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Loans – Calculating the monthly payments.

Grade 12 Mathematical Literacy.

Explanation Video link: https://youtu.be/Zo1BoOjaE1E

A few Definitions

Bond:	Is a type of loan taken out to buy property.
Purchase Price:	The amount that the item costs – sometimes referred to as the cash price – normally given in the question.
Deposit:	A sum of money payable on the purchase of something, before a loan is calculated – normally based on a percentage. Deposit = Deposit% × Purchase price
Loan amount:	This is the money you borrow to buy an item or property. Loan amount = Purchase Price − Deposit
Monthly Repayment:	The portion of the loan that is paid back every month normally based on loan/bond repayment tables. Monthly repayments = Loan amount ÷ 1000 × factor
Real cost of the Loan:	Total cost of the loan. Real cost = Monthly repayments × Number of payments
Interest Paid:	Interest = Real cost − Loan amount
Total Cost:	Total cost = Real cost + Deposit

Example 1

A bond of R1,2 million is needed to buy a flat. There is a deposit of 8% required. The current interest rate is 8,5% and the loan period is 20 years. (Use the Loan Factor Table on the next page as necessary)

a   Determine the deposit amount.
b   Determine the loan amount.
c   Determine the monthly repayments.
d   Determine the real cost of the loan.
e   Determine the Interest charged.
f   Determine the total cost.

Example 2

A bond of R2 200 000 is needed to buy a house. There is a deposit of 15% required. The current interest rate is 8% and the loan period is 25 years. (Use the Loan Factor Table on the next page as necessary)

a   Determine the deposit amount.
b   Determine the loan amount.
c   Determine the monthly repayments.
d   Determine the real cost of the loan.
e   Determine the Interest charged.
f   Determine the total cost.

Loan Factor Table

Interest %	Years					
	5	10	15	20	25	30
7.00%	19.80	11.61	8.99	7.75	7.07	6.65
7.25%	19.92	11.74	9.13	7.90	7.23	6.82
7.50%	20.04	11.87	9.27	8.06	7.39	6.99
7.75%	20.16	12.00	9.41	8.21	7.55	7.16
8.00%	20.28	12.13	9.56	8.36	7.72	7.34
8.25%	20.40	12.27	9.70	8.52	7.88	7.51
8.50%	20.52	12.40	9.85	8.68	8.05	7.69
8.75%	20.64	12.53	9.99	8.84	8.22	7.87
9.00%	20.76	12.67	10.14	9.00	8.39	8.05
9.25%	20.88	12.80	10.29	9.16	8.56	8.23
9.50%	21.00	12.94	10.44	9.32	8.74	8.41
9.75%	21.12	13.08	10.59	9.49	8.91	8.59
10.00%	21.25	13.22	10.75	9.65	9.09	8.78

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Example 1

a	8% of 1,2 million = 8% × 1 200 000 = R96 000
b	Loan amount = Purchase Price – Deposit Loan amount = 1 200 000 − 96 000 Loan amount = R1 104 000
c	Monthly repayments = Loan amount ÷ 1000 × factor Monthly repayments = 1 104 000 ÷ 1000 × 8,68 Monthly repayments = R9 582,724
d	Real cost = Monthly repayments × Number of payments Real cost = 9 582,72 × (20 × 12) Real cost = R2 299 852,80
e	Interest = Real cost − Loan amount Interest = 2 299 852,80 − 1 104 000 Interest = R1 195 852,80
f	Total cost = Real cost + Deposit Total cost = 2 299 852,80 + 96 000 Total cost = R2 395 852,80

Example 2

a	15% of 2 200 000 = 15% × 2 200 000 = R330 000
b	Loan amount = Purchase Price – Deposit Loan amount = 2 200 000 − 330 000 Loan amount = R1 870 000
c	Monthly repayments = Loan amount ÷ 1000 × factor Monthly repayments = 1 870 000 ÷ 1000 × 7,72 Monthly repayments = R14 436,40
d	Real cost = Monthly repayments × Number of payments Real cost = 14 436,40 × 25 × 12 Real cost = R4 330 920,00
e	Interest = Real cost − Loan amount Interest = 4 330 920,00 − 1 870 000 Interest = R2 460 920,00
f	Total cost = Real cost + Deposit Total cost = 4 330 920,00 + 330 000 Total cost = R4 660 920,00