

CALCULATION OF CASH PRICE AND INTEREST

Methods of calculation of cash price

- ▶ Working- back method
- ▶ Annuity table method

Working back method

- ▶ In this method the interest included in the last instalment is to be calculated first with the help of a formula.
- ▶ Here the calculation of interest starts from the last instalment and interest on down payment is considered as nil.

Steps to calculate the cash price

Step 1- calculate the ratio of interest and amount due

Formula: ratio of interest and amount due = $\frac{\text{rate of interest}}{100 + \text{rate of interest}}$

Step 2- calculate the interest included in the last instalment

Formula: interest = total amount due at the time of instalment x ratio of interest and amount due

Step 3- subtract the interest from this instalment to get the amount of outstanding cash price at the time of last instalment.

Step 4- add the cash price calculated in Step3 to the amount of instalment due at the end of third year.

Step 5- calculate the interest on the entire sum (cash price included in the 4th instalment + amount of 3rd instalment). Deduct the interest from the total amount due at the end of third year to get the outstanding cash price at the time of third instalment.

Step 6- add the cash price calculated in the step 5 to the amount of instalment due at the end of second year.

Step 7- calculate the interest on the entire sum so obtained in step6. Deduct this interest from the total amount due at the end of second year to get the outstanding cash price at the time of second instalment.

Step 8- add the cash price calculated in step7 to the amount of instalment due at the end of first year.

Step 9- calculate the interest on the entire sum so obtained in step8. Deduct this interest from the total amount due at the end of first year to get the outstanding cash price at the time of first instalment.

Step 10- add the cash price calculated in step9 to the amount of down payment, if any. The sum so obtained will be the total cash price.

Illustration 1: Rohan purchased a truck on hire purchase system from Bharat Benz. Payment was to be made as follows:

Down payment- Rs.70,000

I Instalment- Rs.53,000

II Instalment- Rs.49,000

III Instalment- 55,000

Interest charged- 10% p.a

Calculate the total cash price of the truck and the interest paid with each instalment.

Step 1- calculation of ratio of interest and amount due

$$\text{Ratio of interest and amount due} = \frac{\text{rate of interest}}{100+\text{rate of interest}} = \frac{10}{100+10} = \frac{10}{110} = \frac{1}{11}$$

Step 2- statement of cash price and interest

Year	Amount due at the end of the year (1) Rs	Instalment paid (2) Rs	Total amount due at the end of the year (3) (1+2) Rs	Interest due at the rate of $\frac{1}{11}$ (4) Rs	Cash price or principal amount due at the beginning of the year (5) (3-4) Rs
III	Nil	55,000	55,000	$\frac{1}{11} \times 55,000 = 5,000$	55,000 – 5,000 = 50,000
II	50,000	49,000	99,000	$\frac{1}{11} \times 99,000 = 9,000$	99,000 – 9,000 = 90,000
I	90,000	<u>53,000</u>	1,43,000	$\frac{1}{11} \times 1,43,000 = \underline{13,000}$	1,43,000 – 13,000 = 1,30,000
		1,57,000		27,000	

Total Cash price:

Cash price included in annual instalments Rs.1,30,000

Add: Down payment Rs.70,000

Total cash price **Rs.2,00,000**

Check:

Hire purchase price = down payment + total instalments amount

$$= 70,000 + 1,57,000 = \mathbf{2,27,000}$$

Hire purchase price = cash price + total interest

$$= 2,00,000 + 27,000 = \mathbf{2,27,000}$$

Illustration 2: Sowmya purchased a machine from Mtech ltd. on hire purchase system on 1st April 2016, paying Rs.1,000 down payment and balance Rs.1,300 at the end of first year, Rs.1,200 at the end of second year and Rs.1,100 at the end of third year. interest is charged at 10% p.a. Ascertain the cash price.

Solution: Step 1- calculation of ratio of interest and amount due

$$\text{Ratio of interest and amount due} = \frac{\text{rate of interest}}{100+\text{rate of interest}} = \frac{10}{100+10} = \frac{10}{110} = \frac{1}{11}$$

Step 2- statement of cash price and interest

Year	Amount due at the end of the year (1) Rs	Instalment paid (2) Rs	Total amount due at the end of the year (3) (1+2) Rs	Interest due at the rate of $\frac{1}{11}$ (4) Rs	Cash price or principal amount due at the beginning of the year (5) (3-4) Rs
2019	Nil	1300	1300	$\frac{1}{11} \times 1300 = 118$	$1300 - 118 = 1182$
2018	1182	1200	2382	$\frac{1}{11} \times 2382 = 217$	$2382 - 217 = 2165$
2017	2165	<u>1100</u>	3265	$\frac{1}{11} \times 3265 = \underline{297}$	$3265 - 297 = 2968$
		3600		632	

Total Cash price:

Cash price included in annual instalments Rs.2968

Add: Down payment Rs.1000

Total cash price **Rs.3968**

Check:

Hire purchase price = down payment + total instalments amount

$$= 1,000 + 3,600 = \mathbf{4,600}$$

Hire purchase price = cash price + total interest

$$= 3,968 + 632 = \mathbf{4,600}$$

Illustration 3: L&T Ltd had purchased a machine on the hire purchase system from Mahindra Ltd. The terms are that they would pay Rs.20,000 down on 1st April 2010 and 5 annual instalments of Rs.11,000 each commencing from 31st March 2011. They charged depreciation at the rate of 10% p.a. under diminishing balance method. Mahindra Ltd. Had charged at the rate of 15% p.a. L&T Ltd's accounting year ends on 31st March. Find out the total cash price and interest.

Solution: Step 1- calculation of ratio of interest and amount due

$$\text{Ratio of interest and amount due} = \frac{\text{rate of interest}}{100 + \text{rate of interest}} = \frac{15}{100 + 15} = \frac{15}{115} = \frac{3}{23}$$

Step 2- statement of cash price and interest

Year	Amount due at the end of the year (1) Rs	Instalment paid (2) Rs	Total amount due at the end of the year (3) (1+2) Rs	Interest due at the rate of $\frac{3}{23}$ (4) Rs	Cash price or principal amount due at the beginning of the year (5) (3-4) Rs
31 st Mar 15	Nil	11000	11000	$\frac{3}{23} \times 11000 = 1435$	11000 – 1435 = 9565
31 st Mar 14	9565	11000	20565	$\frac{3}{23} \times 20565 = 2682$	17883 – 2682 = 17883
31 st Mar 13	17883	11000	28883	$\frac{3}{23} \times 28883 = 3767$	28883 – 3767 = 25116
31 st Mar 12	25116	11000	36116	$\frac{3}{23} \times 36116 = 3140$	36116 – 3140 = 32976
31 st Mar 11	32976	<u>11000</u>	43976	$\frac{3}{23} \times 43976 = \underline{5736}$	43976 – 5736 = 38240
		55000		16760	

Total Cash price:

Cash price included in annual instalments Rs.38240

Add: Down payment Rs. 1000

Total cash price **Rs.39240**

Check:

Hire purchase price = down payment + total instalments amount

$$= 1,000 + 55,000 = \mathbf{56,000}$$

Hire purchase price = cash price + total interest

$$= 39,240 + 16760 = \mathbf{56,000}$$