Accounting Fundamentals

01.

Constructing a Balance Sheet

Session objectives

In this session we will:

01. **Explain** the format of the balance sheet

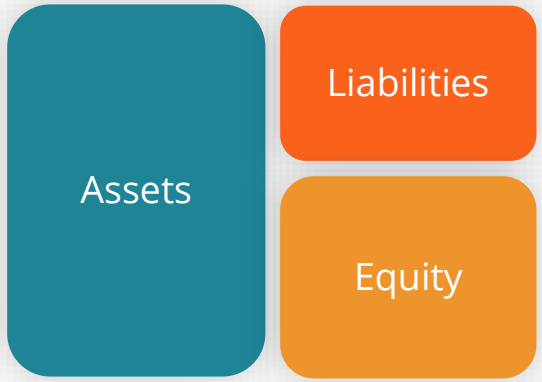
02. **Record** transactions

03. **Prepare** a simple balance sheet

The three key financial statements

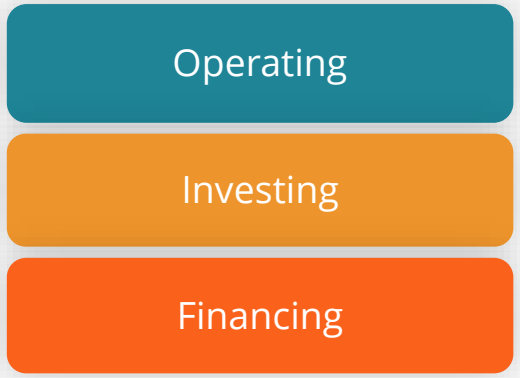
The **financial statements** are a record of the financial activities of a business.

1. Balance sheet



2. Income statement

3. Statement of cash flows



The balance sheet

Total Assets

Current assets
Used within one year

e.g. cash, inventory, accounts receivable

Non-current assets
Last more than a year

e.g. property, plant and equipment, technology, patents, trademarks

=

Total liabilities & equity

Current liabilities
Due within one year

e.g. accounts payable

Non-current liabilities
Due in more than a year

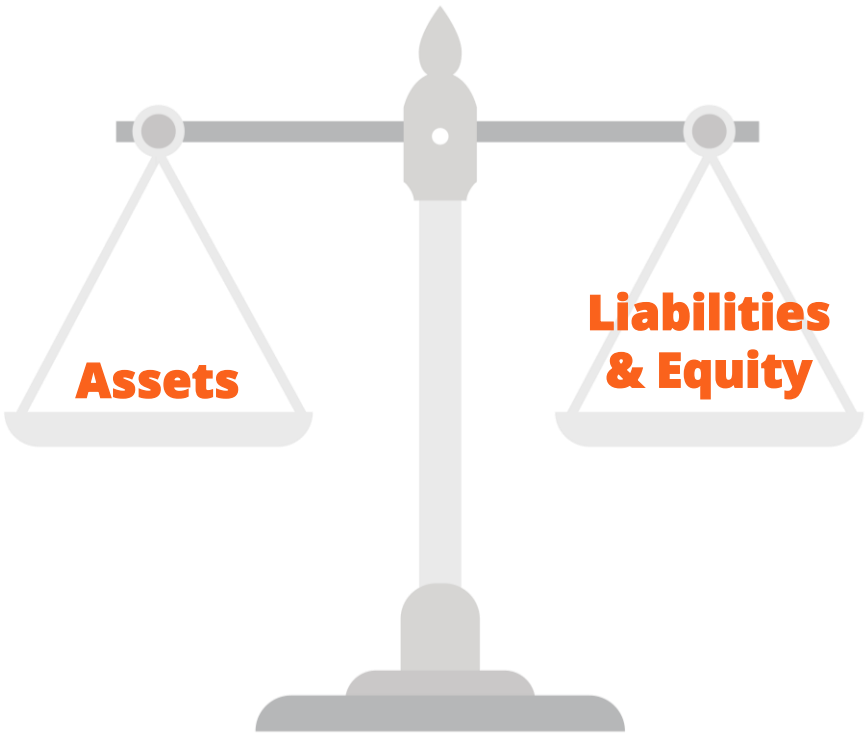
e.g. long-term debt

Shareholders' equity

e.g. common shares and retained earnings

Balancing the balance sheet

A balance sheet **must always balance**



To ensure this is the case, all transactions are recorded in **the balance sheet in two places.**

Double Entry Accounting

Balancing the balance sheet

Two options:

01.

Record the transaction on both sides of the balance sheet

Assets		Liabilities & Shareholders' Equity	
Current assets		**Current liabilities**	
Cash	(100)	Short-term debt	(100)
Non current assets		**Non current liabilities**	
		Shareholders' equity	
Total Assets	**(100)**	**Total Liabilities & SE**	**(100)**

02.

Record the transaction twice on the same side of the balance sheet as both positive and negative number

Assets		Liabilities & Shareholders' Equity	
Current assets		**Current liabilities**	
Cash	(100)		
Non current assets		**Non current liabilities**	
Equipment	100	**Shareholders' equity**	
Total Assets	**0**	**Total Liabilities & SE**	**0**

Recording transactions

A company engaged in the following transactions:

- **Issued shares** for 100 in cash
- **Took out a four year bank loan** of 50
- **Bought equipment and machinery** for 80
- **Bought inventory** for 60
- **Sold all the inventory** for 90
- **Paid salaries** of 20
- **Paid interest** of 3

How would they be recorded in the balance sheet?

Issuing shares for 100 in cash

Assets	
Current assets Cash	↑ **100**
Non current assets	
Total	↑ 100

Liabilities & Shareholders' Equity	
Current liabilities	
Non current liabilities	
Shareholders' equity Common stock	↑ **100**
Total	↑ 100

Taking out a 4 year bank loan

Assets	
Current assets Cash [100 + 50]	↑ **150**
Non current assets	
Total	↑ 150

Liabilities & Shareholders' Equity	
Current liabilities	
Non current liabilities	↑ **50**
Shareholders' equity Common stock	100
Total	↑ 150

Buying a property for 80

Assets	
Current assets Cash [100 + 50 ‡ 80]	↓ **70**
Non current assets Equipment	↑ **80**
Total	150

Liabilities & Shareholders' Equity	
Current liabilities	
Non current liabilities	50
Shareholders' equity Common stock	100
Total	150

Buying inventory for 60

Assets	
Current assets	
Cash [100 + 50 – 80]– 60]	↓ **10**
Inventory	↑ **60**
Non current assets	
Equipment	80
Total	150

Liabilities & Shareholders' Equity	
Current liabilities	
Non current liabilities	50
Shareholders' equity	
Common stock	100
Total	150

Selling all inventory for 90

Assets	
Current assets	
Cash [100 + 50 – 80 – 60] + 90]	↑ **100**
Inventory [60 – 60]	↓ **0**
Non current assets	
Equipment	80
Total	↑ 180

Liabilities & Shareholders' Equity	
Current liabilities	
Non current liabilities	
Bank loan	50
Shareholders' equity	
Common stock	100
Retained earnings	↑ **30**
Revenues	↑ **90**
Cost of sales	↓ **(60)**
Total shareholders' equity	130
Total	↑ 180

Paying salaries of 20

Assets	
Current assets	
Cash [100 + 50 – 80 – 60 + 90 – 20]	↓ **80**
Inventory [60 – 60]	0
Non current assets	
Equipment	80
Total	↓ 160

Liabilities & Shareholders' Equity	
Current liabilities	
Non current liabilities	
Bank loan	50
Shareholders' equity	
Common stock	100
Retained earnings	↓ **10**
Revenues	90
Cost of sales	(60)
Salaries	↓ **(20)**
Total shareholders' equity	↓ 110
Total	↓ 160

Paying interest of 3

Assets	
Current assets	
Cash [100 + 50 – 80 – 60 + 90 – 20]– 3]	↓ **77**
Inventory [60 – 60]	0
Non current assets	
Equipment	80
Total	↓ 157

Liabilities & Shareholders' Equity	
Current liabilities	
Non current liabilities	
Bank loan	50
Shareholders' equity	
Common stock	100
Retained earnings	↓ **7**
Revenues	90
Cost of sales	(60)
Salaries	(20)
Interest	↓ **(3)**
Total shareholders' equity	↓ 107
Total	↓ 157

Defining accounts receivable and payable

Assets	
Current assets	
Cash [100 + 50 – 80]– 60 + 90]	↑ **100**
Inventory [60 – 60]	↓ **0**
Non current assets	
Equipment	80
Total	↑ 180

Liabilities & Shareholders' Equity	
Current liabilities	
Non current liabilities	
Bank loan	50
Shareholders' equity	
Common stock	100
Retained earnings	↑ **30**
Revenues	↑ **90**
Cost of sales	↓ **(60)**
Total shareholders' equity	130
Total	↑ 180

Defining accounts receivable and payable

Accounts receivable – amounts owed by customers to the company

Accounts payable – amounts owed by the company to suppliers

- **Bought inventory for 60 on credit** rather than using cash?
- **Sold all the inventory for 90 on credit** rather than for cash?

How would our balance sheet look different if the company...

Buying and selling on credit

Assets	
Current assets	
Cash [100 + 50 – 80 – 20 – 3]	47
Accounts receivable	**90**
Inventory [60]– 60]	60
Non current assets	
Equipment	80
	217

Liabilities & Shareholders' Equity	
Current liabilities	
Accounts payable	**60**
Non current liabilities	
Bank loan	50
Shareholders' equity	
Common stock	100
Retained earnings	**7**
Revenues	**90**
Cost of sales	**(60)**
Salaries	(20)
Interest	(3)
	217

Balance sheet exercise

Now it's your turn...

01. **Click on the link**
"Vadero Inc exercise"
with instructions

02. **Once you've had a go,**
click on the attachment link
"Vadero Inc solution"

02.

Constructing an Income Statement

Session objectives

In this session we will:

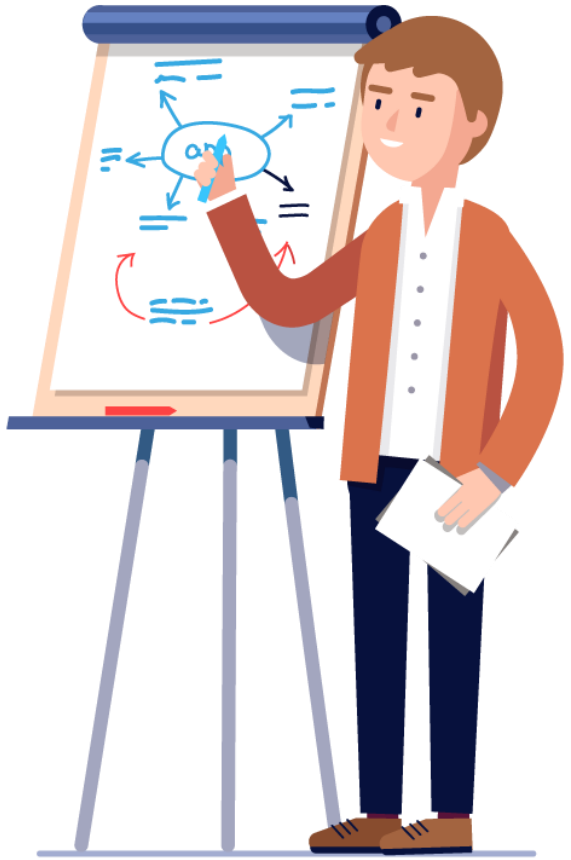
01. **Explain** the format of the income statement

02. **Record** transactions

03. **Prepare** a simple Income statement

The role of the income statement

Income Statement / **Statement of Operations** / **Statement of Profit and Loss**



In principle, it is only necessary for a company to produce a balance sheet.

However in practice, the detailed items that make up the retained earnings for the year are shown in the **income statement**.

The income statement

Revenues

Direct operating cost
(e.g. Cost of goods sold)

Gross profit

Indirect operating cost
(e.g. R&D, administration, selling, distribution)

Operating income = Earnings Before Interest and Taxes (EBIT)

Cost of debt financing
(e.g. Interest, bank charges)

Tax

Net income

Creating a full income statement

Assets	
Current assets	
Cash [100 + 50 – 80 – 20 – 3]	47
Accounts receivable	90
Inventory [60 – 60]	0
Non current assets	
Equipment	80
	217

Liabilities & Shareholders' Equity	
Current liabilities	
Accounts payable	60
Non current liabilities	
Bank loan	50
Shareholders' equity	
Common stock	100
Retained earnings	7
Revenues	90
Cost of sales	(60)
Salaries	(20)
Interest	(3)
	217

Creating a full income statement

Balance sheet extract	
Shareholder equity	
Common stock	100
Retained earnings	
Revenues	90
Cost of sales	(60)
Salaries	(20)
Interest	(3)
	7

Income statement	
Revenues	90
Cost of sales	(60)
Gross profit	**30**
SG&A expenses	(20)
Operating profit	**10**
Interest expenses	(3)
Tax	(0)
Net profit	**7**

Recording income and expenses

The income statement includes only the revenues and expenses that relate to the accounting year.

Example

During the last month of the year the company buys insurance for 12 months at a cost of 12,000.

How much insurance would be included in the income statement?

Prepayments

Month 1.... **...Month 12**

1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |

One month of insurance expense on the income statement is 1,000

What happens to the remaining 11,000?

Balance sheet - current asset

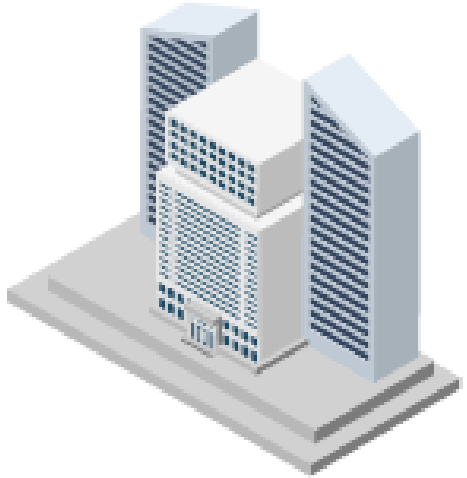
- Prepaid expense 11,000

Prepayments result if payments are made in **advance**

Recording income and expenses

Another example

2,000 worth of office supplies were used in the current year but were not paid for until the following year.



How much of this expense should be included in the income statement for the current year?

Accrued expenses

The full expense of 2,000 as this is the value of the office supplies used in the current year.

Since we haven't paid for the office supplies, how do we record the second half of the transaction?

Balance sheet – current liabilities

- Accrued expense 2,000

Accrued expenses have been reflected on the income statement, but not yet paid for.

Accrual and prepayment exercise

Now it's your turn...

01. **Click on the file** "Luton Inc. exercise" with instructions

02. **Once you've had a go,** open the file "Luton Inc. solution"

Depreciation

Assets	
Current assets	
Cash [100 + 50 – 80 – 20 – 3]	47
Accounts receivable	90
Inventory [60 – 60]	0
Non current assets	
Equipment	**80**
	217

Liabilities & Shareholders' Equity	
Current liabilities	
Accounts payable	60
Non current liabilities	
Bank loan	50
Shareholders' equity	
Common stock	100
Retained earnings	7
Revenues	90
Cost of sales	(60)
Salaries	(20)
Interest	(3)
	217

Depreciation

Let's assume that the useful life of this equipment is **4 years**, that we can allocate that usefulness evenly over the years of use, and that after 4 years the equipment has a **scrap value of 30**.

Year 1 | Year 2 | Year 3 | Year 4

How would we account for the reduction in value of the equipment as we use it in our operations?

We record an expense called "depreciation".

The impact of depreciation

$$\text{Depreciation} = \frac{\overbrace{80}^{\text{Purchase price}} - \overbrace{30}^{\text{Scrap value}}}{\underbrace{4}_{\text{\# of useful life}}} = 12.5$$

Income statement – the depreciation expense is calculated by taking the purchase price (80), deducting the scrap value (30) and dividing the difference by 4 years. This gives us a depreciation expense of 12.5 a year.

The impact of depreciation

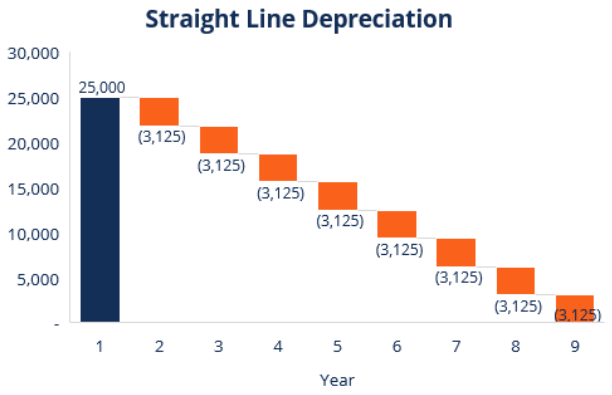
	Purchase price	80.0	67.5	55.0	42.5
	(Depreciation expense)	(12.5)	(12.5)	(12.5)	(12.5)
PP&E =	**Closing balance**	**67.5**	**55.0**	**42.5**	**30.0**

Balance sheet – the balance sheet value of the equipment would start at 80 but would reduce by 12.5 a year for the next 4 years. At the end of 4 years, the equipment would be valued on the balance sheet at 30 (the expected scrap value).

Different depreciation methods

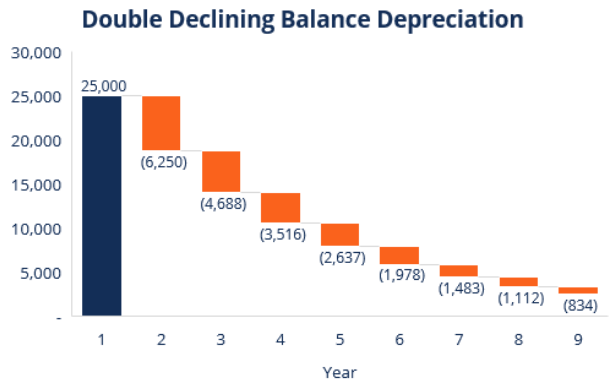
There are various depreciation methods companies can use:

Straight-line



$$= \frac{\text{Cost – Salvage value}}{\text{Useful life of asset}}$$

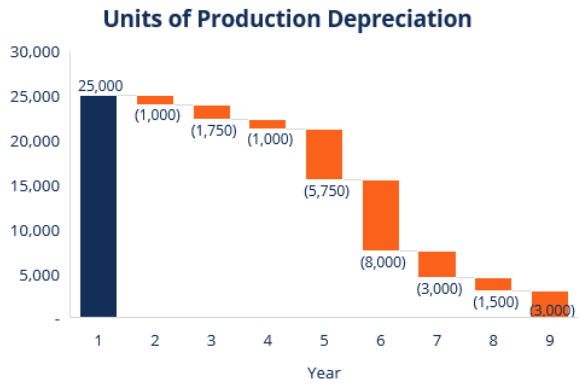
Double Declining Balance



$$= \frac{100\%}{\text{Useful life of asset}} \times 2$$

$$\times \text{ Beginning period book value}$$

Units of Production



$$= \frac{\text{\# of units produced}}{\text{Lifetime \# of units}}$$

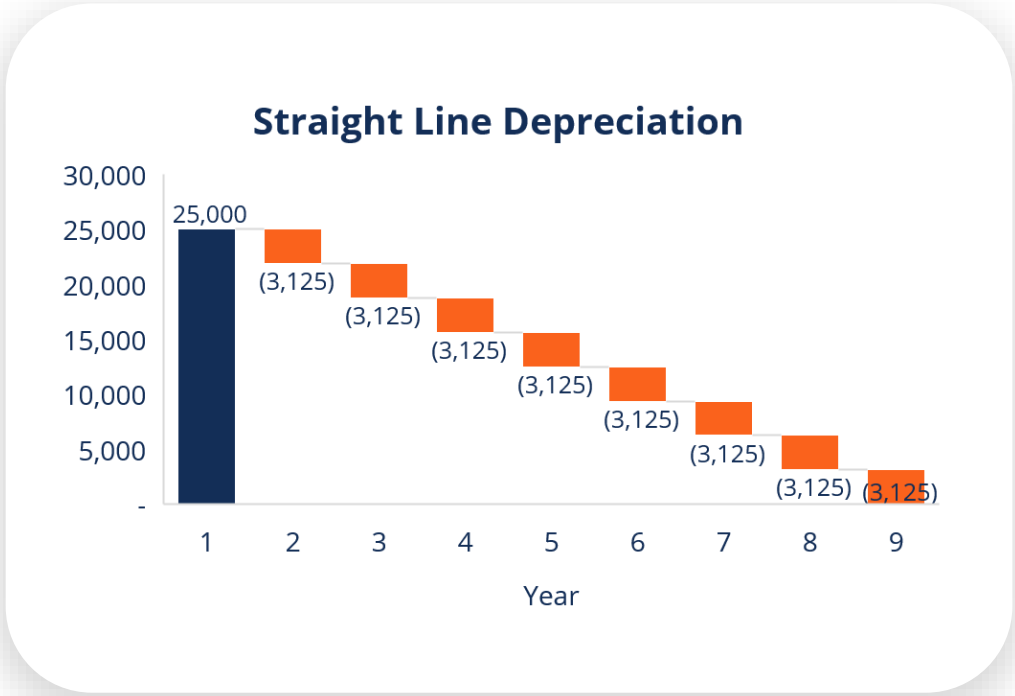
$$\times \text{ (Cost – Salvage value)}$$

Different depreciation methods

Straight-line approach: an equal amount of depreciation is applied every year for the asset's useful life.

Depreciation Expense =

$$\frac{\text{Cost – Salvage value}}{\text{Useful life of asset}}$$

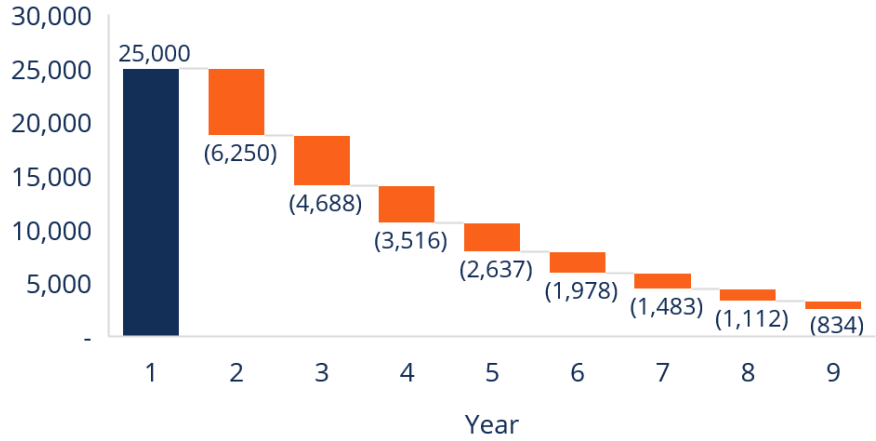


Different depreciation methods

Double Declining Balance approach: a form of accelerated depreciation where the depreciation expense is greater in the first few years and smaller in the later years.

Depreciation Expense =

$$\frac{100\%}{\text{Useful life of asset}} \times 2 \times \text{Beginning period book value}$$

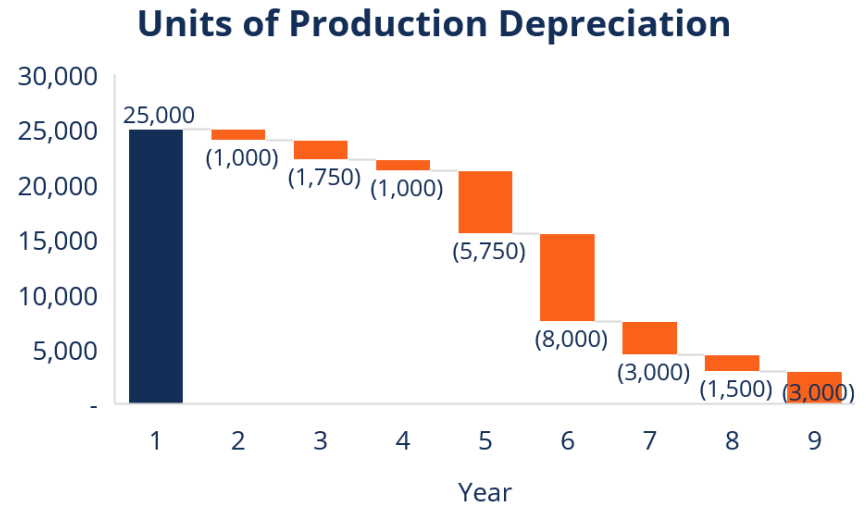


Different depreciation methods

Units of Production approach: depreciation expense varies each year and is based on the output that the assets produce.

Depreciation Expense =

$$\frac{\text{\# of units produced}}{\text{Lifetime \# of units}} \times (\text{Cost} - \text{Salvage value})$$



Depreciation exercise

Now it's your turn...

01. **Click on the link** "Jenga Inc exercise" with instructions

02. **Once you've had a go,** open the file "Jenga Inc. solution"

03.

Constructing a Cash Flow Statement

Session objectives

In this session we will:

01. **Explain** the format of the cash flow statement

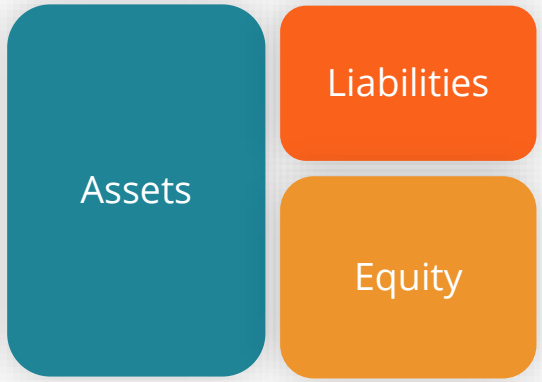
02. **Explain the difference** between the cash flow statement and the income statement

03. **Build a cash flow statement** using the income statement and balance sheet

The three key financial statements

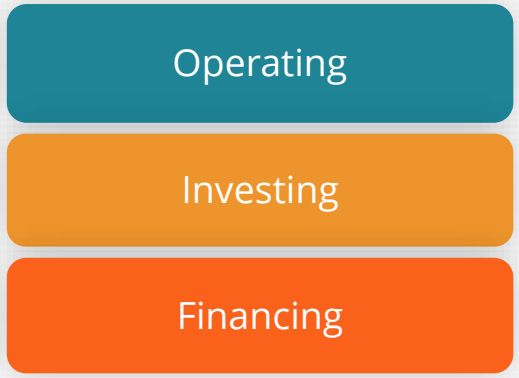
The **financial statements** are a record of the financial activities of a business.

1. Balance sheet



2. Income statement

3. Statement of cash flows



The role of the cash flow statement

In theory, it is not necessary to have a cash flows statement as all cash items could be recorded in the balance sheet.

However, in practice just the closing cash balance is recorded on the balance sheet and all the details are shown in the cash flow statement.

FINANCIAL STATEMENTS	Historical Results 2012	2013	2014	2015	2016
Balance Sheet Check	OK	OK	OK	OK	OK
Balance Sheet					
Assets					
Cash	167,971	181,210	183,715	211,069	239,550
Accounts Receivable	5,100	5,904	6,567	7,117	7,539
Inventory	7,805	9,601	9,825	10,531	11,342
Property & Equipment	45,500	42,350	40,145	38,602	37,521
Total Assets	**226,376**	**239,065**	**240,252**	**267,319**	**295,951**
Liabilities					
Accounts Payable	3,902	4,800	4,912	5,265	5,671
Debt	50,000	50,000	30,000	30,000	30,000
Total Liabilities	**53,902**	**54,800**	**34,912**	**35,265**	**35,671**
Shareholder's Equity					
Equity Capital	170,000	170,000	170,000	170,000	170,000
Retained Earnings	2,474	14,265	35,340	62,053	90,280
Shareholder's Equity	**172,474**	**184,265**	**205,340**	**232,053**	**260,280**
Total Liabilities & Shareholder's Equity	**226,376**	**239,065**	**240,252**	**267,319**	**295,951**
Cash Flow Statement					
Operating Cash Flow					
Net Earnings	2,474	11,791	21,075	26,713	28,227
Plus: Depreciation & Amortization	19,500	18,150	17,205	16,544	16,080
Less: Changes in Working Capital	9,003	1,702	775	903	827
Cash from Operations	**12,971**	**28,239**	**37,505**	**42,354**	**43,480**
Investing Cash Flow					
Investments in Property & Equipment	15,000	15,000	15,000	15,000	15,000
Cash from Investing	**15,000**	**15,000**	**15,000**	**15,000**	**15,000**
Financing Cash Flow					
Issuance (repayment) of debt	-	-	(20,000)	-	-
Issuance (repayment) of equity	170,000	-	-	-	-
Cash from Financing	**170,000**	**-**	**(20,000)**	**-**	**-**
Net Increase (decrease) in Cash	167,971	13,239	2,505	27,354	28,480
Opening Cash Balance	-	167,971	181,210	183,715	211,069
Closing Cash Balance	**167,971**	**181,210**	**183,715**	**211,069**	**239,550**

The cash flow statement

Cash flows are organized based on...

Cash flows from OPERATING ACTIVITIES
(e.g. revenues, operating expenses)

Operating cash flows

Cash flows from INVESTING ACTIVITIES
(e.g. sale/purchase of assets)

Cash before financing

Cash flows from FINANCING ACTIVITIES
(e.g. issuing shares, raising debt)

Net cash movement

The difference between profit and cash

The **accrual concept** recognizes revenues and costs as a business earns or incurs them, not as it receives or pays money. It includes them in the relevant period's income statement, and as far as possible matches them with each other.

Income statement

01. Earned

02. Incurred

Statement of cash flows

01. Received

02. Paid

The idea of matching over time

A **five day** transit pass costs **$40** and is **paid in cash on Monday**.

How much is the **daily cost** of travel on **Thursday**...

- On a **cash flow** basis?
- On a **matching / accrual** basis?

Which **basis**...

- ...better reflects the **cost of an individual journey**?
- ...better helps you **plan your personal cash flow**?

The idea of matching over time

The **daily cost** of travel on **Thursday**

On a cash flow basis:

$0, because the cash expense happened on Monday

Better for planning actual **cash inflows and outflows**

On a matching basis:

$40 / 5 days = **$8** expense per day

Better for planning the **daily cost**

Both approaches provide valuable information

PP&E and depreciation recap

ABC Inc. buys a truck for $45,000, will use it in the business for 5 years, and in 5 years expects to sell it for $15,000 (expected scrap value).

What do we show in the

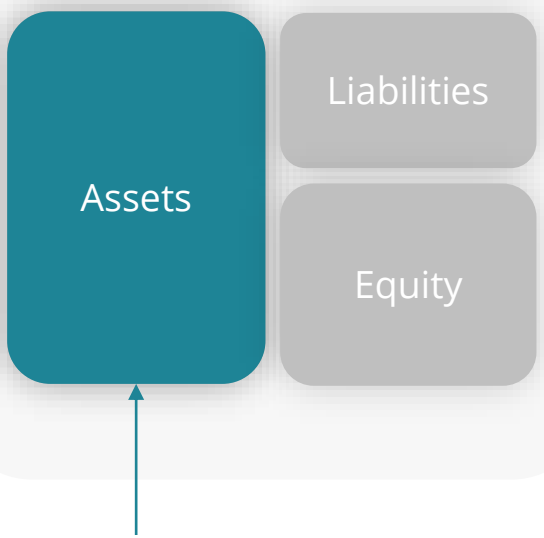
- Cash flow statement?
- Income statement?
- Balance sheet?

Two additional assumptions to make:

1. The company uses straight line depreciation method.
2. The company charges a full year of depreciation expense in the year it makes the purchase.

Depreciation and the three financial statements

Balance sheet

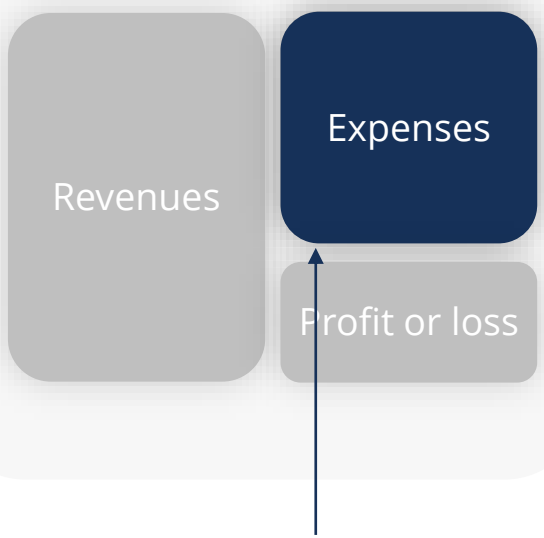


Property, plant and equipment:
$39,000

=$45,000 *[initial purchase price]* – $6,000 *[depreciation expense]*

The value reduces by $6,000 per year.

Income statement

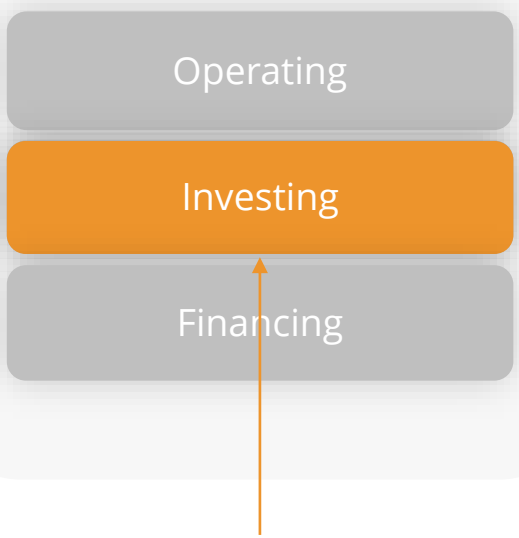


Depreciation expense:
$6,000

= ($45,000 *[purchase price]* – $15,000 *[salvage value]*) / 5 *[useful years]*

$6,000 will be charged as an expense for 5 years.

Statement of cash flows



Cash outflow from investing activities (capex):
$45,000

Calculating operating cash flows - direct method

The most obvious way of showing operating cash flows would be:

Operating cash inflows	X
Less: Operating cash outflows	(X)
= **Net operating cash flows**	**X**

This method is rarely used in practice.

3. Statement of cash flows

01. Operating

02. Investing

03. Financing

Operating cash flows – indirect method

The operating cash flows begin with the **net income** number. If all the items in the income statement were cash items, this would be the only item in this section.

Adjustments are required if:

- Some of the sales would have been on credit
- Some of the purchases would have been on credit
- Some of the inventory that had been bought would not have been sold
- Some other income statement items are not cash items e.g. depreciation, stock-based compensation, and unrealized gains/losses

Therefore, adjustments are made to correct for these.

Operating cash flows – indirect method

Calculating operating cash flows with the indirect method:

Net income	X
+ Depreciation	X
Changes in working capital	
+ (Increase) / decrease in inventory	(X)/X
+ (Increase) / decrease in receivables	(X)/X
+ Increase / (decrease) in payables	X/(X)
Net operating cash flows	**X**

3. Statement of cash flows

01. Operating

02. Investing

03. Financing

Operating cash flows example – period 1

Below is a list of transactions and balances for Johannes Inc:

- Cash purchases 250
- Cash sales 370
- Cash expenses 40
- Depreciation 55

There was no inventory at the year end.

Operating cash flows example – period 1

Income Statement	
Revenue	370
Purchases	(250)
Expenses	(40)
Depreciation	(55)
Net income	**25**

Cash flow direct	
Cash from sales	370
Cash on purchases	(250)
Cash on expenses	(40)
Change in cash	**80**

Cash flow indirect	
Net income	25
Depreciation	55
Change in cash	**80**

Operating cash flows example – period 2

In the next period, the following transactions took place:

- Cash purchases 280
- Cash sales 300
- Sales on credit 170
- Cash expenses 50
- Receipts from receivables 140
- Depreciation 55

Again, there was no inventory at the year end.

Operating cash flows example – period 2

Income Statement	
Revenue 300 + 170	470
Purchases	(280)
Expenses	(50)
Depreciation	(55)
Net income	**85**

Cash flow direct	
Cash from sales	440
Cash on purchases	(280)
Cash on expenses	(50)
Change in cash	**110**

Cash flow indirect	
Net income	85
- Increase in A/R	(30)
+ Deprecation	55
Change in cash	**110**

Operating cash flows example – period 3

In the third period, the following transactions took place:

- Cash purchases 150
- Cash sales 320
- Sales on credit 310
- Purchases on credit 180
- Receipts from receivables 260
- Payments to payables 140
- Cash expenses 70
- Depreciation 55

Again, there was no inventory at the year end.

Operating cash flows example – period 3

Income Statement	
Revenue	
Purchases	
Expenses	
Depreciation	
Net income	

Cash flow direct	
Cash from sales	
Cash on purchases	
Cash on expenses	
Change in cash	

Cash flow indirect	
Net income	
- Increase in A/R	
+ Increase in A/P	
+ Deprecation	
Change in cash	

Johannes operating cash flow exercise

Now it's your turn...

01. **Open the file** "Johannes period 4 exercise".

02. **Once you've had a go,** open the attachment "Johannes period 4 solution".

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Deriving the complete cash flow statement

It is possible to derive the cash flow statement using:

This year's balance sheet

Last year's balance sheet

This year's income statement

Usually, financial analysts forecast future income statements and balance sheets and derive cash flows using the method described over the next few slides.

This approach is used extensively in CFI's financial modeling and valuation courses.

Stage one - compare the balance sheets

For every item in the balance sheet, calculate the **difference between this year's figure and last year's figure**.

If **assets have increased**, this will have resulted in a **cash outflow** and therefore record the difference as a negative amount.

If **liabilities have increased**, this will have resulted in a **cash inflow** and therefore record the difference as a positive amount.

Add up the total of all the differences and it should **equal the increase or decrease in cash**.

Comparing assets and liabilities

ABC Inc. balance sheet extract

Current assets	Year 1	Year 2	Difference
Accounts receivable	80	150	**-70 (cash outflow)**
Inventory	60	80	**-20 (cash outflow)**
Current liabilities			
Accounts payable	30	50	**20 (cash inflow)**

Stage two – classifying the cash flows

Put each of the differences into the cash flow statement classifying them as either:

Operating cash flows

Investing cash flows

Financing cash flows

How should we classify ABC Inc.'s cash flows related to changes in accounts receivable, accounts payable, and inventories?

Classifying working capital cash flows

If we assume ABC Inc.'s net income is 8 and its depreciation expense is 90, the operating cash flows would be:

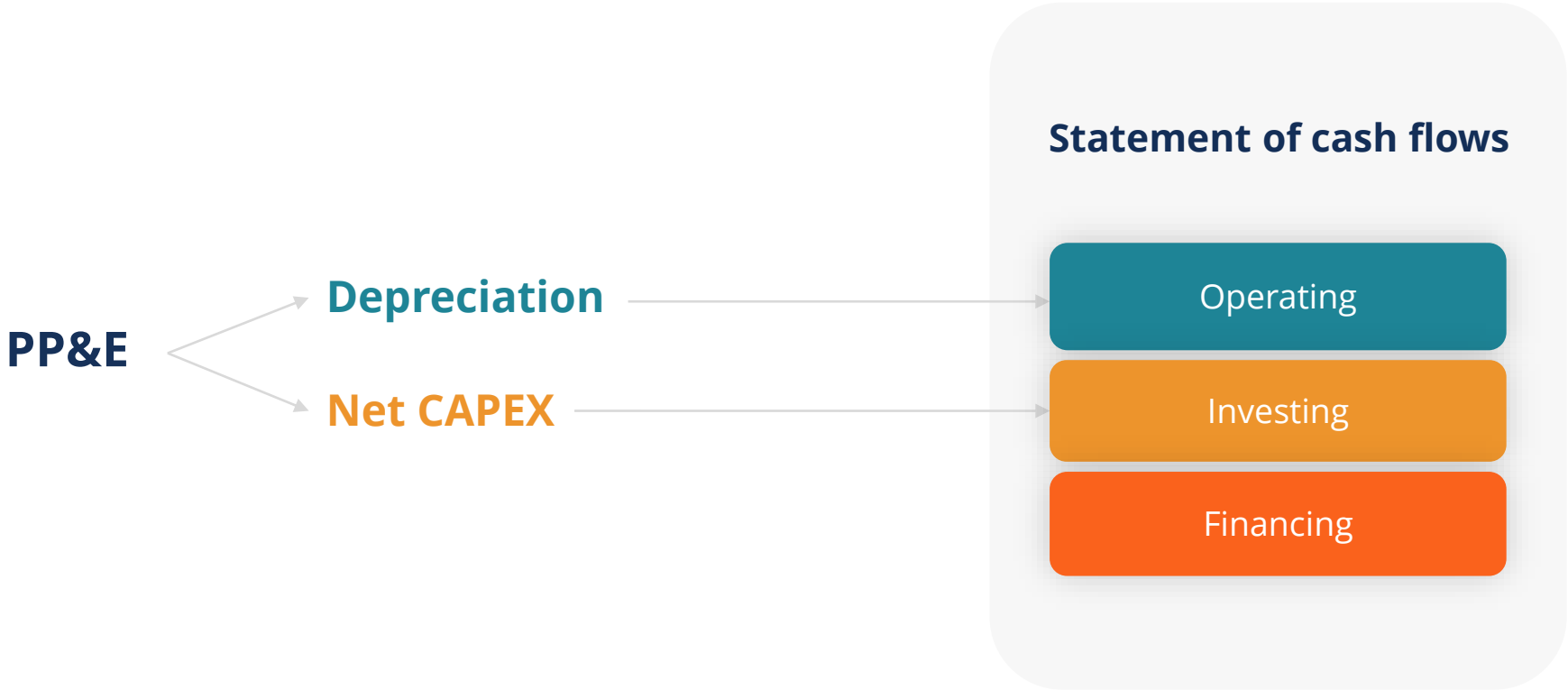
Net Income	8
Depreciation	90
Increase in receivables	(70)
Increase in inventory	(20)
Increase in payables	20
Total operating cash flows	**28**

They are all classified under operating activities

Dealing with property, plant and equipment

There are usually two reasons why a difference PP&E might have occurred:

- **Depreciation expense** lowering PP&E
- **Net capital expenditure (a.k.a. CAPEX)** increasing PP&E



Calculating net capex

We can calculate net capital expenditure as long as we have the following three items:

- **Opening net book value of PP&E** from the balance sheet
- **Closing net book value of PP&E** from the balance sheet
- **Depreciation expense** from the income statement

If ABC Inc.'s depreciation expense is 90 and PP&E in the balance sheet is as follows:

	Year 1	Year 2
PP&E	**810**	**730**

What is ABC Inc.'s net capital expenditure?

Calculation net capital expenditure

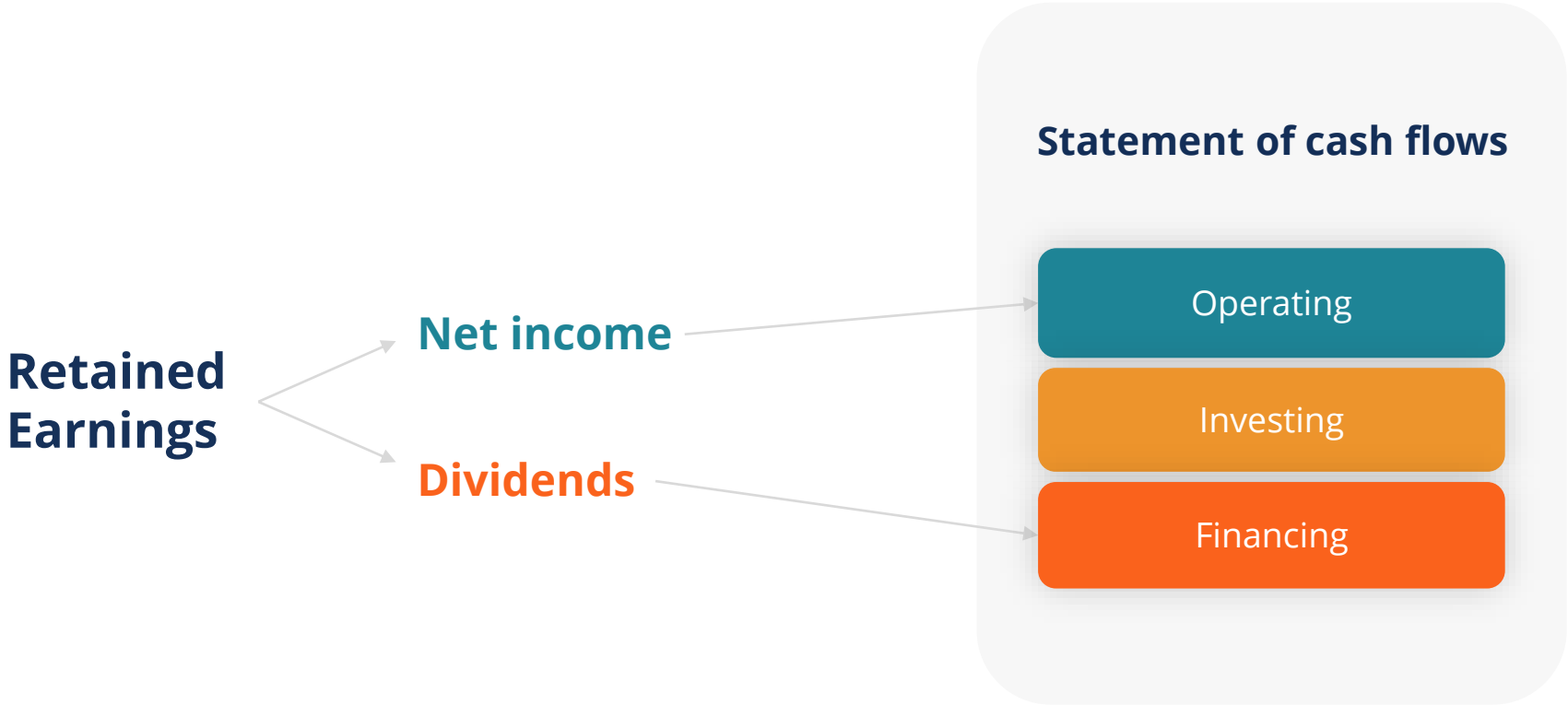
Net capital expenditure is...

Opening PP&E	+	Net CAPEX	–	Depreciation	=	Closing PP&E
810		**10**		90		730

Dealing with retained earnings

Changes in retained earnings are usually due to two factors:

- **+ Net income**
- **- Dividends**



Preparing a cash flow statement exercises

Now it's your turn...

01. **There are two exercises for you to try –** "Jenga cash flow exercise" and "Candor cash flow exercise".

02. **Once you've had a go,** click on the appropriate solution – "Jenga cash flow solution" or "Candor cash flow solution"

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