

## 6

# ACCOUNTING EQUATION

### 6.1 INTRODUCTION

You have already studied about Dual Aspect Concept and the various basic Accounting terms viz Assets, Liabilities, Capital, Expenses and Revenue. According to this concept, every transaction affects the business in two ways by the same amount. Suppose, a businessman starts his business with Rs.2,00,000. In the books of accounts, Rs.2,00,000 will be recorded as an asset (Cash) and an equivalent amount will be shown as liability against the owner. In this example, you have noted that assets are equal to liabilities. We can present this in mathematical form

$$\text{Assets} = \text{Liabilities}$$

This mathematical expression is Accounting Equation.

Every transaction has its effect on the Accounting equation in such a manner that both sides remain equal. Now, we shall take different business transactions and see their subsequent effect on the accounting equation.

### 6.2 OBJECTIVES

After studying this lesson, you will be able to:

- state the meaning of accounting equation;
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- appreciate the importance of accounting equation;
- point out the effect of each aspect of a transaction on the accounting equation;
- establish that assets are equal to liabilities and capital;
- prepare accounting equation from given transactions.

### 6.3 ACCOUNTING EQUATION

The recording of business transaction in books of accounts is based on a fundamental equation called Accounting Equation. *Whatever business possesses in the form of assets is financed by proprietor or by outsiders.* This equation expresses the equality of assets on one side and the claims of outsiders (liabilities) and owners or proprietors on the other side. In Mathematical form,

$$\text{Assets} = \text{Liabilities} + \text{Capital}$$

Whenever an asset is introduced in the business, a corresponding liability also emerges. A business does not have any amount of its own. Hence, we can say that

Business owns Nothing, And Owes Nothing,  
What it Owns, it owes

Let us see the effect of business transactions on Accounting equation. These transactions increase or decrease the assets, liabilities or capital. Every business has certain assets. For example, Sunita has started business by contributing Rs.2,00,000 as Capital. It can be said that asset in the form of Cash has been created for the business concern.

Hence,      Cash                      =      Capital  
              Rs. 2,00,000               =      Rs.2,00,000

Sunita later on purchases furniture for Rs.20,000 and machinery for Rs.60,000. Now the position of the assets is as follows:

$$\begin{array}{rcll}
 \text{Capital} & = & \text{Cash} & + \text{Furniture} + \text{Machinery} \\
 2,00,000 & = & 1,20,000 & + 20,000 + 60,000 \\
 & & (2,00,000 - 80,000) & 
 \end{array}$$

From the above business transactions, we find that

$$\text{Capital} = \text{Assets}$$

or

$$\text{Assets} = \text{Capital}$$

Increase or decrease in capital will result in the corresponding increase or decrease in assets. For example, Sunita introduces Rs.50,000 as additional capital. Then

$$\begin{array}{rcll}
 \text{Capital} & = & \text{Cash} & + \text{Furniture} + \text{Machinery} \\
 2,00,000 & = & 1,20,000 & + 20,000 + 60,000 \\
 + 50,000 & & + 50,000 & \\
 \hline
 2,50,000 & = & 1,70,000 & + 20,000 + 60,000
 \end{array}$$

Every business concern, generally borrows money from outsiders in order to carry on its activities. In other words, every business concern owes money to outsiders. These assets are financed by the funds supplied by proprietors and outsiders. Money borrowed from outsiders is called as liability.

For example, Sunil started business by investing Rs.5,00,000 and borrowed from Ajay Rs.1,00,000. Hence the amount of asset (cash) is Rs.6,00,000. The accounting equation of these two transactions will be :-

$$\begin{array}{rcll}
 \text{Asset (cash)} & = & \text{Capital} & + \text{Liability (Loan from ajay)} \\
 6,00,000 & = & 5,00,000 & + 1,00,000
 \end{array}$$

The fact that business receives funds from proprietors and creditors and retains all of them in the form of various assets, can be presented in terms of an equation as

$$\begin{array}{rcll}
 \text{Assets} & = & \text{Capital} & + \text{Liabilities or } A = C + L \\
 & & & \text{or} \\
 \text{Liabilities} & = & \text{Assets} & - \text{Capital or } L = A - C \\
 & & & \text{or} \\
 \text{Capital} & = & \text{Assets} & - \text{Capital or } C = A - C
 \end{array}$$

Let us consider some more examples:

Rahul started business by introducing Rs.3,00,000 as capital. He also invested Rs.2,00,000 which he borrowed from Shweta.

Assets	=	Capital	+	Liabilities
Cash				Loan from Shweta
5,00,000	=	3,00,000	+	2,00,000

She purchases goods from cash Rs.50,000

	Assets	=	Capital	+	Liabilities
	Cash + goods				
Old equation	5,00,000	=	3,00,000	+	2,00,000
effect of transaction	50,000 + 50,000	=	0		
New Equation	<u>4,50,000+50,000</u>	=	<u>3,00,000</u>	+	<u>2,00,000</u>

He paid Shweta Rs.50,000

	Assets	=	Capital	+	Liabilities
	Cash + goods				
Old equation	4,50,000 + 50,000	=	3,00,000	+	2,00,000
effect of transaction	50,000 + 0	=	0	-	50,000
New Equation	<u>4,00,000 + 50,000</u>	=	<u>3,00,000</u>	+	<u>1,50,000</u>

In the above example, expenses and revenue have not been considered. They also affect the accounting equation. Their effect is always on the capital account.

Every business concern has to meet certain expenses in its day-do-day operations such as payment of salaries, rent, insurance premium, postage, wages, repairs of machines, etc. These expenses are paid regularly. All expenses reduce the cash balance as they are paid in cash. These expenses reduce the net income of the business. As the net income is the income of proprietor, which is represented by the capital account, so all expenses are deducted from the Capital account.

Similarly, every business concern receives certain revenues during its day to day operations, such as rent received, commission received, etc. Revenue is added to the cash balance as it is received in terms of cash. Revenue increases the net income of the business and hence, it is added to the capital account.

Now, the Accounting Equation is represented by

Assets	=	Capital	+ liabilities
+ revenue (cash)		+ revenue	
- expenses (cash)		- expenses	

or

$$A = C + L$$

Accounting equation is thus affected by every business transaction. Any increase or decrease in assets, liabilities and capital can be identified by preparing accounting equation. It also shows that every business transaction satisfies the dual aspect concept of accounting. It also serves as a basis for preparing the Balance Sheet.

### INTEXT QUESTIONS 6.1

- I. Fill in the blanks with correct words:
- a. Accounting equation is also called as ..... equation.
  - b. Assets = ..... + Liabilities
  - c. Accounting equation satisfies the ..... concept of accounting.
  - d. Capital = Assets - .....
  - e. Accounting equation serves as a basis for preparing .....
  - f. Liabilities = ..... - Capital.

## II. Multiple choice questions:

Choose the correct alternative in the following questions:

1. In accounting equation, assets are equal to
  - a. Capital only
  - b. Capital + liabilities
  - c. Capital – Liabilities
  - d. Liabilities – Capital
  
2. Which of the following lists is a list of assets only?
  - a. Cash, Stock, debtors, Machinery
  - b. Cash, creditors, loan
  - c. Capital, furniture, bills payable.
  - d. Capital, prepaid expenses, outstanding expenses.
  
3. Which of the following lists is a list of liabilities only?
  - a. Cash, Stock, debtors
  - b. Cash, loan, creditors
  - c. Creditors, loan, bank overdraft, bills payable
  - d. Prepaid rent, salary outstanding, bills receivables.

## 6.4 EFFECT OF TRANSACTIONS ON ACCOUNTING EQUATION

You have learnt that assets, liabilities and capital are the three basic elements of every business transaction, and their relationship is expressed in the form of accounting equation which always remains equal. At any point of time, there can be a change in the individual asset, liability or capital, but the two sides of the accounting equation always remain equal. Let us examine this fact by taking up some more transactions and see how these transactions affect the accounting equation.

Suppose, Rajni starts her business and the following transactions take place:

1. She started business with cash Rs.5,00,000 introduced as capital.

Assets	=	Liabilities	+	Capital
cash				
Effect of the Rs.5,00,000 transaction	=	0	+	Rs. 5,00,000

This transaction means that Rs.5,00,000 have been introduced by Rajni in terms of cash, which is the capital for the business concern. Hence on one hand, the asset (cash) has been created to the extent of Rs.5,00,000.

2. She purchased furniture for cash worth Rs.50,000

Assets	=	Capital	+	Liabilities
Cash + Furniture				
Old equation	5,00,000 + 0	=	5,00,000	+ 0
effect -	50,000 + 50,000	=	0	- 0
transaction				
New equation	4,50,000 + 50,000	=	5,00,000	+ 0

This transaction has its effect only on the assets, as one asset has been purchased against the other. In this transaction, furniture is purchased against cash given. Furniture and cash both are assets. Hence furniture is introduced by Rs.50,000.

3. She purchased goods for cash Rs.10,000

Assets	=	Capital	+	Liabilities
Cash + Furniture + Goods	=	Capital	+	Liabilities
Old eq.	4,50,000 + 50,000 + 0	=	5,00,000	+ 0
Effect of the transaction	-10,000 + 0 + 10,000	=	0	+ 0
New equation	4,40,000 + 50,000 + 10,000	=	5,00,000	+ 0

Goods purchased is an asset and in return cash paid is also an asset.

Hence in this transaction, there is an increase in one asset (goods) and decrease in the other asset (cash) by Rs.10,000 leaving the capital and liabilities untouched.

4. She purchased goods from Rohit for Rs.40,000

	Assets			=	Capital	+	Liabilities
	Cash	+ furniture	+ Goods	=	Creditors		
Old Equation	4,40,000	+ 50,000	+ 10,000	=	5,00,000	+	0
effect	0	+ 0	+ 40,000	=	0	+	40,000
<b>New Equation</b>	<b>4,40,000</b>	<b>+ 50,000</b>	<b>+ 50,000</b>	<b>=</b>	<b>5,00,000</b>	<b>+</b>	<b>40,000</b>
tion							

In this transaction, goods have been purchased on credit from Rohit, hence there is an increase in the assets (goods) by Rs.40,000 and also an increase in the liabilities by Rs.40,000, as the business concern now owes money to Rohit.

In any transaction, whenever cash payment is not mentioned and the name of the seller is given, then the transaction is always a credit transaction.

5. She sold goods to Rahul for Rs.20,000: the cost of the goods is Rs.15,000.

	Assets				=	Capital	+	Liabilities
	Cash	+ Furniture	+ Goods	+ Debtors	=			
Old eq.	4,40,000	+ 50,000	+ 50,000	+ 0	=	5,00,000	+	40,000
Effect of the	0	+ 0	- 15,000	+ 20,000	=	5,05,000	+	40,000
Transaction	4,40,000	+ 50,000	+ 35,000	+ 20,000	=	5,05,000	+	40,000
<b>New Equation</b>	<b>4,40,000</b>	<b>+ 50,000</b>	<b>+ 35,000</b>	<b>+ 20,000</b>	<b>=</b>	<b>5,05,000</b>	<b>+</b>	<b>40,000</b>

In this transaction, goods have been sold on credit to Rahul, so there is a decrease in the assets (goods) by Rs.15,000, and an increase in the assets (Rahul) by Rs.20,000 as money has to be collected from Rahul. In this process, the proprietor has a gain of Rs.5,000 which is added to the capital.

Whenever goods are sold and nothing about cash received is mentioned and the name of the purchaser is given then that transaction is treated as credit transaction.

6. She paid salaries to clerks for Rs.12,000

	Assets				=	Capital	+Liabilities
	Cash	+ Furniture	+ Goods	+ Debtors			
Old eq.	4,40,000	+50,000	+35,000	+20,000	=	5,05,000	+ 40,000
Effect of the transaction	-12,000	+0	+0	+ 0	=	-12,000	+ 0
New Equation	4,28,000	+50,000	+35,000	+20,000	=	4,93,000	+ 40,000

In this transaction, salaries paid to clerks is an expense for the business concern. Since salaries is paid in terms of cash, hence cash as an asset is reduced by Rs.12,000 and as all expenses reduce the capital, so capital is also reduced by Rs.12,000.

7. Cash paid to Rohit Rs.20,000

	Assets				=	Capital	+Liabilities
	Cash	Furniture	+Goods	+Debtors			
Old eq.	4,28,000	50,000	+35,000	+20,000	=	4,93,000	+40,000
Effect of the transaction	- 20,000	+0	+0	+0	=		-20,000
New Equation	4,08,000	+50,000	+35,000	+20,000	=	4,93,000	+20,000

In this transaction, cash has been paid to the creditors, Rohit Rs.20,000, hence cash as an asset is reduced by Rs.20,000 and also the liability (Rohit) is reduced by Rs.20,000.

From the above transactions, now you are clear as to how every transaction has its effect on the accounting equation without disturbing the equality of the two sides.

### COMBINATIONS OF THE EQUATION

The inter-relationship between assets, liabilities and capital can be expressed in various forms. Nine combinations can be created.

Increase or decrease in one has a corresponding Increase or Decrease in Itself or the other.

Let us study the nine combinations with examples.

- i) Increase in asset with corresponding increase in capital  
Example: Started business with cash.
- ii) Increase in asset with corresponding increase in liabilities.  
Example: Goods purchased on credit.
- iii) Decrease in asset with corresponding decrease in capital  
Example: Cash withdrawn from the business by the proprietor for personal use.
- iv) Decrease in asset with corresponding decrease in liability  
Example: Cash paid to the creditor.
- v) Increase and decrease in assets  
Example: Furniture purchased for cash,  
Goods purchased for cash, etc.
- vi) Increase and decrease in liabilities.  
Example: Payment made to creditors by taking loan from bank.
- vii) Increase and decrease in capital.  
Example: Interest on Capital
- viii) Increase in liabilities and decrease in capital.  
Example: Wages due but not yet paid, outstanding salaries
- ix) Increase in capital and decrease in liabilities.  
Example: Conversion of loan into capital.

Let us consider another Illustration and study the accounting equation once again:

**Illustration**

1.	Shashi started business with :	Rs.
	Cash	2,00,000
	Goods	1,20,000
	Machine	80,000
2.	He purchased goods for cash	50,000
3.	He sold goods (costing Rs.20,000)	25,000
4.	He purchased goods from Ravi	70,000
5.	He paid cash to Ravi in full settlement	69,000
6.	He sold goods to Vikas (costing Rs.54,000)	60,000
7.	He received prompt payment from Vikas and discount allowed Rs.2,000	58,000
8.	Salaries paid by him	40,000
9.	Rent outstanding	4,000
10.	Prepaid insurance	1,000
11.	Commission received by him	3,000
12.	Amount withdrawn by him for personal use	30,000
13.	Interest on capital invested by him	2,000
14.	Depreciation charged on Machinery	8,000
15.	Purchased goods from Sandeep	1,70,000

## Solution

Sl. Transaction No.	Assets			Liabilities			Capital
	Cash + Goods	+ Machine + Debtors	+ Prepaid expense	= Creditors + expense	+ Outstanding	+ Capital	
1. Started business with Cash 2,00,000 Goods 1,20,000 Machine 80,000	2,00,000 + 1,20,000 + 80,000 +	0 +	0 =	0 +	0 +	4,00,000	
2. Goods Purchased for Rs. 50,000 New Equation	-50,000 + 50,000 + 80,000 +	0 +	0 =	0 +	0 +	4,00,000	
3. Sold goods (Cost Rs. 20,000) for Rs. 25,000 New Equation	+25,000 - 20,000 + 80,000 +	0 +	0 =	0 +	0 +	5,000	
4. Purchased goods from Ravi Rs. 70,000 New Equation	1,75,000 + 1,50,000 + 80,000 +	0 +	0 =	0 +	0 +	4,05,000	
	0 + 70,000 + 80,000 +	0 +	0 =	+70,000 +	0 +	0	
	1,75,000 + 2,20,000 + 80,000 +	0 +	0 =	+70,000 +	0 +	4,05,000	

5. Payment made to Ravi in full settlement Rs. 69,000 New Equation	-69,000 +	0 +	0 +	0 +	0 +	0 +	0 =	-70,000 +	0 +	1,000
6. Goods Sold Rs. 54,000 for Rs. 60,000 New Equation	1,06,000 +	2,20,000 +	80,000 +	0 +	0 +	0 +	0 =	0 +	0 +	4,06,000
	0 -	54,000 +	0 +	60,000 +	0 +	0 +	0 =	0 +	0 +	6,000
7. Payment received from Vikas and discount Rs. 2,000 New Equation	1,06,000 +	1,66,000 +	80,000 +	60,000 +	0 +	0 +	0 =	0 +	0 +	4,12,000
	+58,000 +	0 +	0 -	60,000 +	0 +	0 +	0 =	0 +	0 -	2,000
8. Salaries paid Rs. 40,000 New Equation	1,64,000 +	1,66,000 +	80,000 +	0 +	0 +	0 +	0 =	0 +	0 +	4,10,000
	-40,000 +	0 +	0 +	0 +	0 +	0 +	0 =	0 +	0 -	40,000
9. Rent outstanding Rs. 4,000 New Equation	1,24,000 +	1,66,000 +	80,000 +	0 +	0 +	0 +	0 =	0 +	0 +	3,70,000
	0 +	0 +	0 +	0 +	0 +	0 +	0 =	0 +	4,000 -	4,000
10. Prepaid insurance Rs. 1,000 New Equation	1,24,000 +	1,66,000 +	80,000 +	0 +	0 +	0 +	0 =	0 +	4,000 +	3,66,000
	-1,000 +	0 +	0 +	0 +	0 +	1,000 =	0 +	0 +	0 +	0
	1,23,000 +	1,66,000 +	80,000 +	0 +	0 +	1,000 =	0 +	0 +	4,000 +	3,66,000



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**INTEXT QUESTION 6.2**

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1. Goods purchased from Ritu for Rs.60,000. What effect will the transaction have on the Accounting Equation?
    - a. Increase in assets and decrease in liability.
    - b. Increase and decrease in asset.
    - c. Increase and decrease in liability.
    - d. Decrease in asset and decrease in liability.
  
  2. Rent outstanding Rs.2,000. What effect will this transaction have on the Accounting Equation?
    - a. Increase and decrease in asset.
    - b. Increase and decrease in liability.
    - c. Increase in liability and increase in asset.
    - d. Increase in liability and decrease in Capital.
  
  3. Interest on drawings amounted to Rs.5,000. What effect will this transaction have on the Accounting Equation?
    - a. Increase and decrease in asset.
    - b. Increase and decrease in liability.
    - c. Increase and decrease in Capital.
    - d. Increase in asset and Increase in liability.
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**6.5 WHAT YOU HAVE LEARNT**

1. Business transaction means exchange of goods and/or services for value and any other financial activity undertaken in the course of the business.
  2. Every business transaction is recorded on the basis of Accounting Equation.
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3. Accounting equation is a statement showing the equality of assets on one hand and the capital and liabilities on the other:
4.  $\text{Assets} = \text{Capital} + \text{Liabilities}$  (  $A = C + L$  )
5. Every business transaction has its effect on the Accounting Equation.
6. Business owns nothing and owes nothing. What it owns it owes.
7. Under any circumstance, the equality of the Accounting Equation remains same.
8. The effect of expenses and revenue is always on the Capital Account. Expenses reduce the Capital and revenues increase it.
9. Every business transaction satisfies the Dual Aspect Concept.
10. Any increase or decrease in one element of Accounting Equation has a corresponding increase or decrease on the other element or itself.

## 6.6 TERMINAL QUESTIONS

1. Answer the following questions in 1-10 words.
  - a. If a firm borrows a sum of money, what will be its effect on the Accounting Equation?
  - b. Give two examples — one showing the effect only on assets and the other on liabilities only.
  - c. How will you show income received in advance in the accounting equation?
  - d. If goods costing Rs.8,000 are sold for Rs.8,500, how will the capital be affected?
2. Answer the following in (30-50 words).
  - a. What is an Accounting Equation?
  - b. How are revenue and expense treated in Accounting Equation?

3. "Accounting Equation remains intact under all circumstances". Justify this statement with the help of examples (100-150 words).

4. Prepare Accounting Equation on the basis of the following:

- (i) Karan started business with cash Rs. 1,60,000.
- (ii) He purchased furniture for cash Rs.16,000.
- (iii) He paid rent Rs.1,600.
- (iv) He purchased goods on credit Rs.24,000.
- (v) He sold goods (cost price Rs.16,000) for Rs.40,000 for cash.

5. Akshay had the following transactions: Rs.

- |  |          |
|--|----------|
| (i) Commenced business with cash             | 2,50,000 |
| (ii) Purchased goods for cash                | 1,00,000 |
| (iii) Salaries paid                          | 2,500    |
| (iv) sold goods for cash Rs.2,00,000 costing | 1,50,000 |
| (v) Rent outstanding                         | 500      |
| (vi) Purchased goods on credit               | 1,50,000 |
| (vii) Purchased Machinery on credit          | 25,000   |
| (viii) Purchased Motorcycle for personal use | 25,000   |
| (ix) Purchased building for cash             | 1,00,000 |

Use Accounting Equation to show the effect of the above transactions on the assets, liabilities and capital.

6. Show the Accounting Equation on the basis of the following transactions

- |                                      | Rs.      |
|--------------------------------------|----------|
| (i) Shivam started business          |          |
| Cash                                 | 5,00,000 |
| Goods                                | 2,00,000 |
| (ii) He purchased machinery for cash | 2,50,000 |

(iii)	He purchased goods from Ramesh	1,00,000
(iv)	He sold goods to Suresh (Cost Rs.25,000)	30,000
(v)	Paid insurance premium	5,000
(vi)	Salary outstanding	10,000
(vii)	Depreciation of Machinery	25,000
(viii)	Interest on Capital	3,000
(ix)	Amount withdrawn for personal use	18,000
(x)	Interest on drawings	900
(xi)	Rent received in advance	1,500
(xii)	Cash paid to Ramesh	50,000
(xiii)	Cash received from Suresh	15,000

## 6.7 ANSWERS TO INTEXT QUESTIONS

6.1 I. a. balance sheet equation

b. capital

c. dual aspect

d. liabilities

e. balance sheet

f. assets

II. 1. b. Capital + Liabilities

2. a

3. c

6.2 I. 1. a

2. d

d. c