

## Tutorial: Learn how to use a Financial Calculator

Learn how to use your financial calculator for discounting all types of mortgage payments.

Work your way down the examples below. The answer is given and underlined.

Enter the numbers given in the calculator but DO NOT enter the underlined number. Click "Calculate" to the right of the answer you want (in the first example click "Calculate" to the right of Payment per Period) to check the answer is correct.

### 1. Whole purchase, no balloon

Original principal balance of \$100,000 amortized over 30 years, no balloon, interest rate 10% per annum. What are the monthly payments?

| Future Value | Present Value | Interest Rate (per year) | <u>Payment per period</u> | Total # of payments |
|--------------|---------------|--------------------------|---------------------------|---------------------|
| 0            | 100000        | 10                       | <u>877.57</u>             | 360                 |

What is the current balance if 90 payments have already been made? (Note you only change the # of payments from 360 to 90. The current balance is the Future Value)

| <u>Future Value</u> | Present Value | Interest Rate (per year) | Payment per period | Total # of payments |
|---------------------|---------------|--------------------------|--------------------|---------------------|
| <u>-94105.39</u>    | 100000        | 10                       | 877.57             | 90                  |

What is the present value of the payments that are remaining? (You will see this is almost exactly the same as the current balance just calculated, as you would expect.)

| Future Value | <u>Present Value</u> | Interest Rate (per year) | Payment per period | Total # of payments |
|--------------|----------------------|--------------------------|--------------------|---------------------|
| 0            | <u>94105.01</u>      | 10                       | 877.57             | 270 (360-190)       |

If you want to buy the remaining 270 payments to give you a yield of 15%, how much would you pay?

| Future Value | <u>Present Value</u> | Interest Rate (per year) | Payment per period | Total # of payments |
|--------------|----------------------|--------------------------|--------------------|---------------------|
| 0            | <u>67752.51</u>      | 15                       | 877.57             | 270                 |

If you can resell the remaining 270 payments to an investor who wants a yield of 13%, how much would they pay? (Your profit is  $\$76,590.35 - 67,752.51 = \$8,837.84$  excluding your costs like the appraisal)

| Future Value | <u>Present Value</u> | Interest Rate (per year) | Payment per period | Total # of payments |
|--------------|----------------------|--------------------------|--------------------|---------------------|
| 0            | <u>76590.35</u>      | 13                       | 877.57             | 270                 |

## 2. Whole Purchase, with balloon

Same scenario as above (Original principal balance of \$100,000 amortized over 30 years, interest rate 10% per annum, payment 877.57 per month) but with a balloon in 10 years. First you need to know the amount of the balloon.

| Future Value                    | Present Value | Interest Rate (per year) | Payment per period | Total # of payments |
|---------------------------------|---------------|--------------------------|--------------------|---------------------|
| <u>-90938.34</u> is the balloon | 100000        | 10                       | 877.57             | 120 (=10 years)     |

What is the current balance if 90 payments have already been made?

| Future Value     | Present Value | Interest Rate (per year) | Payment per period | Total # of payments |
|------------------|---------------|--------------------------|--------------------|---------------------|
| <u>-94105.39</u> | 100000        | 10                       | 877.57             | 90                  |

What is the present value (after 90 payments have been made) of the remaining 30 payments and the balloon? (it is the same as the current balance just calculated)

| Future Value            | Present Value   | Interest Rate (per year) | Payment per period | Total # of payments |
|-------------------------|-----------------|--------------------------|--------------------|---------------------|
| -90938.34 (the balloon) | <u>94105.39</u> | 10                       | 877.57             | 30 (120-90)         |

If you want to buy the remaining 30 payments and the balloon to give you a yield of 15%, how much would you pay?

| Future Value            | Present Value                   | Interest Rate (per year) | Payment per period | Total # of payments |
|-------------------------|---------------------------------|--------------------------|--------------------|---------------------|
| -90938.34 (the balloon) | <u>84488.15</u> is what you pay | 15                       | 877.57             | 30                  |

If you can resell the remaining 30 payments and the balloon to an investor who wants a yield of 13%, how much would they pay? (your profit is  $88,195.07 - 84,488.15 = \$3,706.92$  minus your costs)

| Future Value            | Present Value                    | Interest Rate (per year) | Payment per period | Total # of payments |
|-------------------------|----------------------------------|--------------------------|--------------------|---------------------|
| -90938.34 (the balloon) | <u>88195.07</u> is what they pay | 13                       | 877.57             | 30                  |

### 3. How about if you buy the remaining 30 payments and not the balloon?

What is the present value of those 30 payments?

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period | Total # of payments |
|--------------|----------------------|-----------------------------|--------------------|---------------------|
| 0            | <u>23209.13</u>      | 10                          | 877.57             | 30                  |

If you want to buy the remaining 30 payments to give you a yield of 15%, how much would you pay?

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period | Total # of payments |
|--------------|----------------------|-----------------------------|--------------------|---------------------|
| 0            | <u>21841.76</u>      | 15                          | 877.57             | 30                  |

If you can resell the remaining 30 payments WITHOUT the balloon to an investor who wants a yield of 13%, how much would they pay? (your profit is  $\$22,374.69 - 21,841.76 = \$532.93$  minus your costs)

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period | Total # of payments |
|--------------|----------------------|-----------------------------|--------------------|---------------------|
| 0            | <u>22374.69</u>      | 13                          | 877.57             | 30                  |

### 4. How about if you buy the balloon and NOT the remaining 30 payments?

What is the present value of that balloon?

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period          | Total # of payments |
|--------------|----------------------|-----------------------------|-----------------------------|---------------------|
| -90938.34    | <u>70896.25</u>      | 10                          | 0 (you aren't getting them) | 30                  |

If you want to buy the balloon only to give you a yield of 15%, how much would you pay?

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period | Total # of payments |
|--------------|----------------------|-----------------------------|--------------------|---------------------|
| -90938.34    | <u>62646.39</u>      | 15                          | 0                  | 30                  |

If you can resell the balloon only to an investor who wants a yield of 13%, how much would they pay? (your profit is  $\$65,820.38 - 62,646.39 = \$3,173.99$  minus your costs)

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period | Total # of payments |
|--------------|----------------------|-----------------------------|--------------------|---------------------|
| -90938.34    | <u>65820.38</u>      | 13                          | 0                  | 30                  |

## 5. Partial purchase no balloon

Same scenario as above (Original principal balance of \$100,000 amortized over 30 years, interest rate 10% per annum, payment 877.57 per month, no balloon ). What is the current balance if 90 payments have been made?

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period | Total # of payments |
|--------------|----------------------|-----------------------------|--------------------|---------------------|
| -94105.39    | 100000               | 10                          | 877.57             | 90                  |

What is the present value of the remaining 270 payments? (You should get almost the identical answer to the last question).

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period | Total # of payments |
|--------------|----------------------|-----------------------------|--------------------|---------------------|
| 0            | <u>94105.01</u>      | 10                          | 877.57             | 270 (360-190)       |

If you want to buy the next 135 of the remaining 270 payments to give you a yield of 15%, how much would you pay?

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period | Total # of payments |
|--------------|----------------------|-----------------------------|--------------------|---------------------|
| 0            | <u>57082.32</u>      | 15                          | 877.57             | 135                 |

If you can resell these 135 payments to an investor who wants a yield of 13%, how much would they pay? (your profit is  $\$62,092.62 - 57,082.32 = \$5,010.30$  minus your costs)

| Future Value | <u>Present Value</u> | Interest Rate<br>(per year) | Payment per period | Total # of payments |
|--------------|----------------------|-----------------------------|--------------------|---------------------|
| 0            | <u>62092.62</u>      | 13                          | 877.57             | 235                 |

**Congratulations. Does your head hurt? ;-)**