR34 Original Cost $600.00

Estimated Useful Life 3 years Estimated Salvage Value none Depreciation Straight—line method

Disposed of: Discarded ✓ Sold ____ Traded ____

Date Jan 3, 20X5 Disposal Amount zero

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE
20X1	$200.00	$200.00	$400.00
20X2	200.00	400.00	200.00
20X3	200.00	600.00	0.00

PLANT ASSET RECORD No. 163 General Ledger Account No. 1245

Description Freight Scale General Ledger Account Warehouse Equipment

Date Bought Jan. 5, 20X1 Serial Number GY52232B Original Cost $2,800.00

Estimated Useful Life 5 years Estimated Salvage Value $400.00 Depreciation Straight—line method

Disposed of: Discarded ____ Sold ✓ Traded ____

Date Mar 30, 20X5 Disposal Amount *600

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE
20X1	$480.00	$480.00	$2,320.00
20X2	480.00	960.00	1,840.00
20X3	480.00	1,440.00	1,360.00
20X4	480.00	1,920.00	880.00
20X5	120	2,040	760

PLANT ASSET RECORD No. 127 General Ledger Account No. 1225

Description Desk General Ledger Account Office Equipment

Date Bought Apr. 4, 20X2 Serial Number EF26796 Original Cost $700.00

Estimated Useful Life 5 years Estimated Salvage Value $200.00 Depreciation Straight—line method

Disposed of: Discarded ____ Sold ✓ Traded ____

Date June 26, 20X5 Disposal Amount *500

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE
20X2	$75.00	$75.00	$625.00
20X3	100.00	175.00	525.00
20X4	100.00	275.00	425.00
20X5	50.00	325.00	375.00

PLANT ASSET RECORD No. 116 General Ledger Account No. 1245

Description Truck General Ledger Account Warehouse Equipment

Date Bought Jul. 3, 20X1 Serial Number 01E16742XL42 Original Cost $38,000.00

Estimated Useful Life 5 years Estimated Salvage Value $3,000.00 Depreciation Straight—line method

Disposed of: Discarded ____ Sold ____ Traded ✓

Date DEC 18, 20X5 Disposal Amount NO.172

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE
20X1	$3,500.00	$3,500.00	$34,500.00
20X2	7,000.00	10,500.00	27,500.00
20X3	7,000.00	17,500.00	20,500.00
20X4	7,000.00	24,500.00	13,500.00
20X5	7,000.00	31,500.00	6,500.00

PLANT ASSET RECORD No. 105 General Ledger Account No. 1205

Description Lansing Store General Ledger Account Land

Date Bought Jan. 6, 19X7 Serial Number n/a Original Cost $40,000.00

Estimated Useful Life n/a Estimated Salvage Value n/a Depreciation n/a

Disposed of: Discarded ____ Sold ✓ Traded ____

Date DEC. 30, 20X5 Disposal Amount *110,000 WHT NO.106

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE

PLANT ASSET RECORD No. 106 General Ledger Account No. 1215

Description Lansing Store General Ledger Account Building

Date Bought Jan. 6, 19X7 Serial Number n/a Original Cost $60,000.00

Estimated Useful Life 25 years Estimated Salvage Value $10,000.00 Depreciation Straight—line method

Disposed of: Discarded ____ Sold ✓ Traded ____

Date DEC. 30, 20X5 Disposal Amount *110,000 WHT NO. 105

YEAR	ANNUAL DEPRECIATION EXPENSE	ACCUMULATED DEPRECIATION	ENDING BOOK VALUE
19X7	$2,000.00	$2,000.00	$58,000.00
19X8	2,000.00	4,000.00	56,000.00
19X9	2,000.00	6,000.00	54,000.00
20X0	2,000.00	8,000.00	52,000.00
20X1	2,000.00	10,000.00	50,000.00
20X2	2,000.00	12,000.00	48,000.00
20X3	2,000.00	14,000.00	46,000.00
20X4	2,000.00	16,000.00	44,000.00
20X5	2,000.00	18,000.00	42,000.00

8.4: Other Methods of Depreciation

- *Declining-Balance Method of Depreciation*
  - Many plant assets depreciate more in the early years of useful life than in the later years. Charging more depreciation expense in the early years of a plant asset may be more accurate than charging the same amount each year.
  - **Declining-Balance Method of Depreciation** - multiplying the book value at the end of each fiscal period by a constant depreciation rate
  - Although the depreciation rate is the same each year, the annual depreciation expense declines from year to year.
  - A declining-balance rate that is based the straight-line method rate is commonly used. This is referred to as the double declining-balance method.
    - Example: A plant asset with an estimated useful life of five years would have a depreciation rate of 40%.

	Total Depreciation Expense	100%
÷	Estimated Useful Life	÷ 5
=	Straight-Line Rate	20%
x	Double the Rate	x 2
=	Declining-Balance Rate	40%

  - The annual depreciation expense is calculated using the beginning book value for each year. In the asset's first year of service, the beginning book value equals the original cost.
  - A plant asset is never depreciated below its estimated salvage value. Therefore, in the last year, only enough depreciation expense is recorded to reduce the book value of the plant asset to its salvage value.

Practice Problem

The following information relates to a delivery truck purchased on January 2, 20X1. A depreciation table is provided below.

1. Complete the depreciation table showing depreciation expense calculated using double declining-balance. *(Application Problem 8.7)*

100% ÷ 3 = 33.3 x 2 = 66.6%

Original Cost	$90,000
Estimated Salvage Value	$6,000
Estimated Useful Life	3 years

Plant asset: Delivery truck
Depreciation method: Double declining-balance
Original cost: $90,000
Estimated salvage value: $6,000
Estimated useful life: 3 years

YEAR	BEGINNING BOOK VALUE	DECLINING-BALANCE RATE	ANNUAL DEPRECIATION	ENDING BOOK VALUE
20X1	$90,000	66.67%	$60,000	30,000
20X2	30,000	66.67%	20,000	10,000
20X3	10,000	66.67%	4,000	6,000

- *Sum-of-the-Years'-Digits Method of Depreciation*
  - Another method of calculating depreciation is based on a fraction derived from the years' digits for the useful life of a plant asset.
  - **Sum-of-the-Years'-Digits Method of Depreciation** - using fractions based on the number of years of a plant asset's useful life.
  - Example: A plant asset has a useful life of five years. The fractions are determined as follows:
    1. The years' digits are added (1 + 2 + 3 + 4 + 5 = 15).
    2. Then, a fraction is created for each year with the years' digits in reverse order:

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

  - The depreciation expense for each year is calculated by multiplying the total depreciation expense times the fraction for that year. In the last year, the ending book value will equal the plant asset's salvage value.

Practice Problem

The following information relates to a delivery truck purchased on January 2, 20X1. A depreciation table is provided below.

1. Complete the depreciation table showing depreciation expense calculated using sum-of-the-year's-digits. *(Application Problem 8.7)*

1+2+3=6

Original Cost	$90,000
Estimated Salvage Value	$6,000
Estimated Useful Life	3 years

Plant asset: Delivery Truck
Depreciation method: Sum-of-the years'-digits

Original cost: $90,000
Estimated salvage value: $6,000
Estimated useful life: 3 years

YEAR	BEGINNING BOOK VALUE	FRACTION	ANNUAL DEPRECIATION	ENDING BOOK VALUE
20X1	$90,000	3/6 (= 1/2)	$42,000	$48,000
20X2	48,000	2/6 (= 1/3)	28,000	20,000
20X3	20,000	1/6	14,000	6,000

84,000 × 2/6 = 28,000

84,000 × 1/6 = 14,000

90,000 - 6,000 = 84,000 × 3/6 = 42,000

- *Production-Unit Method of Depreciation*
  - Sometimes the useful life a plant asset depends on how much the asset is used.
  - **Production-Unit Method of Depreciation** - calculating estimated annual depr. expense based on the amount of production expected from a plant asset
  - Example: A truck originally cost $18,200, had an estimated salvage value of $2,000, and an estimated useful life of 90,000 miles. The depreciation rate for the truck is calculated by dividing the estimated total depreciation expense by the estimated useful life.

	Original Cost	$18,200
-	Estimated Salvage Value	- 2,000
=	Estimated Total Depreciation Expense	$16,200
÷	Estimated Useful Life	÷ 90,000 miles
=	Depreciation Rate	$0.18 /mile

  - The annual depreciation expense is calculated by multiplying the total number of miles driven by the depreciation rate.

Practice Problem

The following information relates to a delivery truck purchased on January 2, 20X1. A depreciation table is provided below.

1. Complete the depreciation table showing depreciation expense calculated using production-unit. *(Application Problem 8.8)*

			Miles Driven
Original Cost	$90,000	20X1	34,600
Estimated Salvage Value	$6,000	20X2	47,300
Estimated Useful Life	200,000 miles	20X3	52,800
		20X4	36,900

Plant asset: Delivery truck
Depreciation method: Production-units

Original cost: $90,000
Estimated salvage value: $6,000
Estimated useful life: 200,000 miles
Depreciation rate: $0.42

YEAR	BEGINNING BOOK VALUE	MILES DRIVEN	ANNUAL DEPRECIATION	ENDING BOOK VALUE
20X1	$90,000	34,600	$14,532	$75,468
20X2	75,468	47,300	19,866	55,602
20X3	55,602	52,800	22,176	33,426
20X4	33,426	36,900	15,498	17,928

90,000 - 6000 = 84,000
÷ 200,000 = $0.42/mile

- *Calculating Depreciation Expense for Income Tax Purposes (MACRS Method of Depreciation)*
  - **Modified Accelerated Cost Recovery System** (aka MACRS) - service to be used for income tax calculation purposes for most plant assets place in service after 1986
  - MACRS is a depreciation method with prescribed periods for nine classes of useful life for plant assets. A property is assigned to a specified class based on its characteristics and general life expectancy.
  - The two most common classes, other than real estate, are the 5-year and the 7-year property classes.
    - The five-year class includes: cars, general-purpose trucks, computers, manufacturing equipment, and office machinery.
    - The seven-year class includes: office furniture and fixtures.
  - The depreciation approximates the use of the double declining-balance method.
  - To calculate depreciation using MACRS, the IRS has prescribed methods that use annual percentage rates to determine the depreciation. These rates are applied to the total cost of the plant asset without considering salvage value. All plant assets are assumed to be place in service in the middle of the year and taken out of service in the middle of the year.
  - Example: A printer, with an original cost of $2,000 is classified as five-year property. With the MACRS method, its depreciation is spread over six years as shown.

Year	*Depreciation Rate*	*Annual Depreciation*
1	20.00%	$400.00
2	32.00%	640.00
3	19.20%	384.00
4	11.52%	230.40
5	11.52%	230.40
6	5.76%	115.20
Totals	100.00%	$2,000.00

Practice Problem

The following information relates to a delivery truck purchased on January 2, 20X1. A depreciation table is provided below.

1. Complete the depreciation table showing depreciation expense calculated using MACRS. *(Application Problem 8.9)*

Original Cost	$90,000
MACRS Property Class	5 years

Plant asset: Delivery Truck
Depreciation method: MACRS
Original cost: $90,000
Property class: 5 years

YEAR	DEPRECIATION RATE	ANNUAL DEPRECIATION
20X1	20%	$18,000
20X2	32%	28,800
20X3	19.2%	17,280
20X4	11.52%	10,368
20X5	11.52%	10,368
20X6	5.76%	5,184

- *Depletion*
  - Some plant assets decrease in value because part of these plant assets is physically removed in the operation of a business.
  - **Depletion** - decrease in the value of a plant asset because of the removal of a natural resource
  - Example: A business owns land on which a coal mine is located. The land with the coal has an original cost of $100,000. The company's experts estimated that the land contains 50,000 tons of recoverable coal. The estimated value of the remaining land after the coal is removed is $12,250. The depletion rate of the land per ton of coal is calculated as follows:

	Original Cost	$100,000
-	Estimated Salvage Value	- 12,250
=	Estimated Total Value of Coal	$87,750
÷	Estimated Tons of Recoverable Coal	÷ 50,000
=	Depreciation Rate per Ton of Coal	$1,755

    - The annual depreciation expense is calculated by multiplying the depreciation rate by the tons of coal removed that year.

Practice Problem

The following data relate to a mineral mine owned by Kellogg, Inc. A depletion table is provided below.

1. Complete a table showing depletion expense calculated using the production-unit method. *(Application Problem 8.10)*

			Tons Mined
Original Cost	$260,000	20X1	3,500
Estimated Salvage Value	$60,000	20X2	12,500
Estimated Tons of Recoverable Mineral	60,000 tons	20X3	15,600

Plant asset: Mineral Mine

Depreciation method: Production-units

Original cost: *100,000

Estimated salvage value: *60,000

Estimated total depletion: *100,000

Estimated useful life: 60,000 tons

Depletion rate: *3.33

YEAR	BEGINNING BOOK VALUE	TONS RECOVERED	ANNUAL DEPRECIATION	ENDING BOOK VALUE
20X1	*100,000	3,500	*11,655	*248,345
20X2	248,345	12,500	41,625	206,720
20X3	206,720	15,600	51,948	154,772

100,000 - 60 = 100,000 ÷ 60,000 = *3.33