# Managing savings and loans

# Homework A

Imagine that you want to save some money for a car. Let’s say that the car would cost £5,000 and that you already have savings of £1,500.

Using the website below, answer all the following questions:

1. Using interest rates of 1%, 3% and 5%, find out how long it will take you to save the amount needed for the car by saving £50 each month.
2. Using interest rates of 1%, 3% and 5%, find out how much you would need to save if you needed to buy the car in two years.

The website is: <https://www.moneyadviceservice.org.uk/en/tools/savings-calculator>

# Task 1: loans

Maya knows that she has to be careful in managing her finances. At some point in the future she knows that she may need a loan and also that she may have savings that she would want to place in an account.

**Working in pairs**, identify five things that should be considered when taking out a loan with a bank. Think what you would do if you wanted to take out a loan for a trip overseas to see a friend, for example.

|  |  |
| --- | --- |
|  | **Taking out a loan: what needs to be considered** |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |

# Task 2: bank accounts

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Julie was worried that her bank account had shown an overdraft position of £50. She was concerned that she would be charged interest on this amount and had asked you to help her understand what might happen.

The bank statement explained that interest was charged at 2% per month. She asked you to help her understand what she would pay if:

1. The overdraft lasted for one month
2. The overdraft lasted for two months
3. The overdraft lasted for one year

## Using interest compounding formulae

The response to part c is most efficiently worked out using the compounding formula:

$$Balance after n periods=P\left(\frac{100+r}{100}\right)^{n}$$

Where:

P= Principal = initial overdraft balance of £50;

r = interest rate = 2% per month; and

n = period of loan = 12 months.

# Homework B

# Payday loans, part 1

Joanna has heard about paydayloans where interest rates can become very high, as much as **40% per month.** Joanna is not considering taking out a payday loan but was wondering how mathematics could help her understand the implications of taking out one of the following loans:

## Loan 1:

borrow £200 at a monthly interest cost of 40%. Loan 1 is taken out on 1 July and will be repaid over a two-month period. The first repayment instalment due on 31 July will repay half of the original loan: £100, plus outstanding interest at that time. The second instalment will settle the outstanding loan and interest balance on 31 August.

1. What is the amount of the second instalment payment?
2. What is the total interest cost in £ of the loan?

# Homework B

# Payday loans, part 2

Joanna is considering a different loan.

## Loan 2:

borrow £200 at a dailyinterest cost of 1.5%. Loan 2 is taken out on 1 July and will be repaid over a two-week period. The first repayment instalment due on 8 July will repay half of the original loan: £100, plus outstanding interest at that time. The second instalment will settle the outstanding loan and interest balance on 15 July.

1. What is the amount of the final instalment payment?
2. What is the total interest cost in £ of the loan?

# Task 3: savings accounts

Reena is in a different position to Joanna and has just been given a gift of £2,000 from her gran to help her with future university costs. She plans to go to university in three years. She has investigated two savings accounts that she is considering depositing her £2,000 into.

## Savings account 1

Invest up to £3,000. Must be left in the account for three years. Annual interest paid is 2% and tax of 20% is deducted from the interest earned.

## Savings account 2

Exclusive to savers under 18. Invest any amount. Withdrawals at any time, tax free. Interest rate paid is 0.85% every six months.

**Work in pairs.** Reena wants to achieve a balance in her account of £2,100 before she withdraws her savings in three years’ time. Using the savings account details provided, answer the following questions:

1. What balance will be in Savings account 1 after three years?
2. What initial savings must Reena deposit in Savings account 1 to achieve a balance of £2,100 in three years?
3. If Reena can only afford to deposit £2,000, what must the interest rate rise to in Savings account 1 to achieve a balance of £2,100 after three years?
4. If Reena can only afford to deposit £2,000 and wants to use Savings account 2, how long must she invest for to get a balance of £2,100?