3.2 Reducing balance loans

Focus area: Investment and loans · Syllabus outcome MST-12-S2-02

The idea

With a reducing balance loan, interest is charged on the amount you still owe. Each period, two things happen in this order:

1. interest is **added** to the balance
2. the repayment is **subtracted**

As the balance falls, so does the interest, and more of each repayment pays off the loan.

Watch out

- Convert the rate to the period first: 7.2% p.a. monthly is 7.2 ÷ 12 = **0.6%** a month.
- Add interest *before* subtracting the repayment.
- Round each interest amount to the nearest cent before you carry the balance down.

WORKED EXAMPLE 1

Mia borrows **$18 000** for a car. Interest is **7.2% p.a.**, calculated monthly, and she repays **$450** a month. Complete the table for the first four months.

$$\mathrm{I} = \mathrm{P} \times 0.006 \qquad \text{new balance} = \mathrm{P} + \mathrm{I} - \mathrm{R}$$

Month	Principal P ($)	Interest I ($)	P + I ($)	P + I − R ($)
1	18 000.00	108.00	18 108.00	17 658.00
2	17 658.00	105.95	17 763.95	17 313.95
3	17 313.95	103.88	17 417.83	16 967.83
4	16 967.83	101.81	17 069.64	16 619.64

What the table tells you. After four months Mia has paid 4 × $450 = $1 800, but she owes only $18 000 − $16 619.64 = **$1 380.36** less. The other **$419.64** was interest.

YOUR TURN

1. Jack takes out a **$9 500** personal loan at **9% p.a.**, interest calculated monthly. He repays **$300** a month. Complete the table for the first three months. **3 marks**

Month	Principal P ($)	Interest I ($)	P + I ($)	P + I − R ($)
1	9500.00	71.25	9571.25	9271.25
2	9271.25			
3				

2. Jack is offered the same loan with fortnightly repayments of $150. Explain why he would pay less interest overall. **2 marks**

Exam link. Multi-part questions often ask you to finish a table like this, then find the total interest. Worked solutions: page 41.

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