



Basic Yield Computations

User Manual

Metropolitan Mortgage & Securities Co., Inc.

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Basic Yield Computations

Manual Information

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NOTE: The information shown above is for reporting problems with the manual. If you have a *procedures* problem, please report it to Mike Kirk.

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Equipment

The equipment referenced in this manual is the HP-12C programmable calculator, manufactured by Hewlett-Packard, Portable Computer Division, 1000 N.E. Circle Blvd., Corvallis, Oregon 97330.

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BEFORE YOU BEGIN—READ THIS FIRST



REVISION NOTICE This manual is a dynamic publication, that is, designed to keep pace with changes, additions or improvements to the system. As changes to the system are implemented, so too will changes be made to this manual. Please make sure you are using the most current version of this manual that is available.

CONVENTIONS This manual has been designed for clear, step-by-step operation of the yield calculations. Notice that each calculation is organized under three headings:

- **Type**
- **Press**
- **Display**

Each item under the *type* heading consists of one or more digits that you type on the keyboard. You will see these digits in the display, but no action has taken place yet.

Under the *press* heading are representations of the keys that you press to perform some action. If you see two keys, press the left one first and then the right.

Items under the *display* heading are what you should see on the display if everything is proceeding correctly.

Occasionally you will see a reference to the “blue mode.” If you look at your keyboard, you will see white legends on the tops of the keys, and blue legends on the slanted fronts of the keys. When you press the blue “g” key first, the blue legend is the one that is selected. You will also see legends in gold above some of the keys. When you press the gold “f” key first, the gold legend is the one that is selected.

IMPORTANT NOTICE! When entering cashflows into the HP, you must remember to break the payment streams into segments of 99 payments or less. The HP will not handle more than two digits (maximum value 99) per entry in the blue mode.

THIS CASH FLOW:

120 pmts at	\$500.00
72 pmts at	\$600.00
239 pmts at	\$700.00
1 pmt at	\$50.00

MUST BE ENTERED AS:

99 pmts at	500.00
21 pmts at	500.00
72 pmts at	600.00
99 pmts at	700.00
99 pmts at	700.00
41 pmts at	700.00
1 pmt at	50.00



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1—GENERAL COMPUTATIONS

Introduction

This manual was written specifically for the HP-12C programmable calculator, manufactured by the Hewlett-Packard Company. The procedures will not work with other types of calculators.

The formulas in this manual give you step-by-step instructions for computing yields on the majority of transactions encountered in the contract purchasing business.

You will, however, inevitably run into some which are not listed. You can compute most of these by using portions of some formulas or combinations of different formulas.

When computing yields, a contract purchaser must be aware of four items before trying to figure any given transaction:

- Present balance
- Payment amount
- Interest rate
- Term (amortization)

If any three of these items are known, the fourth can be computed. But remember, you must know three of these items before you can perform any of the computations.

**PROBLEM**

A vendor holds a note and deed of trust for \$40,000, payable at \$440.43 per month, at the rate of 12 percent per annum. The note is five years old (60 mos). Compute the present balance owed.

**Present Balance
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
12	9 I	1.00
440.43	PMT	440.43
	n	241.00 (months)
60	n	60
	FV	36,698.10

Solution

The present balance is \$36,698.10.

PROBLEM

The vendor doesn't remember the starting balance, but knows he has 10 years of payments (120) remaining at \$440.43 per month with an interest rate of 12 percent per annum.

**Present Balance
Computation**

Type	Press	Display
440.43	PMT	440.43
12	9 I	1.00
120	n	120.00
	PV	-30,698.20

Solution

The present balance is \$30,698.20.

**PROBLEM**

The vendor holds a contract with a present balance of \$40,000, payable over 20 years (240 payments) on a monthly basis at 12 percent per annum. Find the monthly payment amount.

Monthly Payment Computation

Type	Press	Display
40000	CHS PV	-40,000.00
12	g i	1.00
240	n	240.00
	PMT	440.43

Solution

The monthly payment is \$440.43.

PROBLEM

The vendor holds a contract with a present balance of \$40,000, payable over 20 years on an annual basis at 12 percent per annum. You need to find the annual payment amount.

Annual Payment Computation

Type	Press	Display
40000	CHS PV	-40,000.00
12	i	12.00
20	n	20.00
	PMT	5,355.15

Solution

The annual payment amount is \$5,355.15.

**PROBLEM**

The vendor holds a contract with a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. You need to find how many payments are left.

Remaining Monthly Payments Computation	Type	Press	Display
	40000	CHS PV	-40,000.00
	12	g I	1.00
	440.43	PMT	440.43
		n	241.00 (months/payments)

Solution

The number of monthly payments remaining is 241.

PROBLEM

The vendor holds a contract with a present balance of \$40,000, payable at \$6,000 per year at the rate of 12 percent per annum. Find how many payments are left.

Remaining Annual Payments Computation	Type	Press	Display
	40000	CHS PV	-40,000.00
	12	I	12.00
	6000	PMT	6,000.00
		n	15.00 (months/payments)

Solution

The number of annual payments remaining is 15.

**PROBLEM**

The vendor holds a contract with a present balance of \$40,000, payable over 20 years at \$440.43 per month. Find the interest rate.

**Annual
Interest Rate
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
240	n	240.00
	i	1.00 (monthly interest rate)
12	X	12.00 (annual interest rate)

Solution

The annual interest rate is 12 percent.

PROBLEM

The vendor holds a contract with a present balance of \$40,000, payable over 20 years at \$6000 per year. Find the interest rate.

**Annual
Interest Rate
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
6000	PMT	6,000.00
20	n	20.00
	i	13.89 (annual interest rate)

Solution

The annual interest rate is 13.89 percent.

**PROBLEM**

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. Find the amount of the last payment.

Final Payment Computation

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
12	g i	1.00
	n	241.00 (months)
240	n	240.00
	FV	4.41 (last pmt amt)

Solution

The amount of the last payment is \$4.41.

Alternate Computation Method

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
12	g i	1.00
	n	241.00 (months)
	FV	-435.98

Solution

The amount that the last payment is less than normal is \$435.98. When you subtract this from the normal payment of \$440.43, the difference (last payment) is \$4.45.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$6,000 per year at the rate of 12 percent per annum. Find the amount of the last payment.

**Final Payment
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
6000	PMT	6,000.00
12	i	12.00
	n	15.00 (years)
14	n	14.00
	FV	1,128.88
12	% +	1,264.34

Solution

The amount of the last annual payment is \$1,264.34.

**Alternate
Computation
Method**

Type	Press	Display
40000	CHS PV	-40,000.00
6000	PMT	6,000.00
12	i	12.00
	n	15.00 (years)
	FV	-4,735.66

Solution

The amount that the last annual payment is less than normal is \$4,735.66. When you subtract this from the normal payment of \$6,000.00, the difference (last payment) is \$1,264.34.

**PROBLEM**

The vendor holds a contract with a present balance of \$40,000, payable at \$440.43 per month at an interest rate of 12 percent per annum. You have agreed to pay \$24,461.00 for that balance. Find the discount and the discount percentage.

**Discount
Computation**

Type	Press	Display
40000	ENTER	-40,000.00
24461	-	15,539.00
40000	÷	0.39

Solution

The amount of the discount is \$15,539.00; the discount percentage is 39 percent.

**PROBLEM**

A vendor holds a contract with a present balance of \$40,000. The property sold for \$50,000. You have agreed to pay the sum of \$24,461.00 for the present balance. The contract is in a first position. Find the loan-to-value (LTV) ratio.

LTV Computation

Type	Press	Display
(buy price) 24461	ENTER	24,461.00
(value) 50000	÷	0.49

Solution

The LTV ratio is 49 percent.

PROBLEM

A vendor holds a contract with a present balance of \$40,000. The property sold for \$50,000. There is a first-position balance of \$20,000 which you have agreed to assume and pay the vendor \$11,126.00 for his \$20,000 equity. Find the LTV ratio.

LTV Computation

Type	Press	Display
(buy price) 11126	ENTER	11,126.00
(underlying) 20000	+	31,126.00 (total exposure)
50000	÷	0.62

Solution

The LTV ratio is 62 percent.

**PROBLEM**

The vendor holds an undivided one-third interest in a contract with a present balance of \$40,000. The property sold for \$50,000, free and clear of any encumbrances. You have agreed to pay the sum of \$8,217.00 for the vendor's one-third interest. Find the LTV ratio.

LTV Computation

Type	Press	Display
40000	ENTER	40,000.00
3	÷	13,333.33 (1/3 interest)
2	X	26,666.66 (other owner int)
(buy price) 8217	÷	34,883.66 (total exposure)
(value) 50000	÷	0.70

Solution

Using the 100 percent of other interest calculation, the LTV is 70 percent.

**Alternate
Computation
Method**

Type	Press	Display
(buy price) 8217	ENTER	8,217.00
(division of interest) 3	X	24,651.00 (total exposure)
50000	÷	0.49

Solution

Using the equal value method, the LTV is 49 percent.

**PROBLEM**

The vendor holds a contract with a present value of \$40,000. The property sold for \$50,000. Find the buyer's debt-to-value (BDV) ratio.

BDV Computation	Type	Press	Display
	40000	ENTER	40,000.00
	50000	÷	0.80

Solution

The BDV ratio is 80 percent.

PROBLEM

The vendor holds a contract with a present balance of \$17,000. The property sold for \$50,000 with the buyer assuming a \$30,000 first mortgage. Find the BDV ratio.

BDV Computation	Type	Press	Display
	17000	ENTER	17,000.00
	30000	+	47,000.00
	50000	÷	0.94

Solution

The BDV ratio is 94 percent.

**PROBLEM**

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a starting balance of \$40,000. The present balance is \$38,258.40, payable at \$440.43 per month at the rate of 12 percent per annum. The contract has been in existence for 32 months. Find the current payment status.

**Payment Status
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
12	g I	1.00
	n	241.00 (months)
32	n	32.00
	FV	38,484.11 (calc bal.)
(present bal) 38258.40	FV	38,258.40
	n	36.00

Solution

The calculated present balance is \$38,484.11 while the actual present balance is \$38,258.40. Since n is 36 months, the contract is paid ahead four months.


PROBLEM

The vendor holds a contract with a present balance of \$40,000, payable at \$440.43 per month, at the rate of 12 percent per annum. The contract is in a first position and has a balloon payment due in 10 years. Find the balloon payment amount.

**Balloon Payment
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
12	g i	1.00
	n	241.00 (months)
(10 yrs) 120	n	120.00
	FV	30,699.54

Solution

The balloon payment amount is \$30,699.54

**PROBLEM**

The vendor holds an overall contract with a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. The contract calls for a balloon payment in 10 years. The first position balance is \$20,000 payable at \$225.00 per month at the rate for 10 percent per annum. No balloon is called for. Find the overall balloon amount and then the net balloon.

Net Balloon Computation

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
12	g i	1.00
	n	241.00 (months)
(10 yrs) 120	n	120.00
	FV	30,699.54 (gross balloon)

(CLEAR MACHINE)

(underlying) 20000	CHS PV	-20,000.00
10	g i	0.83
225	PMT	225.00
	n	163.00 (months)
(10 yrs) 120	n	120.00
	FV	8,050.71 (underlying reduction)

Solution

The balloon payment is \$30,699.54; the underlying reduction is \$8,050.71. The balloon less the underlying reduction equals a net balloon payment of \$22,648.83.

NOTE: A residual is computed in exactly the same manner as a balloon payment.

**PROBLEM**

The vendor holds a contract with a present balance of \$40,000 payable at \$440.43 per month at the rate of 10 percent per month. Compute the interest application and the principal application of the first payment.

**P&I Application
Computation**

Type	Press	Display
40000	ENTER	40,000.00
.10	X	4,000.00 (annual int application)
(months) 12	÷	333.33 (int application 1st pmt)
440.43	-	-107.10 (prin application 1st pmt)

Solution

The annual interest application is \$4,000. The interest application from the first payment is \$333.33 and the principal application is \$107.10.

NOTE: To compute the second month, use the new present balance as your starting point, etc.

**PROBLEM**

The vendor holds a contract that was originated seven months ago with a starting balance of \$40,000 payable at \$6,000 annually at the rate of 12 percent per annum. Compute the present balance with the accrued interest.

**Interest Accrual
Computation**

Type	Press	Display
40000	ENTER	40,000.00
(interest rate) .12	X	4,800.00 (annual int app)
(mos in year) 12	÷	400.00 (monthly int app)
(mos since start) 7	X	2,800.00 (accrued int)
40000	+	42,800.00 (present bal)

Solution

The annual interest application is \$4,800; the monthly interest application is \$400. Accrued interest is \$2,800 and the present balance is \$42,000.00.

NOTE: Interest is always computed from the principal balance remaining after the last payment and from the date of the last payment.

**PROBLEM**

The vendor holds three contracts with different balances and terms. He has a common underlying contract with a principal balance of \$25,000 payable at \$300.00 per month at the rate of 10 percent per annum. The vendor wishes to sell all three contracts. You must find the common underlying ratios in order to compute a yield.

	Balance	Pmt/mo	Int Rate
Contract No. 1:	\$32,000	\$400	12 percent
Contract No. 2:	\$22,000	\$250	12 percent
Contract No. 3:	\$27,000	\$300	12 percent

Underlying Ratio Computations

To find how much of the underlying to apply to each over-all contract, you must compute the percentage of each receivable contract in relation to the total receivable.

Add the three balances/receivables:

\$32,000

\$22,000

\$27,000

Total receivable: \$81,000

Then divide each balance/receivable by the total receivable:

\$32,000 divided by \$81,000 = 40 percent

\$22,000 divided by \$81,000 = 27 percent

\$27,000 divided by \$81,000 = 33 percent

Now, simply use the applicable percentage of the underlying balance and payment for your computations:

Solution

	Balance	Pmt/mo	Int Rate
Contract No. 1:	\$32,000	\$400	12 percent
(40 percent):	<i>\$10,000</i>	<i>\$120</i>	<i>10 percent</i>
Contract No. 2:	\$22,000	\$250	12 percent
(27 percent):	<i>\$6,750</i>	<i>\$81</i>	<i>10 percent</i>
Contract No. 3:	\$27,000	\$300	12 percent
(33 percent):	<i>\$8,250</i>	<i>\$99</i>	<i>10 percent</i>



2—FIRST-POSITION COMPUTATIONS

GENERAL

This chapter deals with the most common scenario in contract purchasing—first position. These contracts, however, may include varying pay schedules such as balloons, bumps, payment or interest changes, etc. In addition, you may be purchasing payment streams, percentages of ownership, or remainderman interests.

The following examples provide information that will enable you to compute the majority of those first-position contracts you may encounter.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. Using a required yield of 20 percent, find the buy price.

**Buy Price
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
12	9 I	1.00
	n	241.00 (months)
	FV	-435.98
20	9 I	1.67
	PV	-25,925.66

Solution

The buy price is \$25,925.66.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. The contract holder wants to sell 120 payments. Find the amount purchased, the buy price, and the residual.

Amount Purchased Computation	Type	Press	Display
	120	n	120.00
	440.43	PMT	440.43
	12	g i	1.00 (required yield)
		PV	-30,698.20

Buy Price Computation	Type	Press	Display
	120	n	120.00
	440.43	PMT	440.43
	20	g i	1.67
		PV	-22,790.02

Residual Computation	Type	Press	Display
	40000	CHS PV	-40,000.00
	440.43	PMT	440.43
	12	g i	1.00
		n	241.00 (months)
	120	n	120.00
		FV	30,699.54

Solution

The purchased amount is \$30,698.20. The buy price is \$22,790.02 and the residual is \$30,699.43.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000 (15 months ago), payable at \$440.43 per month at the rate of 12 percent per annum. Ten years of payments were purchased 15 months ago from the contract holder who now wishes to cash out the remaining interest in his contract. Find the last payment, the amount purchased, and the buy price.

**Last Payment
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
12	g i	1.00
	n	241.00 (months)
240	n	240.00
	FV	4.41

**Original Cash
Flow**

\$440.43 x 240 months
\$4.41 x 1 month

Originally, 120 payments were purchased and 15 payments have been made. Therefore, there are 105 payments remaining on the original purchase.

**Present Cash
Flow**

0 x 105 months
440.43 x 120 months
4.41 x 1 month
(converted to)
0 x 99 months
0 x 6 months
440.43 x 99 months
440.43 x 21 months

**FIRST POSITION
Monthly Payments**

**Partial Purchase—
Remaining Interest**



Amount Purchased Computation	Type	Press	Display
	0	g CFi	0.00
	99	g Ni	99.00
	0	g CFi	0.00
	6	g Ni	6.00
	440.43	g CFi	440.43
	99	g Ni	99.00
	440.43	g CFi	440.43
	21	g Ni	21.00
	4.41	g CFi	4.41
	1	g Ni	1.00
(interest rate) 12		g i	1.00
		f NPV	10,799.10

The amount purchased is \$10,799.10.

Buy Price Computation	Type	Press	Display
	0	g CFi	0.00
	99	g Ni	99.00
	0	g CFi	0.00
	6	g Ni	6.00
	440.43	g CFi	440.43
	99	g Ni	99.00
	440.43	g CFi	440.43
	21	g Ni	21.00
(required yield) 20		g i	1.67
		f NPV	4,017.85

Solution The buy price is \$4,017.85.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. **Special Terms:** A bump payment of \$1,500 (in addition to the normal payment amount) is due two years from the date of closing and again four years from the date of closing.

Compute the remaining balance at each of the bump payment dates, the final payment amount, and the buy price.

Remaining Balance Computations	Type	Press	Display
40000		CHS PV	-40,000.00
440.43		PMT	440.43
12		g i	1.00
		n	241.00 (months)
23		n	23.00
		FV	38,960.29 (remaining balance)

23 is the number of months until the first bump. When you apply the bump payment as principal reduction to the remaining balance (\$38,960.29 minus \$1,500.00), the balance becomes \$37,460.29 which is the present value in the next computation.

Type	Press	Display
37460.29	CHS PV	-37,460.29
440.43	PMT	440.43
12	g i	1.00
	n	192.00 (months)
24	n	24.00
	FV	35,684.71 (remaining balance)

24 is the number of months until the second bump. When you apply the second bump payment as principal reduction to the remaining balance (\$35,684.71 minus \$1,500.00), the balance becomes \$34,184.71 which is the present value in the next computation.

FIRST POSITION Monthly Payments

With Bump Payments



Last Payment Computation

Type	Press	Display
34184.71	[CHS] [PV]	-34,184.71
440.43	[PMT]	440.43
12	[g] [i]	1.00
	[n]	151.00 (months)
150	[n]	150.00
	[FV]	189.16 (last payment)

Cash Flow

440.43 x 23 payments
 1,940.43 x 1 payment
 440.43 x 23 payments
 1,940.43 x 1 payment
 440.43 x 150 payments

Type	Press	Display
440.43	[g] [CFj]	440.43
23	[g] [Nj]	23.00
1940.43	[g] [CFj]	1,940.43
1	[g] [Nj]	1.00
440.43	[g] [CFj]	440.43
23	[g] [Nj]	23.00
1940.43	[g] [CFj]	1,940.43
1	[g] [Nj]	1.00
440.43	[g] [CFj]	440.43
99	[g] [Nj]	99.00
440.43	[g] [CFj]	440.43
51	[g] [Nj]	51.00
189.16	[g] [CFj]	189.16
1	[g] [Nj]	1.00
(required yield) 20	[g] [i]	1.67
	[f] [NPV]	27,118.56

Solution The buy price is \$27,118.56.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. **Special Terms:** The balance of the contract is due and payable 10 years from the date of closing.

Compute the balloon payment and the buy price.

Balloon Computation	Type	Press	Display
40000		CHS PV	-40,000.00
440.43		PMT	440.43
12		g i	1.00
		n	241.00 (months)
(mos until balloon) 120		n	120.00
		FV	30,699.54 (balloon)
Buy Price	120	n	120.00
Computation	440.43	PMT	440.43
	30699.54	FV	30,699.54
	(required yield) 20	g i	1.67
		PV	27,013.80

Solution

The balloon payment amount is \$30,699.54 and the buy price is \$27,013.80.

NOTE: Be sure that you only enter the allowable portion of the balloon when computing your buy price. Also, if you are only buying a portion of the balloon, enter only that amount being purchased.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$440.43 per month at the rate of 10 percent per annum. **Special Terms:** The interest increases to 12 percent per annum after five years.

Compute the balance, the last payment and the buy price.

**Balance
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
10	g i	0.83
	n	171.00 (months)
(5 yrs pmts) 60	n	60.00
	FV	31,706.75 (balance)
(CLEAR MACHINE)		

**Last Payment
Computation**

31706.75	CHS PV	-31,706.75
440.43	PMT	440.43
(interest change) 12	g i	1.00
	n	128.00 (months)
127	n	127.00
	FV	391.65 (last pmt)

Solution

The balance is \$31,706.75 and the last payment amount is \$391.65.

Cash Flow

440.43	x	60 months
440.43	x	127 months
391.65	x	1 month

FIRST POSITION Monthly Payments

With Interest Changes



Buy Price Computation	Type	Press	Display
440.43		PMT	440.43
187		n	187.00
391.61		FV	391.61
(required yield) 20		g i	1.67
		PV	-25,242.35

Solution The buy price is \$25,242.35.

NOTE: Since all the cash flows are the same, you can use the short formula and bypass the blue mode.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. **Special Terms:** The payments increase to \$500.00 per month after five years.

Compute the balance, the last payment, and the buy price.

**Balance
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
440.43	PMT	440.43
12	g i	1.00
	n	241.00 (months)
(5 yrs pmts) 60	n	60.00
	FV	36,698.10 (balance)
(CLEAR MACHINE)		

**Last Payment
Computation**

36698.10	CHS PV	-36,698.10
(pmt change) 500.00	PMT	500.00
(interest change) 12	g i	1.00
	n	134.00 (months)
133	n	133.00
	FV	36.09 (last pmt)

Solution

The balance is \$36,698.10 and the last payment is \$36.09.

Cash Flow

440.43	x	60 months
500.00	x	133 months
36.09	x	1 month

**FIRST POSITION
Monthly Payments**

With Payment Changes



**Buy Price
Computation**

Type	Press	Display
440.43	9 CFI	440.43
60	9 Nj	60.00
500	9 CFI	500.00
99	9 Nj	99.00
500	9 CFI	500.00
35	9 Nj	35.00
36.09	9 CFI	36.09
1	9 Nj	1.00
(required yield) 20	9 I	1.67
	f NPV	26,538.27

Solution The buy price is \$26,538.27.


PROBLEM

A yield on a contract with quarterly payments is computed in the same manner as an annual payment with one exception. Since the interest rate on a contract is normally compounded annually, with quarterly payments you must divide the interest rate by 4 in order to compute amortization and last payment.

The vendor holds a contract with a present balance of \$40,000 payable at the rate of 12 percent per annum with quarterly payments of \$2,000. Compute how many payments are remaining and the amount of the last payment.

	Type	Press	Display
Term Computation	40000	CHS PV	-40,000.00
	2000	PMT	2,000.00
	(12% divided by 4) 3	i	3.00
		n	31.00 (qtr pmts)
Last Payment Computation	30	n	
		FV	1,939.67
	3	%	58.19
		+	1,997.86

Solution

There are 31 quarterly payments remaining and the amount of the last payment is \$1,997.86.

Once you have computed the amortization, simply compute as you would an annual cash flow.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$2,000 per quarter at the rate of 12 percent per annum. Compute the number of payments left and the buy price.

NOTE: For computation purposes, the first payment will be due in three months. Always start your amortization with the number of months until the next payment.

	Type	Press	Display
Term Computation	40000	CHS PV	-40,000.00
	2000	PMT	2,000.00
	(12% divided by 4) 3	i	3.00
		n	31.00 (qtr pmts,
	(CLEAR MACHINE)		
Buy Price Computation	2000	FV	2,000.00
	(required yield) 20	g i	1.67
	(mos to next pmt) 3	n	3.00
		PV	1,903.24
	(mos between pmts) 3	n	3.00
	(required yield) 20	g i	1.67
	0	FV	0.00
		PMT	655.68
	93	n	93.00
		PV	30,883.35

Solution

The number of payments is 31 and the buy price is \$30,883.35.

NOTE: This shortcut method will only work if payments and interest rates are consistent throughout the contract.


PROBLEM

A yield on a contract with semi-annual payments is computed in the same manner as an annual payment with one exception. Since the interest rate on a contract is normally compounded annually, with semi-annual payments you must divide the interest rate by 2 in order to compute amortization and last payment.

The vendor holds a contract with a principal balance of \$40,000 payable at the rate of 12 percent per annum with semi-annual payments of \$5,000. Compute how many payments are remaining and the amount of the last payment.

**Term and
Last Payment
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
5000	PMT	5,000.00
(12% divided by 2) 6	I	6.00
	n	12.00 (pmts)
11	n	11.00
	FV	1,073.73
6	%	64.42
	+	1,138.15

Solution

There are 12 semi-annual payments remaining and the last payment amount is \$1,138.15.

Once you have computed the amortization, simply compute as you would an annual cash flow.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$5,000 semi-annually at the rate of 12 percent per annum. Compute the number of payments remaining and the buy price.

NOTE: For computation purposes, the first payment will be due in six months. Always start your amortization with the number of months until the next payment.

	Type	Press	Display
Term Computation	40000	[CHS] [PV]	-40,000.00
	5000	[PMT]	5,000.00
	(12% divided by 2) 6	[i]	6.00
		[n]	12.00 (pmts)
(CLEAR MACHINE)			
Buy Price Computation	5000	[FV]	5,000.00
	(required yield) 20	[g] [i]	1.67
	(mos to next pmt) 6	[n]	6.00
		[PV]	-4,527.92
	(mos between pmts) 6	[n]	6.00
	(required yield) 20	[g] [i]	1.67
	0	[FV]	0.00
		[PMT]	799.28
	(no. of pmts in months) 72	[n]	72.00
		[PV]	-33,368.95

Solution

There are 12 payments remaining and the buy price is \$33,368.95.

NOTE: This shortcut method will only work if payments and interest rates are consistent throughout the contract.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$11,100 annually at the rate of 12 percent per annum. Compute the final payment and the buy price.

NOTE: For computation purposes, the first payment will be due in 12 months. Always start your amortization with the number of months until the next payment.

	Type	Press	Display
Final Payment Computation	40000	CHS PV	-40,000.00
	12	I	12.00
	11100	PMT	11,100.00
		n	5.00 (years)
	4	n	4.00
		FV	9,890.23
	(mos of int) 12	%	1,186.83
		+	11,077.06

Solution

The remaining principal is \$9,890.23 and the final payment is \$11,077.06.

Cash Flow

\$11,100.00 on month 12
 \$11,100.00 on month 24
 \$11,100.00 on month 36
 \$11,100.00 on month 48
 \$11,077.06 on month 60

	Type	Press	Display
Buy Price Computation	11100	FV	11,100.00
	20	g i	1.67
	12	n PV	-9,102.90
	24	n PV	-7,465.12
	36	n PV	-6,122.01
	48	n PV	-5,020.55
	11077.06	FV	
	60	n PV	-4,108.75

Solution

When you add the PV totals, the buy price is \$31,819.33.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$11,100 annually at the rate of 12 percent per annum. Compute the term and the buy price.

NOTE: For computation purposes, the first payment will be due in 12 months. Always start your amortization with the number of months until the next payment.

	Type	Press	Display
Term Computation	40000	CHS PV	-40,000.00
	11100	PMT	11,100.00
	12	i	12.00
		n	5.00 (pmts)
	(CLEAR MACHINE)		
Buy Price Computation	11100	FV	11,100.00
	(required yield) 20	g i	1.67
	(mos to next pmt) 12	n	12.00
		PV	-9,102.90
	(mos between pmts) 12	n	12.00
	(required yield) 20	g i	1.67
	0	FV	0.00
		PMT	843.24
	(no. of pmts in months) 60	n	60.00
		PV	-31,827.84

Solution

The term is five payments and the buy price is \$31,827.84.

NOTE: This shortcut method will only work if payments and interest rates are consistent throughout the contract.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$11,100 annually at the rate of 12 percent per annum. The contract holder wants to sell three annual payments. Compute the final payment and the buy price.

NOTE: For computation purposes, the first payment will be due in 12 months. Always start your amortization with the number of months until the next payment.

	Type	Press	Display
Final Payment Computation	40000	CHS PV	-40,000.00
	12	i	12.00
	11100	PMT	11,100.00
		n	5.00 (years)
	4	n	4.00
		FV	9,890.23
	(mos of int) 12	%	1,186.83
		+	11,077.06

Solution The final payment is \$11,077.06.

Cash Flow

\$11,100.00 on month 12
 \$11,100.00 on month 24
 \$11,100.00 on month 36
 \$11,100.00 on month 48
 \$11,077.06 on month 60



Amount Purchased Computation	Type	Press	Display
	11100	FV	11,100.00
	12	g i	1.00
	12	n PV	-9,850.69
	24	n PV	-8,741.98
	36	n PV	-7,758.07

Add totals for amount purchased:

\$9,850.69
 8,741.98
7,758.07
 \$26,350.74

Buy Price Computation	Type	Press	Display
	11100	FV	11,100.00
	20	g i	1.67
	12	n PV	-9,102.90
	24	n PV	-7,465.12
	36	n PV	-6,122.01

Add totals for buy price:

\$9,102.90
 7,465.12
6,122.01
 \$23,690.03

Residual Computation	Type	Press	Display
	40000	CHS PV	-40,000.00
	11100	PMT	11,100.00
	12	i	12.00
		n	5.00 (pmts)
	3	n	3.00
		FV	18,741.28

Solution

The amount purchased is \$26,350.74, the buy price is \$23,690.03 and the residual balance is \$18,741.28.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a balance of \$40,000 (15 months ago), payable at \$11,100 annually at the rate of 12 percent per annum. The contract holder wants to cash out the remaining interest in his contract. Compute the final payment, the amount purchased, and the buy price.

Final Payment
Computation

Type	Press	Display
40000	CHS PV	-40,000.00
12	I	12.00
11100	PMT	11,100.00
	n	5.00 (years)
4	n	4.00
	FV	9,890.23
(mos of int) 12	%	1,186.83
	+	11,077.06

Solution

The final payment is \$11,077.06.

Cash Flow

\$11,100.00 on month 12 (already purchased)
 \$11,100.00 on month 24 (already purchased)
 \$11,100.00 on month 36 (already purchased)
 \$11,100.00 on month 48
 \$11,077.06 on month 60



(continued) You have already purchased those payments on months 12, 24, and 36. The remaining interest consists of those payments due on months 48 and 60. Since that was 15 months ago, those payments are now due on months 33 and 45.

	Type	Press	Display
Amount	11100	FV	11,100.00
Purchased	(interest rate) 12	g i	1.00
Computation	(payment month) 33	n PV	-7,993.14
	11077.06	FV	11,077.06
	(payment month) 45	n PV	-7,078.85
Add PV totals for amount purchased:			
			\$7,993.14
			<u>7,078.85</u>
			\$15,071.99

	Type	Press	Display
Buy Price	11100	FV	11,100.00
Computation	(required yield) 20	g i	1.67
	(payment month) 33	n PV	-6,433.24
	11077.06	FV	11,077.06
	(payment month) 45	n PV	-5,264.88
Add PV totals for buy price:			
			\$6,433.24
			<u>5,264.88</u>
			\$11,698.12

Solution The amount purchased is \$15,071.99 and the buy price is \$11,698.12.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$6,000 annually at the rate of 12 percent per annum.

Special Terms: A bump payment of \$7,000 (in addition to the normal payment amount) is due two years from the date of closing and again four years from the date of closing.

Compute the remaining balance at each of the bump payment dates, the final payment amount, and the buy price.

	Type	Press	Display
Bump Payment 1 Computation	40000	[CHS] [PV]	-40,000.00
	6000	[PMT]	6,000.00
	12	[i]	12.00
		[n]	15.00 (payments)
	2	[n]	2.00
		[FV]	37,456.00 (remaining balance)

Solution

When you subtract the first \$7,000 bump payment from the remaining balance of \$37,456.00, you have a remaining balance of \$30,456.00.

	Type	Press	Display
Bump Payment 2 Computation	30456	[CHS] [PV]	-30,456.00
	6000	[PMT]	6,000.00
	12	[i]	12.00
		[n]	9.00 (payments)
	2	[n]	2.00
		[FV]	25,484.01 (remaining balance)

When you subtract the second \$7,000 bump payment from the remaining balance of \$25,484.01, you have a remaining balance of \$18,484.01.

FIRST POSITION Annual Payments

With Bump Payments



Final Payment Computation	Type	Press	Display
18484.01		CHS PV	-18,484.01
6000		PMT	6,000.00
12		I	12.00
		n	5.00 (payments)
4		n	4.00
		FV	408.98
12		%	49.08
		+	458.06 (final pmt)

Solution The final payment amount is \$458.06.

Cash Flows Now you know the amount of each annual cash flow and how many there are:

\$6,000.00	on month	12
\$13,000.00	on month	24
\$6,000.00	on month	36
\$13,000.00	on month	48
\$6,000.00	on month	60
\$6,000.00	on month	72
\$6,000.00	on month	84
\$6,000.00	on month	96
\$458.06	on month	108

FIRST POSITION Annual Payments

With Bump Payments



Buy Price Computation	Type	Press	Display
6000		FV	6,000.00
20		g i	1.67
12		n PV	-4,920.49
13000		FV	13,000.00
24		n PV	-8,742.94
6000		FV	6,000.00
36		n PV	-3,309.19
13000		FV	13,000.00
48		n PV	-5,879.92
6000		FV	6,000.00
60		n PV	-2,225.54
72		n PV	-1,825.13
84		n PV	-1,496.75
96		n PV	-1,227.46
458.06		FV	458.06
108		n PV	-76.85
Add PV totals for buy price:			
			\$4,920.49
			8,742.94
			3,309.19
			5,879.92
			2,225.54
			1,825.13
			1,496.75
			1,227.46
			<u>76.85</u>
			\$29,704.27

Solution

The remaining balance at the first bump payment is \$30,456.00; at the second bump payment it is \$18,484.01. The final payment is \$458.06 and the buy price is \$29,704.27.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$11,100 annually at the rate of 12 percent per annum. **Special Terms:** The contract balloons in three years. Compute the balloon payment and the buy price.

**Balloon Payment
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
12	i	12.00
11100	PMT	11,100.00
	n	5.00 (prmts)
(yrs before balloon) 2	n	2.00
	FV	26,644.00
12	%	3,197.28
	+	29,841.28

Solution The balloon payment amount is \$29,841.28.

Cash Flow

\$11,100.00 on month 12
\$11,100.00 on month 24
\$29,841.28 on month 36

**Buy Price
Computation**

Type	Press	Display
11100	FV	11,100.00
(required yield) 20	g i	1.67
(payment month) 12	n PV	-9,102.90
(payment month) 24	n PV	-7,465.12
29841.28	FV	29,841.28
36	n PV	-16,458.43

Add totals for buy price:

\$9,102.90
7,465.12
16,458.43
\$33,026.45

Solution The buy price amount is \$33,026.45.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$11,100 annually at the rate of 12 percent per annum. **Special Terms:** The interest rate changes to 14 percent at the end of three years and continues at that rate until the contract is paid in full.

Compute the remaining balance, final payment, and the buy price.

	Type	Press	Display
Remaining Balance	40000	CHS PV	-40,000.00
Balance	12	i	12.00
Computation	11100	PMT	11,100.00
		n	5.00 (years)
(yrs until change) 3		n	3.00
		FV	18,741.28
(CLEAR MACHINE)			

	Type	Press	Display
Final Payment Computations	18741.28	CHS PV	-18,741.28
	11100	PMT	11,100.00
(new interest rate) 14		i	14.00
		n	3.00 (years)
	2	n	
		FV	602.17
	14	%	84.30
		+	686.47

Solutions

The remaining balance is \$18,741.28 and the final payment is \$686.47.



Cash Flow

\$11,100.00 on month 12
 \$11,100.00 on month 24
 \$11,100.00 on month 36
 \$11,100.00 on month 48
 \$686.47 on month 60

	Type	Press	Display
Buy Price Computation	11100	FV	11,100.00
	20	g i	1.67
	12	n PV	-9,102.50
	24	n PV	-7,465.12
	36	n PV	-6,122.01
	48	n PV	-5,020.55
	686.47	FV	686.47
	60	n PV	-254.63

Add PV totals for buy price:

\$9,102.50
 7,465.12
 6,122.01
 5,020.55
254.63
 \$27,966.21

Solution The buy price is \$27,965.21.


PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$11,100 annually at the rate of 12 percent per annum. **Special Terms:** Beginning with the payment due four years from the date of closing, the payment amount is reduced to \$5,000 per year until the contract is paid in full.

Compute the remaining balance, final payment, and the buy price.

	Type	Press	Display
Remaining Balance Computation	40000	CHS PV	-40,000.00
	11100	PMT	11,100.00
	12	i	12.00
		n	5.00 (pmts)
	3	n	3.00
		FV	18,741.28

(CLEAR MACHINE)

	Type	Press	Display
Final Payment Computation	18741.28	CHS PV	-18,741.28
	12	i	1.00
	5000	PMT	5,000.00
		n	6.00 (pmts)
	5	n	5.00
		FV	1,264.30
	12	%	151.72
		+	1,416.02

Solution

The remaining balance is \$18,741.28 and the final payment is \$1,416.02.

**FIRST POSITION
Annual Payments**

With Payment Changes



Cash Flow	\$11,100.00	on month	12
	\$11,100.00	on month	24
	\$11,100.00	on month	36
	\$5,000.00	on month	48
	\$5,000.00	on month	60
	\$5,000.00	on month	72
	\$5,000.00	on month	84
	\$5,000.00	on month	96
	\$1,416.02	on month	108

	Type	Press	Display
Buy Price	11100.00	FV	11,100.00
Computation	20	g i	1.67
	12	n PV	-9,102.90
	24	n PV	-7,465.12
	36	n PV	-6,122.01
	5000	FV	5,000.00
	48	n PV	-2,261.51
	60	n PV	-1,854.62
	72	n PV	-1,520.94
	84	n PV	-1,247.29
	96	n PV	-1,022.88
	1416.02	FV	1,416.02
	108	n PV	-237.56

Add PV totals for buy price:

\$9,102.90
 7,465.12
 6,122.01
 2,261.51
 1,854.62
 1,520.94
 1,247.29
 1,022.88
 237.56
 \$30,834.83

Solution The buy price is \$30,834.83.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$10,000 annually **plus interest** at the rate of 12 percent per annum. Compute the payment amount and the buy price.

To compute a yield on a contract with principal plus interest payments, you must first find the amortization and then the amount of each payment prior to figuring the yield.

When you divide the \$40,000 balance by the annual principal application of \$10,000, the answer is four annual payments.

To figure the amount of the payments, first use a principal application schedule and compute the interest for each.

	Principal		Interest		Principal	
Pmt	Balance	Int Rate	Application	Application	Pmt Amt	
1st	10,000.00	x .12	= 4,800.00	+	10,000.00	= 14,800.00
2nd	10,000.00	x .12	= 3,600.00	+	10,000.00	= 13,600.00
3rd	10,000.00	x .12	= 2,400.00	+	10,000.00	= 12,400.00
4th	10,000.00	x .12	= 1,200.00	+	10,000.00	= 11,200.00

Once you have done this, you are ready to look at cash flow and use this to compute buy price.

Cash Flow

\$14,800.00 on month 12
 \$13,600.00 on month 24
 \$12,400.00 on month 36
 \$11,200.00 on month 48



**Buy Price
Computation**

Type	Press	Display
14800	FV	14,800.00
20	g i	1.67
12	n PV	-12,137.21
13600	FV	13,600.00
24	n PV	-9,146.46
12400	FV	12,400.00
36	n PV	-6,839.00
11200	FV	11,200.00
48	n PV	-5,065.78

Add PV totals for buy price:

\$12,137.21
9,146.46
6,839.00
5,065.78
\$33,188.45

Solution The buy price is \$33,188.45.



3—SECOND-POSITION COMPUTATIONS

STRAIGHT For any straight second, third, fourth, etc., position contract, use the computation format that would apply under the first-position headings in chapter 2.

**WRAP-AROUND
OR OVERALL** For any wrap-around or overall second-, third-, fourth-, etc., position contract, use the computation format that would apply under the overall-position headings in chapter 4.



4—OVERALL POSITION COMPUTATIONS

GENERAL This chapter deals with contracts where there may be one or more underlying contracts involved. You may be purchasing a percentage of the contract, the remainder of the contract, or a stream of payments. There may be different interest rates on the underlying contract as well as bump or balloon payments.

To compute an overall contract with quarterly, semi-annual, or annual payments, use exactly the same format as you would for a first-position contract. The only difference is that you must reduce the cash flow by the amount of the underlying payment.

OVERALL POSITION Monthly Payments

Standard



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum.

Underlying: There is an underlying contract with a present balance of \$20,000 payable at \$225.00 per month at the rate of 10 percent per annum.

Compute the last payment of both the overall contract and the underlying contract, the cash flow, and the buy price.

Last-Payment Computation

Type	Press	Display
40000	CHS PV	-40,000.00
12	g i	1.00
440.43	PMT	440.43
	n	241.00 (months)
240	n	240.00
	FV	4.41 (last pmt)
20000	CHS PV	-20,000.00
10	g i	0.83
225	PMT	225.00
	n	163.00 (months)
162	n	162.00
	FV	148.65 (last pmt)

Cash Flow Computation

Subtract underlying payment from overall payment:

\$440.43
-225.00
\$215.43

Subtract underlying last payment from overall payment:

\$440.43
-148.65
\$291.78

162 months x 215.43
1 month x 291.78
77 months x 440.43
1 month x 4.41

OVERALL POSITION
Monthly Payments

Standard



Buy Price Computation	Type	Press	Display
215.43		9 CFI	215.43
99		9 NI	99.00
215.43		9 CFI	215.43
63		9 NI	63.00
291.78		9 CFI	291.78
1		9 NI	1.00
440.43		9 CFI	440.43
77		9 NI	77.00
4.41		9 CFI	4.41
1		9 NI	1.00
(required yield) 20		9 I	1.67
		f NPV	13,343.30

Solution The last payment of the overall contract is \$4.41 while the last payment of the underlying contract is \$148.65. The buy price is \$13,343.30.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. **Underlying:** There is an underlying contract with a present balance of \$20,000 payable at \$225.00 per month at the rate of 10 percent per annum. The contract holder wishes to sell 120 months of payments.

Compute the residual equity, the amount purchased, and the buy price.

**Residual
Computation**

Type	Press	Display
40000	[CHS] [PV]	-40,000.00
12	[g] [i]	1.00
440.43	[PMT]	440.43
	[n]	241.00 (months)
(mos purchased) 120	[n]	120.00
	[FV]	30,699.54
20000	[CHS] [PV]	-20,000.00
10	[g] [i]	0.83
225	[PMT]	225.00
	[n]	163.00 (months)
(mos purchased) 120	[n]	120.00
	[FV]	8,050.71

Subtract underlying residual from overall residual:

\$30,699.54
-8,050.71
 \$22,648.83 = residual equity

OVERALL POSITION Monthly Payments

Partial Purchase



Amount Purchased Computation	Type	Press	Display
	120	n	120.00
	12	g i	1.00
(cash flow) 215.43		PMT	215.43
		PV	-15,015.58

Buy Price Computation	Type	Press	Display
	120	n	120.00
(required yield) 20		g i	1.67
215.43		PMT	215.43
		PV	-11,147.41

Solution The residual equity is \$22,648.83, the amount purchased is \$15,015.58 and the buy price is \$11,147.41.

OVERALL POSITION
Monthly Payments

Partial Purchase—
Remaining Interest



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000 (15 months ago), payable at \$440.43 per month at the rate of 12 percent per annum.

Underlying: There was an underlying contract with a present balance of \$20,000 payable at \$225.00 per month at the rate of 10 percent per annum. The contract holder sold you 120 payments 15 months ago, now he wishes to sell his remaining interest. Compute how much you are buying and the buy price.

**Last-Payment
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
12	9 i	1.00
440.43	PMT	440.43
	n	241.00 (months)
240	n	240.00
	FV	4.41 (last pmt)
20000	CHS PV	-20,000.00
10	9 i	0.83
225	PMT	225.00
	n	163.00 (months)
162	n	162.00
	FV	148.65 (last pmt)

**Cash Flow
Computation**

Subtract underlying payment from overall payment:

\$440.43
-225.00
\$215.43

Subtract underlying last payment from overall payment:

\$440.43
-148.65
\$291.78

**Original
Cash Flow**

162 months	x	215.43
1 month	x	291.78
77 months	x	440.43
1 month	x	4.41

OVERALL POSITION Monthly Payments

Partial Purchase— Remaining Interest



You have already purchased 120 payments 15 months ago,
leaving another 105 months before the remaining interest
starts.

Remaining Cash Flow

105 months	x	0.00
42 month	x	291.78
77 months	x	440.43
1 month	x	4.41

Amount- Purchased Computation

Type	Press	Display
0	g CFi	0.00
99	g Ni	99.00
0	g CFi	0.00
6	g Ni	6.00
291.78	g CFi	291.78
42	g Ni	42.00
440.43	g CFi	440.43
77	g Ni	77.00
4.41	g CFi	4.41
1	g Ni	1.00
(overall int rate) 12	g i	1.00
	f NPV	8,966.02

Buy Price Computation

0	g CFi	0.00
99	g Ni	99.00
0	g CFi	0.00
6	g Ni	6.00
291.78	g CFi	291.78
42	g Ni	42.00
440.43	g CFi	440.43
77	g Ni	77.00
4.41	g CFi	4.41
1	g Ni	1.00
(required yield) 20	g i	1.67
	f NPV	3,220.22

Solution

The amount purchased is \$8,966.02 and the buy price is
\$3,220.22.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000 (15 months ago), payable at \$440.43 per month at the rate of 12 percent per annum.

Underlying: There are two underlying contracts: one with a present balance of \$20,000 payable at \$225.00 per month at the rate of 10 percent per annum and a second with a principal balance of \$4,000 payable at \$50.00 per month at the rate of 8 percent per annum. Compute the last payment of each, the cash flow, and the buy price.

Last-Payment Computations

Type	Press	Display
40000	[CHS] [PV]	-40,000.00
12	[g] [i]	1.00
440.43	[PMT]	440.43
	[n]	241.00 (months)
240	[n]	240.00
	[FV]	4.41 (last pmt)
20000	[CHS] [PV]	-20,000.00
10	[g] [i]	0.83
225	[PMT]	225.00
	[n]	163.00 (months)
162	[n]	162.00
	[FV]	148.65 (last pmt)
4000	[CHS] [PV]	-4,000.00
8	[g] [i]	0.67
50	[PMT]	50.00
	[n]	115.00 (months)
114	[n]	114.00
	[FV]	34.88 (last pmt)

OVERALL POSITION Monthly Payments

With Multiple Underlyings



Combined Cash Flow

99 months	x	165.43
15 months	x	165.43
1 months	x	180.55
47 months	x	215.43
1 months	x	291.78
77 months	x	440.43
1 months	x	4.41

Buy-Price Computation

Type	Press	Display
165.43	9 CFj	165.43
99	9 Nj	99.00
165.43	9 CFj	165.43
15	9 Nj	15.00
180.55	9 CFj	180.55
1	9 Nj	1.00
215.43	9 CFj	215.43
47	9 Nj	47.00
291.78	9 CFj	291.78
1	9 Nj	1
440.43	9 CFj	440.43
77	9 Nj	77
4.41	9 CFj	4.41
1	9 Nj	1.00
(required yield) 20	9 i	1.67
	f NPV	10,793.87

Solution

The overall has a last payment of \$4.41. The first underlying has a last payment of \$148.65 and the second underlying has a last payment of \$34.88. The buy price is \$10,793.87.



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000 payable at \$440.43 per month at the rate of 12 percent per annum.

Special Terms: A bump payment of \$1,500 in addition to the normal payment amount is due two years from the date of closing and again four years from the date of closing. Also there is an underlying contract with a present balance of \$20,000 payable at \$225.00 per month at the rate of 10 percent per annum.

Compute the remaining balance of the overall, the last payment of the underlying, the net remaining balance, the cash flow, and the buy price.

**First Bump
Computation**

Type	Press	Display
40000	[CHS] [PV]	-40,000.00
12	[g] [i]	1.00
440.43	[PMT]	440.43
	[n]	241.00 (months)
(mos until bump) 23	[n]	23.00
	[FV]	38,960.29 (rem bal)

Subtract bump payment from remaining balance:

\$38,960.29
~~-1,500.00~~
 \$37,460.29 = net rem bal

20000	[CHS] [PV]	-20,000.00
10	[g] [i]	0.83
225	[PMT]	225.00
	[n]	163.00 (months)
162	[n]	162.00
	[FV]	148.65 (last pmt)

After the first bump payment, the net remaining balance is \$37,460.29 and the overall last payment is \$148.65.

OVERALL POSITION Monthly Payments

With Bump Payments



Second Bump Computation

Type	Press	Display
37460.29	CHS PV	-37,460.29
12	g i	1.00
440.43	PMT	440.43
	n	192.00 (months)
(mos until bump) 24	n	24.00
	FV	35,684.71 (rem bal)

Subtract bump payment from remaining balance:

\$35,684.71
~~-1,500.00~~
 \$34,184.71 = net rem bal

34184.71	CHS PV	-34,184.71
12	g i	1.00
440.43	PMT	440.43
	n	151.00 (months)
150	n	150.00
	FV	189.16 (last pmt)

After the second bump payment, the net remaining balance is \$34,184.71 and the underlying last payment is \$189.16.

Cash Flow

OVERALL

23 months	x	440.43
1 month	x	1,940.43
23 months	x	440.43
1 month	x	1,940.43
150 months	x	440.43
1 month	x	189.16

UNDERLYING

162 months	x	<225.00>
1 month	x	<148.65>

COMBINED

23 months	x	215.43
1 month	x	1,715.43
23 months	x	215.43
1 month	x	1,715.43
99 months	x	215.43
15 months	x	215.43
1 month	x	291.87
35 months	x	440.43
1 month	x	189.16

OVERALL POSITION
Monthly Payments

With Bump Payments



**Buy Price
Computation**

Type	Press	Display
215.43	9 CFj	215.43
23	9 Nj	23.00
1715.43	9 CFj	1,715.43
1	9 Nj	1.00
215.43	9 CFj	215.43
23	9 Nj	23.00
1715.43	9 CFj	1,715.43
1	9 Nj	1.00
215.43	9 CFj	215.43
99	9 Nj	99.00
215.43	9 CFj	215.43
15	9 Nj	15.00
291.78	9 CFj	291.78
1	9 Nj	1.00
440.43	9 CFj	440.43
35	9 Nj	35.00
189.16	9 CFj	189.16
1	9 Nj	1.00
(required yield) 20	9 i	1.67
	f NPV	14,536.21

Solution The buy price is \$14,536.21.

OVERALL POSITION Monthly Payments

With Balloon Payments



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000 payable at \$440.43 per month at the rate of 12 percent per annum.

Special Terms: The contract is due and payable ten years from the date of closing. Also there is an underlying contract with a present balance of \$20,000 payable at \$225.00 per month at the rate of 10 percent per annum.

Compute the balloon payment, cash flow, and the buy price.

Balloon Computation

Type	Press	Display
40000	CHS PV	-40,000.00
12	g i	1.00
440.43	PMT	440.43
	n	241.00 (months)
(mos to balloon) 120	n	120.00
	FV	30,699.54 (balloon)
20000	CHS PV	-20,000.00
10	g i	0.83
225	PMT	225.00
	n	163.00 (months)
(mos to balloon) 120	n	120.00
	FV	8,050.71

Cash Flows

OVERALL

120 months	x	440.43
1 month	x	30,699.54

UNDERLYING

120 months	x	<225.00>
1 month	x	<8,050.71>

COMBINED

120 months	x	215.43
1 month	x	22,648.83

OVERALL POSITION
Monthly Payments

With Balloon Payments



Buy Price Computation	Type	Press	Display
120		n	120.00
215.43		PMT	215.43
22648.83		FV	22,648.83
20		9 i	1.67
		PV	-14,263.54

Solution The buy price is \$14,263.54.

OVERALL POSITION Monthly Payments

With Negative Balloon



PROBLEM

A contract has a sales price of \$50,000 with a down payment of \$10,000 and a present balance of \$40,000 payable at \$440.43 per month at the rate of 12 percent per annum.

Special Terms: There is an underlying contract with a present balance of \$20,000 payable at \$225.00 per month at the rate of 10 percent per annum. Also, there is a balloon payment in five years.

Compute the balloon payment, cash flow, and the buy price.

Balloon Computation

Type	Press	Display
40000	CHS PV	-40,000.00
12	g i	1.00
440.43	PMT	440.43
	n	241.00 (months)
(mos to balloon) 240	n	240.00
	FV	4.41 (last pmt)
20000	CHS PV	-20,000.00
10	g i	0.83
225	PMT	225.00
	n	163.00 (months)
(mos to balloon) 60	n	60.00
	FV	15,482.84

Solution

The balloon payment is \$15,482.84.

OVERALL POSITION
Monthly Payments

With Negative Balloon



Cash Flows	OVERALL			UNDERLYING		
	240 months	x	440.43	60 months	x	225.00
	1 month	x	4.41	1 month	x	15,482.84

COMBINED

60 months	x	215.43
1 month	x	<15,042.41>
99 months	x	440.43
80 months	x	440.43
1 month	x	4.41

Buy Price
Computation

Type	Press	Display
215.43	g CFj	215.43
60	g Nj	60.00
15042.41	CHS	-15,042.41
	g CFj	-15,042.41
440.43	g CFj	440.43
99	g Nj	99.00
440.43	g CFj	440.43
80	g Nj	80.00
4.41	g CFj	4.41
1	g Nj	1.00
(required yield) 20	g i	1.67
	f NPV	11,784.32

NOTE: To enter a negative cash flow, press (change sign) before entering the amount.

Solution The buy price is \$11,784.32.



5—CASH FLOW COMPUTATIONS

GENERAL

Understanding and visualizing the cash flow (or payment stream) of any given transaction is essential when using the HP-12C. If you understand the terms as they are indicated in any given contract and can visualize (by writing down) the way the payments are made, you can compute a given yield on virtually any transaction. This chapter leads you through an example.

**PROBLEM**

A contract has a balance of \$40,000. For the first two years the payments consist of interest-only at 10 percent per annum. At the end of the two-year period, a \$5,000 bump payment is due in addition to the normal payments. For the following four years, the payments are \$500.00 per month at 12 percent per annum and then the payments drop to \$300.00 per months at 11 percent per annum. Regardless of circumstances, the contract is due and payable in full in 10 years.

Taking the terms step-by-step, visualize the cash flow by writing it down as it is due. First, the balance is \$40,000 and payments for the first two years are interest only at 10 percent.

$$\$40,000 \times .10 = \$4,000 \text{ (annual interest)}$$

Divide the annual interest by 12 to find the monthly payment which is \$333.33.

There are 24 payments $\times$ \$333.33.

Then there is a bump payment of \$5,000 in addition to a monthly payment of \$500.00 from the next stage.

There is one payment $\times$ \$5,500.

For the next four years the payments are \$500.00 per month at 12 percent.

There are 47 payments $\times$ \$500.00.

At this point you are aware that the contract payments drop to \$300.00 at 11 percent for the remainder of the contract, all of which is due in 10 years. Looking back, you have already used six years of payments. Therefore, you know that you have four years of payments at \$300.00 except for the last payment, which is a balloon.

There are 47 payments $\times$ \$300.00.



(continued)

Up to this point, you have not really needed the HP. By simply visualizing the cash flow stage by stage, you know the entire sequence of payments except the final payment. To compute the final payment, simply visualize the payment applications.

Starting balance: \$40,000.00
 Two yrs interest only: -0- (principal reduction)
 Bump payment: <5,000.00>
 Remaining balance: \$35,000.00

Now you have \$35,000, payable at \$500.00 per month at 12 percent per annum for five years. The next step is to find the balance at the end of that period.

Remaining Balance Computation

Type	Press	Display
35000	[CHS] [PV]	-35,000.00
12	[9] [i]	1.00
500	[PMT]	500.00
	[n]	121.00 (months)
48	[n]	48.00
	[FV]	25,816.61 (remaining bal)

At this point the balance is \$25,816.61, now payable at \$300.00 per month at 11 percent interest. You know you will receive 47 payments and then a balloon.

Balloon Payment Computation

Type	Press	Display
25816.61	[CHS] [PV]	-25,816.61
11	[9] [i]	0.92
300	[PMT]	300.00
	[n]	171.00 (months)
47	[n]	47.00
	[FV]	22,115.80 (final balloon)

The balloon payment is \$22,115.80.



Cash Flow Now we have the entire cash flow computed. . .

24 payments at 333.33
 1 payment at 5,500.00
 47 payments at 500.00
 47 payments at 300.00
 1 payment at 22,115.80

. . . and you simply enter the information into the HP to find out the buy price.

**Buy Price
Computation**

Type	Press	Display
333.33	9 CFj	333.33
24	9 Nj	24.00
5500	9 CFj	5,500.00
1	9 Nj	1.00
500	9 CFj	500.00
47	9 Nj	47.00
300	9 CFj	300.00
47	9 Nj	47.00
22115.80	9 CFj	22,115.80
1	9 Nj	1.00
(required yield) 20	9 i	1.67
	f NPV	26,907.55 (buy price)

As you can see, if you separate the individual cash flows by stages, it is not that difficult to figure even a very difficult sounding contract. The more practice you have, the quicker you will be able to compute these transactions.



6—MISCELLANEOUS COMPUTATIONS

GENERAL This chapter covers computations that cover seemingly complicated situations you may encounter. Usually these can be computed very easily if you follow the example problems carefully.



PROBLEM

A vendor holds a contract with a present balance of \$40,000, payable at \$440.43 per month at the rate of 12 percent per annum. The vendor indicates he will take no less than \$30,000 for the contract. Compute what the yield will be at a \$30,000 buy price.

**Yield
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
12	9 I	1.00
440.43	PMT	440.43
	n	241.00 (months)
30000	CHS PV	30,000.00
	I	1.42 (monthly int)
12	X	17.03 (yield)

Solution

The yield is 17.03 percent.



PROBLEM

A vendor holds a contract with a present balance of \$40,000, payable at the rate of 12 percent per annum with escalating payments. For the next 120 months, the payment is \$440.43 and then the payment increases to \$500.00 per month until paid. The vendor has indicated he will accept no less than \$30,000 for the contract. Compute the balance at the payment change, the last payment, and what the yield will be at a \$30,000 buy price.

**Cashflow
Computation**

Type	Press	Display
40000	CHS PV	-40,000.00
12	g i	1.00
440.43	PMT	440.43
	n	241.00 (months)
(mos to increase) 120	n	120.00
	FV	30,699.54 (balance at payment change)
(CLEAR MACHINE)		
30699.54	CHS PV	-30,699.54
12	g i	1.00
500	PMT	500.00
	n	96.00 (months)
95	n	95.00
	FV	329.54 (last pmt)

Solution

The balance at the payment change is \$30,699.54 and the last payment is \$329.54.

Cash Flow

99 months	x	440.43
21 months	x	440.43
95 months	x	500.00
1 month	x	329.54



**Programming
the Problem**

Type	Press	Display
	$\frac{f}{\square}$ $\square$ P/R	00 -
	$\frac{f}{\square}$ $\square$ PRGM	00 -
	CHS $\square$ ENTER	02 - 36
	9 $\square$ CFo	03 - 43 13
440.43	9 $\square$ CFj	10 - 43 14
99	9 $\square$ Nj	13 - 43 15
440.43	9 $\square$ CFj	20 - 43 14
21	9 $\square$ Nj	23 - 43 15
500.00	9 $\square$ CFj	27 - 43 14
95	9 $\square$ Nj	30 - 43 15
329.54	9 $\square$ CFj	37 - 42 15
1	9 $\square$ Nj	39 - 43 15
	$\frac{f}{\square}$ $\square$ IRR	40 - 42 15
12	$\square$ X	43 - 20
	$\frac{f}{\square}$ $\square$ P/R	0.00

The programming is now complete. You have entered all the necessary data. To find what yield a \$30,000 buy price achieves, do the following:

**Yield
Computation**

Type	Press	Display
30000	$\square$ R/S	17.11

Solution The yield is 17.11 percent.



PROBLEM Now find what the buy price would be at a required yield of 14 percent. (You do not need to clear the machine.)

Type	Press	Display
14	9 i	1.17
	f NPV	5,507.66

Solution The \$5,507.66 is the difference between the 17.11-percent yield and the 14-percent yield. Simply add the original buy price to the difference.

\$30,000.00	
<u>+ 5,507.66</u>	
\$35,507.66	(buy price at 14-percent yield)

PROBLEM Now find the buy price at a 20-percent yield.

Type	Press	Display
20	9 i	1.67
	f NPV	-3,931.64

Solution

\$30,000.00	
<u>- 3,931.64</u>	
\$26,068.36	(buy price at 20-percent yield)


PROBLEM

A vendor (annuitant) holds an annuity that pays him \$1,750.00 per month for 240 months. Impute the cashflow at a 7.5-percent interest rate to find out what you are purchasing.

**Imputed Interest
Computation**

Type	Press	Display
1750	PMT	1,750.00
240	n	240.00
0	g i	0.00
	PV	-420,000.00
7.5	g i	0.63
	PV	-217,231.23

Solution

The total cash flow is \$420,000.00 and the imputed balance is \$217,231.23.


PROBLEM

A contract has a sales price of \$100,000 with a down payment of \$10,000 and a present balance of \$90,000. The payment amount is \$990.98 per month at an interest rate of 12 percent per annum. The contract holder wants to sell the last 120 payments of the contract. Compute the term, the last payment amount, the amount purchased, and the buy price.

**Term and
Last Payment
Computation**

Type	Press	Display
90000	CHS PV	-90,000.00
12	g i	1.00
990.98	PMT	990.98
	n	240.00 (months)
239	n	239.00
	FV	978.74 (final pmt)

Solution

The term is 240 months and the last payment amount is \$978.74.

**Cash Flow
Breakdown**

120 months	x	990.98	(vendor retains)
119 months	x	990.98	(Metro buys)
1 month	x	978.84	



Amount Purchased Computation	Type	Press	Display
0		g CFi	0.00
99		g Ni	99.00
0		g CFi	0.00
21		g Ni	21.00
990.98		g CFi	990.98
99		g Ni	99.00
990.98		g CFi	990.98
20		g Ni	20.00
978.74		g CFi	978.74
1		g Ni	1.00
12		g i	1.00
		f NPV	20,927.28 (amt purchased)

Solution The amount purchased is \$20,927.28.

Buy Price Computation	Type	Press	Display
0		g CFi	0.00
99		g Ni	99.00
0		g CFi	0.00
21		g Ni	21.00
990.98		g CFi	990.98
99		g Ni	99.00
990.98		g CFi	990.98
20		g Ni	20.00
978.74		g CFi	978.74
1		g Ni	1.00
20		g i	1.67
		f NPV	7,054.86 (buy price)

Solution The buy price is \$7,054.86.


PROBLEM

A contract has a sales price of \$100,000 with a down payment of \$10,000 and a present balance of \$90,000, payable at \$990.98 per month at the rate of 12 percent per annum. The contract holder wishes to sell the last 120 payments of the contract. Compute the last payment, amount you will be purchasing, and the buy price.

**Last-Payment
Computation**

Type	Press	Display
90000	CHS PV	-90,000.00
12	g i	1.00
990.98	PMT	990.98
	n	240.00 (months)
239	n	239.00
	FV	978.74 (final pmt)

Solution The last payment amount is \$978.74.

**Cash Flow
Breakdown**

120 months	x	990.98	(vendor retains)
119 months	x	990.98	(Metro buys)
1 month	x	978.84	

**Amount-
Purchased
Computation**

Type	Press	Display
0	g CFj	0.00
99	g Nj	99.00
0	g CFj	0.00
21	g Nj	21.00
990.98	g CFj	990.98
99	g Nj	99.00
990.98	g CFj	990.98
20	g Nj	20.00
978.74	g CFj	978.74
1	g Nj	1.00
12	g i	1.00
	f NPV	20,927.28 (amt purchased)

Solution The amount purchased is \$20,927.28.



**Buy Price
Computation**

Type	Press	Display
0	g CFi	0.00
99	g Ni	99.00
0	g CFi	0.00
21	g Ni	21.00
990.98	g CFi	990.98
99	g Ni	99.00
990.98	g CFi	990.98
20	g Ni	20.00
978.74	g CFi	978.74
1	g Ni	1.00
20	g i	1.67
	f NPV	7,054.86 (buy price)

Solution The buy price is \$7,054.86.

Now you must compute amortization of the buy price over the period you wish to increase payment. In this case, the vendor wants the 120 payments he retained all to be increased.

**Monthly Increase
Computation**

Type	Press	Display
7054.86	CHS PV	-7,054.86
(int rate) 10	g i	0.83
(amort) 120	n	120.00
	PMT	93.23 (monthly increase)

Solution The monthly increase amount is \$93.23. When added to the vendor's retained payment, the new payment is \$1,084.21.

NOTES

- When computing a payout with increased payments, always use 10 percent for the amortization interest rate.
- For a larger contract, the vendor may elect to take some cash now and the remainder in increased payments. Simply amortize the difference between the cash value and the cash payout over the period required.



PROBLEM

A contract has a sales price of \$100,000 with a down payment of \$10,000 and a present balance of \$90,000, payable at \$990.98 per month at the rate of 12 percent per annum. **Special Terms:** The balance of the contract (balloon) is due and payable five years from the date of closing.

The contract holder wishes to sell the balloon but retain the payments. Compute the balloon amount, the amount you will be purchasing, and the buy price.

**Balloon Payment
Computation**

Type	Press	Display
90000	CHS PV	-90,000.00
(int rate)12	g i	1.00
990.98	PMT	990.98
	n	240.00 (mos)
(mos until balloon) 60	n	
	FV	82,569.69 (balloon)

Solution

The balloon payment amount is \$82,569.69.

NOTE: Be sure that you only enter the allowable portion of the balloon when computing the buy price. Also, if you are only buying a portion of the balloon, use only that portion when computing the amount being purchased.



In this case, you can only buy a portion of the balloon (75 percent of the sales price). You could buy \$75,000 of the balloon and pass the remainder through to the vendor.

Cash Flow	60 months	x	0.00
	1 month	x	75,000.00

Amount-Purchased Computation	Type	Press	Display
0		9 CFI	0.00
60		9 Nj	60.00
75000		9 CFI	75,000.00
1		9 Nj	1.00
12		9 i	1.00
		f NPV	40,874.97 (amt purchased)

Solution The purchase amount is \$40,874.97.

Buy-Price Computation	Type	Press	Display
0		9 CFI	0.00
60		9 Nj	60.00
75000		9 CFI	75,000.00
1		9 Nj	1.00
20		9 i	1.67
		f NPV	27,363.25 (buy price)

Solution The buy price is \$27,363.25.


PROBLEM

A vendor holds a contract with a present balance of \$40,000 payable at \$440.43 per month at the rate of 12 percent per annum. He indicates he doesn't like the uncertainty of the long-term contract, but insists on getting dollar for dollar, or \$40,000 cash for his \$40,000 note. Compute a two-stage guaranteed payout that will generate \$40,000 to the vendor and still maintain the required 15-percent yield.

Cash Value Computation

	Type	Press	Display
40000	CHS	PV	-40,000.00
(int rate)12	g	i	1.00
440.43	PMT		440.43
	n		241.00 (mos)
	FV		-435.98 (last pmt adj)
(required yield) 15	g	i	1.25
	PV		-33,477.48 (cash value)

Solution

The cash value is \$33,447.48.

At this point you would indicate that you can pay \$40,000, but in two stages: one-half (\$20,000) now; the remaining \$20,000 at a later date. Now you must compute how long it will take the difference between the cash value of \$33,447.48 and \$20,000 (\$13,447.48) to grow to \$20,000. Use whatever the Metro debenture rate is at that point. We will use 9 percent in this example.

Term Computation

	Type	Press	Display
13447.48	CHS	PV	-13,447.48
9	g	i	0.75
20000	FV		20,000.00
	n		54.00 (mos)

Solution

The required term is 54 months.

You could offer \$20,000 now and another \$20,000 in 54 months, guaranteed, regardless of contract performance.

**PROBLEM**

A vendor held a contract with a principal balance of \$40,000 payable at \$440.43 per month at the rate of 12 percent per annum. You paid the the sum of \$24,461 12 months ago for the vendor's interest. The vendee has made an offer to pay \$35,000 as payment in full for this contract. Compute the yield on the payoff and your cost of money.

**Payoff Yield
Computation**

Type	Press	Display
24461	CHS PV	-24.461.00
(pmts received) 12	n	12.00
440.43	PMT	440.43
(discount offer) 35000	FV	35,000.00
	i	4.57
12	X	54.90 (payoff yield)

Solution

The payoff yield is 54.90 percent.

Original amortization	—	241 months
Payments made	—	12
Remaining contract life	—	229 months

**Cost-of-Money
Computation**

Type	Press	Display
229	n	229.00
440.43	PMT	440.43
(discount offer) 35000	CHS PV	-35,000.00
	i	1.17
12	X	14.05 (your money cost)

Solution

Your cost of money is 14.05 percent.

NOTE: Your cost of money is also the vendee's rate of return on his investment (discount).



PROBLEM

A vendor approaches you on October 4, 1991 with a contract for sale. The contract has a maturity date of April 17, 2007. Compute the number of payments remaining to the balloon payment.

**Payments-
Remaining
Computation**

Type	Press	Display
	f x, w	0.000000
(starting date) 10.041991	ENTER	10.041991
(maturity date) 4.172007	g ΔDYS	5,674.000 (total days)
365	÷	15.545205 (total yrs)
12	X	186.542466 (total mos)
	f y, r	186.54

Solution

Round 186.54 upwards for a total of 187 months remaining to the balloon payment.

NOTE: You must use all six places after the decimal point. In the example above, a zero was added to make the date 10/04/1991 (rather than 10/4/1991).

