

AVERAGE DUE DATE

MEANING & USAGE

Meaning	Average Due Date is the date on which the net amount payable can be settled without causing loss of interest either to the borrower or the lender. In other words, it is the mean or equated date on which a single total payment may be made in lieu of different dates without any loss to either party.
Usage	It is used in various cases like: <ul style="list-style-type: none"> ❖ Cancellation of various bills of exchange due on different dates & issuance of single bill. ❖ Calculation of interest on drawings of partners. ❖ Amount lent in one installment and repayable in various installments.
Formula (Basic)	ADD= $\frac{\text{Base date} \pm \text{Total of Products}}{\text{Total of Amounts}}$

DUE DATE

Meaning	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.
Cases	<p><u>Case 1 : Normal Sale/Purchase Credit Transaction (Invoice)</u> Due Date = Date of Invoice + Credit Period</p> <p><u>Case 2 : Bill of Exchange (BOE)</u> Due Date = Date of Drawing bill/Date of Acceptance (If bill after sight) + Term (Usance) of Bill + 3 days of grace</p> <p>Where Term can be specified no. of days or months. In case Period/Term is in months then consider the corresponding day of that month & if corresponding day does not exist then take last day of the month.</p>
Due Date if Holiday	<ul style="list-style-type: none"> ✓ Public Holiday: Preceding Working Day (Eg: 26/1, 15/8, 2/10, Sunday) ✓ Emergency Holiday: Succeeding Working Day

Problem Type 1: Calculation of Average Due Date where one Party is Involved (Unilateral Transactions)

$$\text{ADD} = \frac{\text{Base date} \pm \text{Total of Products}}{\text{Total of Amounts}}$$

$$\text{ADD} = \frac{\text{Base date} \pm \text{Total of [Amount * No. of days from base date to due date]}}{\text{Total of Amounts}}$$

Points to be Noted:

- Base date may be the due date of first transaction or due date of the last transaction or any other due date but preferably earliest due date may be taken.
- 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.
- If amount is paid before due date, rebate/discount is given.
- If amount is paid after due date, then interest is charged.
- If no. of days to be added in base date comes in decimals then round off the same..
- If question specifies any particular date to be taken as base date then take that date as base date.

Question

A accepted the following bills drawn by B. Interest is charged @ 18% p.a.

Date of Bill	Period	Amount (Rs.)
07-03-2021	4 months	4,000
16-03-2021	3 months	5,000
08-04-2021	5 months	6,000
17-05-2021	3 months	5,000

11th September is a Gazetted holiday and 10th July is Emergency holiday

- a) He wants to pay all the bills on a single day. Find out this date.
- b) Find out the amount of Interest & Payment amount if settlement takes place on 30.09.2021
- c) If A wants to save Rs. 157 by way of interest calculate the date on which he has to effect the payment.

Solution

Bills Receivable

Date of Bill	Term	Due date	Amount	No. of days from Base date (Base date 19 th June)	Product
07-03-2021	4 months	11.07.2021	4,000	22	88,000
16-03-2021	3 months	19.06.2021	5,000	-	-
08-04-2021	5 months	10.09.2021	6,000	83	4,98,000
17-05-2021	3 months	20.08.2021	5,000	62	3,10,000
			20,000		8,96,000

$$\begin{aligned} \text{Average due date} &= \text{Base date} + \frac{\text{Total of Product}}{\text{Total of Amount}} \\ &= 19/06/2021 + \frac{8,96,000}{20,000} \\ &= 19/06/2021 + 44.8 \text{ Days (44.8 days)} \\ &= 03/08/2021 \end{aligned}$$

b) On 30th September, 2021.

$$\begin{aligned} \text{Interest} &= 20,000 \times \frac{18}{100} \times \frac{58}{365} = 572.05 \text{ r/off to } 572 \\ \text{Total Amount} &= 20,000 + 572 \\ &= 20,572 \end{aligned}$$

c) Saving of Interest of Rs. 157 will happen by making payment early i.e before 03.08.2021

Let no. of days before 03.08.2021 = X days

Then

$$157 = 20,000 * \frac{18}{100} * \frac{X}{365}$$

X = 16 days

It means to save interest of 157, payment to be made 16 days before 03.08.2021 i.e on 18.07.2021.

Problem Type 2 : Calculation of Average Due Date where transactions between 2 parties are Involved (Bilateral Transactions)

When more than one party is involved i.e. where one party purchases and also sells to other party then 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 we will take difference of amount and produce as Net Amount.

$$ADD = \frac{\text{Base date} \pm \text{Difference of Products}}{\text{Difference of Amounts}}$$

Base date may be considered as earliest dates of both tables

Question

Two traders Abhinav and Krishna 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 Abhinav to Krishna		Goods sold by Krishna to Abhinav	
Date	Amount (Rs.)	Date	Amount (Rs.)
18 th April	9,000	23 rd April	7,800
15 th May	10,500	24 th May	7,500
16 th June	12,000		

Compute date upon which balance should be paid, so that no interest is due either to Abhinav or Krishna.

Solution

Amount receivable by Abhinav (Sales by Abhinav)

Date of Transaction	Credit period (months)	Due date	Amount	No. of days from Base date (Base date 18 th May)	Product
18/4	1 month	18/5	9,000	-	-
15/5	1 month	15/6	10,500	28	2,94,000
16/6	1 month	16/7	12,000	59	7,08,000
			31,500		10,02,000

Amount payable by Abhinav (Purchases by Abhinav)

Date of Transaction	Credit period (months)	Due date	Amount	No. of days from Base date (Base date 18 th May)	Product
23/4	1 month	23/5	7,800	5	39,000
24/5	1 month	24/6	7,500	37	2,77,500
			15,300		3,16,500

$$\text{Average due date} = \text{Base date} + \frac{\text{Difference of Products}}{\text{Difference of Amounts}}$$

$$\begin{aligned}
&= 18^{\text{th}} \text{ May} + \frac{10,02,000 - 3,16,500}{31,500 - 15,300} \\
&= 18^{\text{th}} \text{ May} + \frac{6,85,500}{16,200} \\
&= 18^{\text{th}} \text{ May} + 42 \text{ days} \\
&= 29^{\text{th}} \text{ June}
\end{aligned}$$

On 29th June, Krishna has to pay Abhinav Rs. 16,200 to settle the account.

Problem Type 3: Calculation of Average Due Date for determining interest on drawings

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.

In that case rather than calculating interest on each drawing separately, interest can be calculated on total drawings from average due date till the end of period.

$$\text{ADD} = \text{Base date} \pm \frac{\text{Total of Products}}{\text{Total of Amounts}}$$

Question

Mr. Yash and Mr. Harsh are partners in a firm. They had drawn the following amounts from the firm during the year ended 31.03.2021:

Date	Amount (Rs.)	Drawn by
01.05.2020	75,000	Mr. Yash
02.07.2020	20,000	Mr. Yash
15.08.2020	60,000	Mr. Harsh
31.12.2020	50,000	Mr. Harsh
04.03.2021	75,000	Mr. Harsh
31.03.2021	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)

Solution

a) Mr. Yash

Dates	Amount	No. of days from Base date (Base date 01.05.2020)	Product
01.05.2020	75,000	0	0
02.07.2020	20,000	62	12,40,000
31.03.2021	15,000	334	50,10,000
	1,10,000		62,50,000

$$\text{Average due date} = \text{Base date} + \frac{\text{Total of Product}}{\text{Total of Amount}}$$

$$\begin{aligned}
&= 01.05.2020 + \frac{62,50,000}{1,10,000} \\
&= 01.05.2020 + 57 \text{ Days} \\
&= 27.06.2020
\end{aligned}$$

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

$$\text{Interest} = 1,10,000 \times \frac{10}{100} \times \frac{277}{365} = 8,348$$

b) Mr. Harsh

Dates	Amount	No. of days from Base date (Base date 01.05.2020)	Product
15.08.2020	60,000	106	63,60,000
31.12.2020	50,000	244	1,22,00,000
04.03.2021	75,000	307	2,30,25,000
	1,85,000		4,15,85,000

$$\begin{aligned}
 \text{Average due date} &= \text{Base date} + \frac{\text{Total of Product}}{\text{Total of Amount}} \\
 &= 01.05.2020 + \frac{4,15,85,000}{1,85,000} \\
 &= 01.05.2020 + 225 \text{ Days} \\
 &= 12.12.2020
 \end{aligned}$$

Thus, interest is chargeable for Yash from 12th December to March 31 i.e. 109 days

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

Problem Type 4: Calculation of Average Due Date when amount is paid in installments

$$\text{Avg. due date} = \text{Date of Loan} + \frac{\text{Sum of days/months/Years from the date of lending to date of repayment of each installment}}{\text{Number of installments}}$$

This formula is applicable only when repayment installment is equal else normal formula will be applied.

Question

Rs. 10,000 lent by Damini to Yamini on 1st January, 2020 is

Case 1: Repayable in 5 equal annual instalments commencing on 1st January, 2021.

Case 2: Repayable in 5 half yearly equal installments commencing from 1st January, 2021

Find the average due date and calculate interest at 5% p.a., which Damini will recover from Yamini.

Solution

Average due date

$$= \text{Date of Loan} + \frac{\text{Sum of years from date of lending to date of repayment of each installment}}{\text{No. of installments}}$$

Case 1:

$$\begin{aligned}
 &= 1/1/2020 + \frac{1+2+3+4+5}{5} \\
 &= 1/1/2020 + 3 \text{ years} \\
 &= 1/1/2023
 \end{aligned}$$

$$\begin{aligned}
 \text{Interest to be paid by Yamini} &= \text{Amount} \times \text{Rate} \times 3 \text{ years} \\
 &= 10,000 \times \frac{5}{100} \times 3 = 1,500
 \end{aligned}$$

Case 2:

$$\begin{aligned}
 &= 1/1/2020 + \frac{1+1.5+2+2.5+3}{5} \\
 &= 1/1/2020 + 2 \text{ years} \\
 &= 1/1/2022
 \end{aligned}$$

$$\begin{aligned}
 \text{Interest to be paid by Yamini} &= \text{Amount} \times \text{Rate} \times 2 \text{ years} \\
 &= 10,000 \times \frac{5}{100} \times 2 = 1,000
 \end{aligned}$$