

Mathematics

Financial Mathematics - Downloadable Resource.

Lesson 2 of 4: Mortgages

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Try this

If I borrow £150,000 at a interest rate of 3% for a year, how much do I owe at the end of... (assume compounding occurs and you do not repay any amount during the time specified).

- 1) Year 1?
- 2) Year 2?
- 3) Year 3?
- 4) Year 10?
- 5) Year 30?



Connect

Mortgages – A debt that must be repaid, with interest, as a result of purchasing a house.

Compound interest – The interest that accrues upon the initial amount borrowed (or saved), and the interest as times goes on.

- Typical term of between 25 to 35 years.
- Remember the 'Try this' example? If you borrowed £150,000 for 30 years and did not repay any of it, with just 3% interest, you would need to pay back over £360,000!
- You would, gradually, pay off a mortgage over those years.



Connect

If I bought a house and had a mortgage of £120,000, how much would I pay (assuming compounding interest and no repayments), over the course of 25 years if the interest rate was...

- 1) 15%?
- 2) 10%?
- 3) 5%?
- 4) 2%?



Independent Task

Assume that you make no repayments and that the interest rate is compounding.

- 1) If I get a mortgage from a bank for £150,000 with a 2% interest rate, how much would I repay in total over the course of 35 years?
- 2) If I get a mortgage from a bank for £300,000 with a 2% interest rate, how much would I repay in total over the course of 35 years?
- 3) If I get a mortgage from a bank for £950,000 with a 5.4% interest rate, how much would I repay in total over the course of 25 years?
- 4) If I get a mortgage from a bank for £150,000 with a 4.15% interest rate, how much would I repay in total over the course of 25 years?



Explore

Most interest rates for mortgages are around 3% at the moment.

- 1) a) If you ran a bank, what interest rate would you charge? Why?
- b) If you charged a very high rate, would it be ethical?
Would you get many people enquiring about getting a mortgage?
- c) If you had a very low rate, would you make enough profit?
What if house prices decreased?

2) As a result of everything we have learnt so far, how complex is it to know how much you are paying for a mortgage, let alone run a bank?

