7 Ann has \$60 000 in an account paying 4% interest. She wants to withdraw a regular annuity each year for 20 years. How much can she withdraw each year?

8 Patrick has \$150 000 in an account earning 3% annual interest, paid annually. He wants to be able to withdraw \$15 000 at the end of each year.

a For how many years will he be able to do this?

b How much will he be able to withdraw at the end of the year after he has withdrawn his final \$15 000?

9 At the beginning of each year Nadine puts \$1000 into a savings account which pays 2.5% annual interest, compounded annually. How much interest will have been paid in total at the end of the tenth year when she does this? Give your answer to the nearest cent.

10 Anwar takes out a loan of €1500 at an annual interest rate of 10%, compounded monthly.

He has two different options:

Option A: Take a payment holiday for the first year, then pay back in 48 monthly instalments.

Option B: Pay back in 60 monthly instalments.

a Find the size of the monthly instalments in each case.

b How much more interest is paid using option A compared to option B?

c Which option would you recommend? Justify your answer.

11 Martina takes out a loan of \$10 000. Her monthly payments are \$400. In the first two years the interest rate is 5%. After that the interest rate is 8%. Both interest rates are compounded monthly.

a How many months will it take for Martina to pay off the loan?

b What will her final payment be?

12 Sofia wishes to take out a mortgage of €125 000. She has two options:

Mortgage A: 3% per annum interest rate compounded monthly. Term of mortgage 25 years.

Mortgage B: 3.5% per annum interest rate compounded annually. Term of mortgage 30 years.

Both plans require monthly repayments.

Fully justifying your answer, find which mortgage Sofia should take if she wants to:

a minimize her monthly repayments

b minimize the total amount repaid over the lifetime of the mortgage.

13 Jon needs a loan of \$15 000 to buy a new car.

The terms of the loan are as follows:

- Must be repaid in full in 5 years.
- 5% interest compounded monthly for the first two years.
- 6.5% interest compounded monthly for the remaining 3 years.

Jon can afford a maximum monthly repayment of \$300.

Fully justifying your answer, explain whether or not he can afford to take the loan.

7 \$4414.91

8 a 12 b \$1013.20

9 \$1203.38

10 a A: €42.03 B: €31.87

b €105.24

c It depends on the utility of the money used in the payment holiday

11 a 27 months b \$186.65

12 a B (€557.48 cf. €592.76)

b A (€177 828 cf. €200 693)

13 Yes: repayments of \$300 in first two years leave repayments of \$270.29 in remaining three years