

UNIT 6 : AVERAGE DUE DATE

LEARNING OUTCOMES

After studying this chapter, you will be able to:

- ◆ Understand what is average due date and how to choose 0 (zero) day for calculating average due date.
- ◆ Learn the technique of calculating due date
- ◆ Learn calculation of average due date where amount is lent in various instalments.
- ◆ Calculate average due date for determining interest on drawings.
- ◆ Familiarize with the steps involved in calculation of average due date where amount is lent in one instalment but repayment is done in various instalments. Also understand days of grace and learn the technique of maturity date by counting the days of grace.

UNIT OVERVIEW

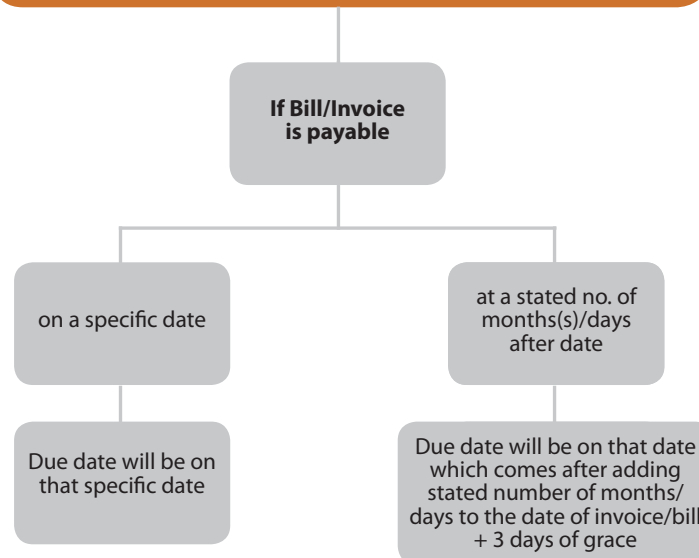
USES OF AVERAGE DUE DATE

For calculation of interest on drawings of partners

Where amount is lent in various instalments

Where amount is lent in one instalment

CALCULATION OF DUE DATE



6.1 INTRODUCTION

In business enterprises, a large number of receipts and payments by and from a single party may occur at different points of time. To simplify the calculation of interest involved for such transactions, the idea of average due date has been developed. Where a person owing several amounts due on different dates, desires to pay the total amount payable by him/her on a particular date, so that neither the debtor nor the creditor stands to lose or gain anything by way of interest, that date is known as average due date. Average Due Date is weighted average of due dates of various transactions where amount of each transaction is used as weight. The unique feature of this approach is that the party making payment neither suffers any loss nor gains anything by this arrangement of making a single payment. Average due date is generally used in following circumstances:

- i) For calculating interest on drawings of partners;
- ii) For settling accounts between principle and agent;
- iii) For settling contra accounts e.g. where parties sell goods to each other;
- iv) For making lump sum payment against various bills drawn on different dates with different due dates;

In this unit, we shall elaborate the underlying principle of determining average due date covering the cases where the amount is lent in various instalments but repayment is made in a single instalment as well as where the amount is lent in one instalment but repayment is made by various instalments. The technique of average due date is also useful for calculating interest on drawings made by the proprietors or partners of a business firm at several points of time.

Average due date: It is the mean or equated date on which a single total payment may be made in lieu of different payments on different dates without any loss to either party.

Where payment is not made on the average due date, the party receiving the amount charges interest for as many days as the payment is delayed from the average due date.

The formula for calculating average due date is as follows:

$$\text{Average due date} = \text{Base date} \pm \frac{\text{Total of the products}}{\text{Total of the amounts}}$$

Points to be noted:

1. Selection of base date/ zero date: Such a date may be the due date of the first transaction or the due date of the last transaction or any other due date between the first and the last but preferably earlier due date may be taken.
2. While ascertaining the number of intervening days (plus or minus) between the base date and the due date of each transaction ignore the first date and include the last day.
3. If due date is in fraction, round it off.
4. If amount is paid before due date, rebate is given.
5. If amount is paid after due date, then interest is charged.
6. Whenever there is a sale of goods by two persons to each other on different dates, the formula for calculating average due date becomes:

$$\text{Base date} \pm \frac{\text{Difference in products}}{\text{Difference in amounts}}$$

6.2 CONCEPT OF DUE DATE (DATE OF MATURITY)

The due date of a bill of exchange/invoice is the date when the amount of a bill/invoice is payable by the drawee/ creditor to drawer/ debtor.

6.2.1 Calculation of Due Date after Taking into Consideration Days of Grace

A Bill of exchange or promissory note matures on the date on which it falls due. And every promissory note or bill of exchange (other than those payable on demand or at sight or on presentment) falls due on the third day after on which it is expressed to be payable.

Examples

- (i) A bill dated 30th September is made payable three months after date. It falls due on 2nd January.
- (ii) Due Date=30 Dec
- (iii) Maturity date= 30 Dec +3 =2 Jan
- (ii) A note dated 1st January is payable one month after sight. It falls due on 4th February.

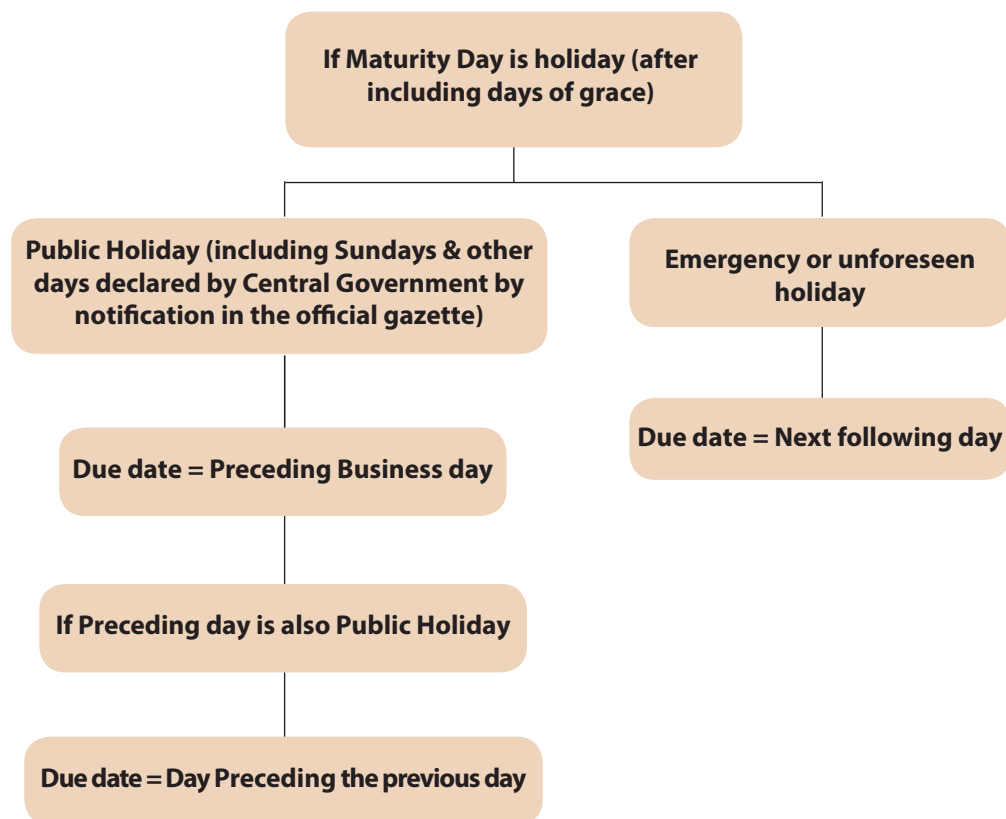
6.2.2 Calculating Due Date of Bill or Note Payable Few Months after Date or Sight

When the bill is made payable at a stated number of months after date or after sight or after certain events, then the period stated shall be held to terminate on the date of the month which corresponds with the day on which the instrument is dated. If the month in which the period would terminate has no corresponding day, the period shall be held to terminate on the last day of such month.

Example: A Bill due on 29th January, 2015 is made payable at one month after date. The due date of instrument is 3rd day after 28th February, i.e., 3rd March (in 2015, February is of 28 days only).

6.2.3 Calculation of Due Date when the Maturity Day is a Holiday

When the day on which a promissory note or bill of exchange is at maturity (after including days of grace) is a public holiday, the instrument shall be deemed to be due on the preceding business day. The expression "public holiday" includes Sundays and other days declared by the Central Government by notification in the official gazette, to be a public holiday. And now if the preceding day is also a public holiday, it will fall on the day preceding the previous day. But if the holiday happens to be emergency or unforeseen holiday then the date shall be the next following day. (Ref: Negotiable Instruments Act 1881).



6.3 TYPES OF PROBLEMS

- ◆ Case 1: Learn calculation of average due date where one Party is involved
- ◆ Case 2: Learn calculation of average due date where inter transactions between 2 Parties are involved
- ◆ Case 3: Learn calculation of average due date where amount is repaid in Instalments
- ◆ Case 4: Learn Calculation of average due date for determining interest on drawings.

Case 1: Learn calculation of average due date Where one Party is involved

Calculation of average due date

Under this type of problem, average due date is calculated as follows :

- a. Take the earliest due date as starting day or base date or "O" day for convenience. Any date whatsoever, may also be taken as "O" day.
- b. Consider the number of days from base date up to each due date. Calculations may also be made in month.
- c. Multiply the number of days by the corresponding amounts.
- d. Add up the amount and products.
- e. Divide the "Product total" by "Amount total" and get result approximately upto a whole number.
- f. This number is added in the base date to find the average due date.

Thus the formula for the average due date can be under.

$$\text{Average due date} = \text{Base date} \pm \frac{\text{Total of products}}{\text{Total amounts}}$$

Note: For calculation of no. of days, no. of days in each respective month involved are to be considered individually.

ILLUSTRATION 1

The followings are the amounts due on different dates in between the same parties:

Amount ₹	Due Date
500	3rd July
800	2nd August
1,000	11th September

Suggest a date on which all the bills may be paid out without any loss of interest to either party.

 **SOLUTION**

Considering 3rd July as the starting day the following table is prepared:

Due Dates	Amount	No. of Days from 3rd July	Products
3rd July	500	0	0
2nd August	800	30	24,000
11th September	1,000	70	70,000
	2,300		94,000

$$\text{Average Due Date} = 3^{\text{rd}} \text{ July} + \frac{94,000}{2,300}$$

$$= 3^{\text{rd}} \text{ July} + 41 \text{ days} = 13^{\text{th}} \text{ August}$$

Loss of Interest: 13th August to 11th September

Assuming 5% is interest rate, the debtor loses interest due to early payment of ₹ 1,000 for 29 days (from 13th August to 11th September) i.e., ₹ 4. $1000 \times 29/365 \times 5/100$

Gain of Interest: 3rd July to 13th August and 2 August to 13th August

He however, gains interest, due to late payment on ₹ 500 for 41 days from 3rd July to 13th August and on ₹ 800 for 11 days i.e. ₹ 2.80 + ₹ 1.20, i.e., ₹ 4.

Thus, the debtor neither loses nor gains by payment of all the amounts on 13th August.

It should be noted that in calculating the number of days only one of the dates, either the starting date or the due date is to be counted.

In the same manner, bill due to one party may be cancelled as against bills of same amount due from the same party after adjustment of interest for the period elapsing between the two average due dates. Instead of payment of several bills on the same date as above, other bill starting from the average due date for agreed period together with interest for the period may be accepted.

 **ILLUSTRATION 2**

The following amounts are due to X by Y. Y wants to pay off (a) on 18th March or (b) on 14th July. Interest rate of 8% p.a. is taken into consideration.

Due Dates	₹
10th January	500
26th January (Republic Day)	1,000
23rd March	3,000
18th August (Sunday)	4,000

Determine the amount to be paid in (a) and in (b).

**SOLUTION****Taking 10th January as the base date**

Due Date (Normal)	Due Date (Actual)	No. of days from 10th January. . .	Amount ₹	Product
10 th January	10th January	0	500	0
26 th January	25th January	15	1,000	15,000
23 rd March	23rd March	72	3,000	2,16,000
18 th August	17th August	219	4,000	8,76,000
			8,500	11,07,000

$$\text{Average Due Date} = 10^{\text{th}} \text{ Jan.} + \frac{11,07,000}{8500} = 10^{\text{th}} \text{ Jan} + 131 \text{ days} = 21^{\text{st}} \text{ May}$$

January	21
February	28
March	31
April	30
	<u>110</u>

- (a) If the payment is made on 18th March rebate will be allowed for unexpired time from 18th March to 21st May i.e., 13 + 30 + 21 i.e. for 64 days. He has to pay the discounted value of the total amount.

$$\text{Discount} = 8,500 \times \frac{8}{100} \times \frac{64}{365} = 680 \times \frac{64}{365} = ₹ 119.2$$

$$\text{Amount to be paid on 18th March} = ₹ (8,500 - 119.23) = ₹ 8,380.77$$

- (b) If the payment is deferred to 14th July, interest is to be paid from 21st May to 14th July i.e., for 10 + 30 + 14 = 54 days.

$$\text{Interest} = 8,500 \times \frac{8}{100} \times \frac{54}{365} = 680 \times \frac{54}{365} = ₹ 100.6$$

The amount to be paid on 14th July.

$$₹ 8,500 + 100.6 = 8600.6$$

**ILLUSTRATION 3**

Calculate Average Due date from the following information:

Date of the bill	Term	Amount ₹
August 10, 2015	3 months	6,000
October 23, 2015	60 days	5,000
December 4, 2015	2 months	4,000

January 14, 2016	60 days	2,000
March 08, 2016	2 months	3,000

(Assume February of 28 days)

SOLUTION

Calculation of Average Due Date Taking 10th August as the base date

Date of bill	Term	Due date- Maturity Date	No. of days from 10th August 2015	Amount ₹	Product ₹
August 10, 2015	3 months	Nov. 13, 2015	95	6,000	5,70,000
October 23, 2015	60 days	Dec. 25, 2015	137	5,000	6,85,000
December 04, 2015	2 months	Feb. 07, 2016	181	4,000	7,24,000
January 14, 2016	60 days	Mar. 18, 2016	220	2,000	4,40,000
March 08, 2016	2 months	May 11, 2016	274	3,000	8,22,000
				20,000	32,41,000

$$\text{Average due date} = \frac{\text{Total of product}}{\text{Total of amount}} = \frac{32,41,000}{20,000} = 162.05 = 163 \text{ days}$$

= 163 days after August 10, 2015 i.e. January 20, 2016.

Days of Grace added as it is case of Bills and it is Negotiable Instrument.

ILLUSTRATION 4

A trader having accepted the following several bills falling due on different dates, now desires to have these bills cancelled and to accept a new bill for the whole amount payable on the average due date :

Sl. No.	Date of bill	Amount	Usance of the bill
1	1st March 2016	400	2 months
2	10th March 2016	300	3 months
3	5th April 2016	200	2 months
4	20th April 2016	375	1 month
5	10th May 2016	500	2 months

You are required to find the said average due date.

SOLUTION

Calculation of the average due date

Taking 4th May as the base date

Sl. No.	Date of bill	Due Date of Maturity	Amount ₹	No. of days from starting date (4th May)	Product
1	1st March 2016	4th May	400	0	0

2	10th March 2016	13th June	300	40	12,000
3	5th April 2016	8th June	200	35	7,000
4	20th April 2016	23rd May	375	19	7,125
5	10th May 2016	13th July	500	70	35,000
Total :			1,775		61,125

Average Due Date is $61,125/1,775=34.43$ i.e., 35 days after the assumed due date, 4th May, 2016. The new bill should be for ₹ 1,775 payable on June 8th, 2016.

ILLUSTRATION 5

A owes B ₹ 890 on 1st January, 2015. From January to March, the following further transactions took place between A and B:

January 16	A buys goods	₹ 910
February 2	A receives Cash loan	₹ 750
March 6	A buys goods	₹ 810

A pays the whole amount on 31st March, 2015 together with interest at 5% per annum. Calculate the interest by the average due date method.

Due Date 2015	Amount ₹	No. of days from Jan. 1	Product
Jan. 1	890	0	0
Jan. 16	910	15	13,650
Feb. 2	750	32	24,000
March 6	810	64	51,840
	3,360		89,490

SOLUTION

Calculation of average due date

Average due date = Base date + days equal to $\frac{\text{Sum of product}}{\text{Sum of the amount}}$

Jan. 1 + $\left[\frac{89,490}{3,360} \right]$ i.e., 27 days or Jan. 28

Interest therefore has been calculated on ₹ 3,360 from 28th Jan. to 31st March, i.e., for 63 days.

$$3,360 \times \frac{5}{100} \times \frac{63}{365} = ₹ 29$$

ILLUSTRATION 6

Radheshyam purchased goods from Hariram. The due dates for payment is cash, being as follows:

March 15	₹ 400 Due on 18th April
April 21	₹ 300 Due on 24th May

April 27

₹ 200 Due on 30th June

May 15

₹ 250 Due on 18th July

Hariram agreed to draw a Bill for the total amount due on the average due date. Ascertain that date

 **SOLUTION**

Taking 18th April as the base date

Due Date	Amount ₹	No. of days from 18th April	Product
18th April	400	0	
24th May	300	36	10,800
30th June	200	73	14,600
18th July	250	91	22,750
	1,150		48,150

Average Due Date is $\frac{48,150}{1,150}$ or 42 days after the base date.

18th April, i.e. 30 May.

Case 2: Learn calculation of average due date Where inter transactions between 2 Parties are involved

When more than one party is involved where one party purchase and also sells to other party like JK Tyres and Maruti where Maruti sells car to JK Tyres for their employees and purchases Tyres from them. In such a case instead of paying gross amount they may go for new amount i.e. Purchase amount and sales amount will be set off and thus here we take difference of amount and produce as Net Amount. In such cases, earliest date of both parties is taken as the base date.

 **ILLUSTRATION 7**

Two traders X and Y buy goods from one another, each allowing the other one month's credit. At the end of 3 months the accounts rendered are as follows:

Goods sold by X to Y ₹		Goods sold by Y to X ₹	
April 18	60.00	April 23	52.00
May 15	70.00	May 24	50.00
June 16	80.00		

Calculate the date upon which the balance should be paid so that no interest is due either to X or Y.

 **SOLUTION**

Taking May 18th as the zero or base date (April 18 +One month Credit=18 May)

For Y's payments:

Date of Transactions (1)	Due Date (2)	Amount (3)	No. of days from the base date (4)	Products (5)
April 18	May 18	60	0	0
May 15	June 15	70	28	1,960
June 16	July 16	80	59	4,720
Amount Due to X		210	Sum of products	6,680

For X's payments

The students should note that the same base date should be taken. Therefore, the base date will be May 18th in this case also.

Date of Transactions (1)	Due Date (2)	Amount (3)	No. of days from the base date (4)	Products (5)
April 23	May 23	52	5	260
May 24	June 24	50	37	1,850
Amount Due to Y		102	Total products	2,110

$$\begin{aligned} \text{Excess of Y's products over X's} &= 6,680 - 2,110 \\ &= 4,570 \end{aligned}$$

$$\text{Excess amount due to X ₹ 210 - 102} = ₹ 108.$$

Number of days from the base date to the date of settlement is

$$\frac{4,570}{108} = 42.3 \text{ days i.e 43 days}$$

Hence the date of settlement of the balance is 4.3 days after May 18 i.e., on June 30. On June 30, Y has to pay X, ₹ 108 to clear the account.

 **ILLUSTRATION 8**

Manoj had the following bills receivables and bills payable against Sohan. Calculate the average due date, when the payment can be received or made without any loss of interest.

Date	Bills Receivable ₹	Tenure	Date	Bills Payable ₹	Tenure
01/06/2016	3,000	3 month	29/05/2016	2,000	2 month
05/06/2016	2,500	3 month	03/06/2016	3,000	3 month
09/06/2016	6,000	1 month	9/06/2016	6,000	1 month
12/06/2016	1,000	2 month			
20/06/2016	1,500	3 month			

15 August, 2016 was a Public holiday. However, 6 September, 2016 was also declared as sudden holiday.

 **SOLUTION:**

Let us take 12.07.2014 as Base date.

Bills receivable

Due date	No. of days from 12.07.2016	Amount	Product
04/09/2016	54	3,000	1,62,000
08/09/2016	58	2,500	1,45,000
12/07/2016	0	6,000	0
14/08/2016	33	1,000	33,000
23/09/2016	73	1,500	1,09,500
		14,000	4,49,500

Bills payable

Due date	No. of days from 12.07.2016	Amount	Product
01/08/2016	20	2,000	40,000
07/09/2016	57	3,000	1,71,000
12/07/2016	0	6,000	0
		11,000	2,11,000

Excess of products of bills receivable over bills payable = 4,49,500 - 2,11,000 = 2,38,500

Excess of bills receivable over bills payable = 14,000 - 11,000 = 3,000

Number of days from the base date to the date of settlement is $2,38,500/3,000 = 79.5$ (approx.)

Hence date of settlement of the balance amount is 80 days after 12th July i.e. 30th September.

On 30th September, 2016 Sohan has to pay Manoj ₹ 3,000 to settle the account.

 **ILLUSTRATION 9**

Mr. Green and Mr. Red had the following mutual dealings and desire to settle their account on the average due date:

Purchases by Green from Red:	₹
6 th January, 2016	6,000
2 nd February, 2016	2,800
31 st March, 2016	2,000

Sales by Green to Red:

6 th January, 2016	6,600
9 th March, 2016	2,400
20 th March, 2016	500

You are asked to ascertain the average due date. (28 days in feb.)

**SOLUTION****Calculation of Average Due Date**

Taking 6th January, 2016 as base date

For Green's payments

Due date	Amount	No. of days from the base date i.e. 6th Jan. 2016	Product
2016	₹		
6 th January	6,000	0	0
2 nd February	2,800	27	75,600
31 st March	2,000	84	1,68,000
Total	10,800		2,43,600
For Red's payment			
2016			
6 th January	6,600	0	0
9 th March	2,400	62	1,48,800
20 th March	500	73	36,500
Total	9,500		1,85,300

Excess of Green's products over Red's = ₹ 2,43,600 – ₹ 1,85,300 = ₹ 58,300

= ₹ 10,800 – ₹ 9,500 = ₹ 1,300

Number of days from the base date to the date of settlement is $58,300/1,300=45$ days (approx.)

Hence, the date of settlement of the balance amount is 45 days after 6th January i.e. on 20th February.

On 20th February, 2016, Green has to pay Red ₹ 1,300 to settle the account.

♦ **Case 3: Learn calculation of average due date where amount is repaid in Instalments**

Calculation of average due date in a case where the amount is lent in one instalment and repayment is done in various instalments (opposite to what we have done in the first case). The problem takes a different shape. The procedure for calculating average due date can be summarized as under:

Step 1: Calculate number of days/monthly/years from the date of lending money to the date of each repayment.

Step 2: Find the total of such days/months/years.

Step 3: Quotient will be the number of days/months/years by which average due date falls away from date of commencement of loan.

As explained earlier, if instalment are same, we can use Simple mean concept i. Divide days by number of items and no need for product.

Thus, the formula for the average due date can be written as under:

$$\text{Average due date} = \text{Date of Loan} + \frac{\text{Sum of days / months / Years from the date of Lending to the date of repayment of each instalment}}{\text{Number of instalments}}$$

ILLUSTRATION 10

₹ 10,000 lent by Dass Bros. to Kumar & Sons on 1st January, 2011 is repayable in 5 equal annual instalments commencing on 1st January, 2012. Find the average due date and calculate interest at 5% per annum, which Dass Bros. will recover from Kumar & Sons.

SOLUTION

Due date	No. of years from 1 Jan 2011
1Jan 2011	0
1Jan 2012	1
1Jan 2013	2
1Jan 2014	3
1Jan 2015	4
1Jan 2016	5

Average = 5+4+3+2+1/5 = 3 years

$$\text{Average due date} = \text{Date of Loan} + \frac{\text{Sum of the number of years / months / days from the date of lending to the date of repayment of each instalment}}{\text{Number of instalments}}$$

$$= \text{Jan. 1, 2011} + \frac{1+2+3+4+5}{5}$$

$$= \text{Jan. 1, 2011} + 3 \text{ years}$$

$$= 1^{\text{st}} \text{ Jan., 2014}$$

Interest at a certain rate on the instalments paid from the date of payment to any fixed date will be the same as on ₹ 10,000 (if lent on 1st Jan., 2014 to that fixed date). There will be no loss to either party. Supposing rate of interest is 5% p.a. and date of settlement is 31st Dec., 2012 then calculation of interest by product method from both parties' point of view will be as follows:

Dass Bros. pays interest as follows:

Amount ₹	Paid on	Money used by Dass Bros upto 31st Dec. 2016	Product ₹
2,000	1st Jan. 2012	5 Years	10,000
2,000	1st Jan. 2013	4 Years	8,000
2,000	1st Jan. 2014	3 Years	6,000
2,000	1st Jan. 2015	2 Years	4,000
2,000	1st Jan. 2016	1 Year	2,000
			30,000

$$\text{Interest at 5\% p.a. on ₹ 30,000 for one year.} = \frac{\text{₹ } 30,000 \times 5}{100} = \text{₹ } 1,500$$

Dass Bros. will receive interest (if given on 1st Jan., 2014 on ₹ 10,000 from average due date to 31st Dec.,

$$2016, \text{ i.e., for 3 years at 5\% p.a.} = \frac{5 \times 3 \times \text{₹ } 10,000}{100} = \text{₹ } 1,500$$

From the above, it can be concluded that if the borrower pays ₹ 2,000 yearly from 1st Jan., 2012 for 5 years and if the lender gives ₹ 10,000 on 1st Jan., 2014 then both will charge same interest from each other. There is no loss to any of the parties. But actually lender gives ₹ 10,000 on 1st Jan., 2011, therefore, he has given loan 3 years in advance and will charge interest on ₹ 10,000 for 3 years.

$$\text{Interest} = \frac{\text{₹ } 10,000 \times 5 \times 3}{100} = \text{₹ } 1,500 \text{ (to be charged by Dass Bros.)}$$

Case 4: Learn Calculation of average due date for determining interest on drawings

In the case of drawings also, amount is drawn by the owners of business on various dates but it may be settled on one day. It should be noted that, when different amounts are due on different dates, but they are ultimately settled on one day the interest may be calculated by means of Average Due Date. When interest is chargeable on drawings, and drawings are on different dates, interest may be calculated on the basis of Average Due Date of drawings determined on the basis given above. An illustration is given below to help in understanding the same:

ILLUSTRATION 11

A and B, two partners of a firm, have drawn the following amounts from the firm in the year ending 31st March, 2015:

Date	A	Date	B
	₹		₹
1 st July	500	12 th June	1,000
30 th September	800	11 th August	500
1 st November	1,000	9 th February	400
28 th February	400	7 th March	900

Interest at 6% p.a. is charged on all drawings. Calculate interest chargeable by using (i) ordinary system
(ii) Average due date system. (assume 1 year = 365 days)

 **SOLUTION**

(i)	Ordinary System :		
A	500 for 9 months	=	4,500 for 1 month
	800 for 6 months	=	4,800 for 1 month
	1,000 for 5 months	=	5,000 for 1 month
	400 for 1 month	=	400 for 1 month
			14,700 for 1 month
	14,700 @ 6% for 1 month	=	1/2% of 14,700
		=	₹ 73.50
B	1,000 for 292 days	=	2,92,000
	500 for 232 days	=	1,16,000
	400 for 50 days	=	20,000
	900 for 24 days	=	21,600
			4,49,600

$$4,49,600 \times \frac{6}{100} \times \frac{1}{365} = ₹ 73.91$$

(ii) Average Due Date System:

(a) Taking 1st July as the base date (O-day)

	Dates	₹	Months from O-day	Products
A	1 st July	500	0	0
	30 th September	800	3	2,400
	1 st November	1,000	4	4,000
	28 th February	400	8	3,200
		2,700		9,600

$$\text{Average Due Date} = \frac{9,600}{2,700} \text{ months from 1st July. i.e., 3.556 months i.e. October 17th .}$$

Interest is chargeable from October 17 to March 31 i.e. 5.444 months

$$2,700 \times \frac{6}{100} \times \frac{5.444}{12} = ₹ 73.49$$

Or,

Taking 1st April as the base date (O-day):

	Dates	₹	Months from O-day	Products
A	1 st July	500	3	1,500
	30 th September	800	6	4,800
	1 st November	1,000	7	7,000
	28 th February	400	11	4,400
		2,700		17,700

Average Due Date = $\frac{17,700}{2,700}$ months from 1st April. i.e. 6.556 months i.e. 17th October.

Interest is chargeable from October 17 to March 31 i.e. 5.444 months.

$$2,700 \times \frac{6}{100} \times \frac{5.444}{12} = ₹ 73.49$$

(b) Taking 12th June as the base date (Zero-day)

	Dates	₹	Days from O-day	Products
B	12 th June	1,000	0	0
	11 th August	500	60	30,000
	9 th February	400	242	96,800
	7 th March	900	268	2,41,200
		2,800		3,68,000

Average Due Date = $\frac{3,68,000}{2,800}$ days from 12th June . i.e. 131 days.

June 18
July 31
Aug. 31
Sept. 30
110

131 days - 110 days i.e. 21st October

So, interest is chargeable from 21st October to 31st March i.e. for 161 days.

$$2,800 \times \frac{6}{100} \times \frac{161}{365} = ₹ 74.10$$

The Differences in amounts in the two systems (1) and (2) are due to approximation.



SUMMARY

- ◆ Average Due Date is one on which the net amount payable can be settled without causing loss of interest either to the borrower or the lender.
- ◆ It is used in various cases like:
 - (i) Calculation of interest on drawings of partners.
 - (ii) Cancellation of various bills of exchange due on different dates and issuance of a Single bill.
 - (iii) Amount lent in one instalment and repayable in various instalments.
- ◆ When the amount is lent in various instalments then average due date can be calculated as :

$$\text{Average due date} = \text{Base date} + \frac{\text{Total [Amount} \times \text{No. of days from base date to due date]}}{\text{Total amounts}}$$

- ◆ When interest is chargeable on drawings, and drawings are on different dates, interest may be calculated on the basis of Average Due Date of drawings.
- ◆ Average due date in a case where the amount is lent in one instalment and repayment is done in various instalments will be:

$$\text{Average due date} = \text{Date of Loan} + \frac{\text{Sum of days/months/years from the date of lending to the date of repayment of each instalments}}{\text{Total amounts}}$$

Every promissory note or bill of exchange (other than those payable on demand or at sight or on presentment) falls due on the third day after on which it is expressed to be payable. This exempted period of three days is called days of grace.



... TEST YOUR KNOWLEDGE

Multiple Choice Questions

1. If payment is made on the average due date it results in-
 - (a) Loss of interest to the creditor.
 - (b) Loss of interest to the debtor.
 - (c) No loss of interest to either of them.
2. A mean date is calculated
 - (a) In connection with the settlement of contra accounts.
 - (b) For a lump sum payment.
 - (c) For several payments on different dates.
3. If payment is made after average due date, the party entitled to interest is
 - (a) Creditor
 - (b) Debtor
 - (c) Bank

4. When due date is a public holiday, then the due date will be.
- Succeeding business day
 - Preceding business day
 - Due date will not change and will remain same.
5. A Bill due on 29th January, 2015 is made payable at one month after date. The due date of instrument
- 28th February, 2015.
 - 29th February, 2015.
 - 3rd March, 2015.

Theoretical Questions

- Define Average Due Date.
- List out the various instances when Average Due Date can be used.

Practical Questions

- Q1** Mr. Yash and Mr. Harsh are partners in a firm. They had drawn the following amounts from the firm during the year ended 31.03.2016:

Date	Amount ₹	Drawn by ₹
01.05.2015	75,000	Mr. Yash
30.06.2015	20,000	Mr. Yash
14.08.2015	60,000	Mr. Harsh
31.12.2015	50,000	Mr. Harsh
04.03.2016	75,000	Mr. Harsh
31.03.2016	15,000	Mr. Yash

Interest is charged @ 10% p.a. on all drawings. Calculate interest chargeable from each partner by using Average due date system. (Consider 1st May as base date)

- Q2** Anand purchased goods from Amirtha, the average due date for payment in cash is 10.08.2016 and the total amount due is ₹ 67,500. How much amount should be paid by Anand to Amirtha, if total payment is made on following dates and interest is to be considered at the rate of 12% p.a.
- On average due date.
 - On 25th August, 2016.
 - On 30th July, 2016.

ANSWERS/HINTS

MCQs

1. (c) 2. (c) 3. (a) 4. (b) 5. (c)

Theoretical Questions

- In business enterprises, many receipts and payments by and from a single party may occur at different points of time. To simplify the calculation of interest involved for such transactions, the idea of average due date has been developed. Average Due Date is a break-even date on which the net amount payable can be settled without causing loss of interest either to the borrower or the lender.

2. Few instances where average due date can be used:

- (i) Calculation of interest on drawings made by the proprietors or partners of a business firm at several points of time.
- (ii) Settlement of accounts between a principal and an agent.
- (iii) Settlement of contra accounts, that is, A and B sell goods to each other on different dates.

Practical Questions

Answer 1

Calculation of Interest chargeable from Partners

Taking 1st May as the base date

	Dates	Amount (₹)	Days from 1st May	Products (₹)
Yash	1.5.2015	75,000	0	0
	30.6.2015	20,000	60	12,00,000
	31.3.2016	15,000	334	50,10,000
		1,10,000		62,10,000

$$\text{Average Due Date} = \frac{62,10,000}{1,10,000} \text{ days from 1st May. i.e. 57 days}$$

$$= 27^{\text{th}} \text{ June}$$

Interest is chargeable for Yash from 27th June to March 31 i.e. 277 days

$$₹ 1,10,000 \times 10\% \times \frac{277}{365} = ₹ 8,348$$

	Dates	₹	Days from 1 May	Products (₹)
Harsh	14.8.2015	60,000	105	63,00,000
	31.12.2015	50,000	244	1,22,00,000
	4.3.2016	75,000	307	2,30,25,000
		1,85,000		4,15,25,000

$$\text{Average Due Date} = \frac{4,15,25,000}{1,85,000} \text{ days from 1 May} = 225 \text{ days.}$$

$$= 12^{\text{th}} \text{ Dec.}$$

Interest is chargeable for Harsh from 12 December to 31st March i.e. for 109 days.

$$₹ 1,85,000 \times \frac{10}{100} \times \frac{109}{365} = ₹ 5,525$$

Thus, interest amounting ₹ 8,348 will be charged from Yash and amount of ₹ 5,525 will be charged from Harsh.

Answer 2

A	B	C	D = B ± C
	Principal Amount	Interest from Average Due Date to Actual date of Payment	Total amount to be paid
(i) Payment on average due date			
	₹ 67,500	$\text{₹ } 67,500 \times \frac{12}{100} \times \frac{0}{365} = 0$	₹ 67,500
(ii) Payment on 25th Aug. 2016			
	₹ 67,500	$\text{₹ } 67,500 \times \frac{12}{100} \times \frac{15}{365} = 333$ Interest to be charged for period of 15 days from 10.8.2016 to 25 th Aug. 2016	₹ 67,833
(iii) Payment on 30th July, 2016			
	₹ 67,500	$\text{₹ } 67,500 \times \frac{12}{100} \times \frac{(11)}{365} = (244)$ Rebate has been allowed for unexpired credit period of 11 days from 30.7.2016 to 10.8.2016	₹ 67,256