

3. a) Credit card:

The present value is $1265(0.97)$, or \$1227.05.
The regular payment amount is unknown.
The payment frequency is 12 times a year.
The number of payments is 12.
The payments are made at the end of the payment periods.
The annual interest rate is 14.5%.
The compounding frequency is 365 times a year.
The future value is \$0.
Using the financial application on a graphing calculator, the regular payment amount is \$110.511... or \$110.52.

Line of credit:

The present value is \$1265.
The regular payment amount is unknown.
The payment frequency is 12 times a year.
The number of payments is 12.
The payments are made at the end of the payment periods.
The annual interest rate is 6.8%.
The compounding frequency is 365 times a year.
The future value is \$0.
Using the financial application on a graphing calculator, the regular payment amount is \$109.350... or \$109.36.

The payments will be \$110.52 for the credit card, and \$109.36 for the line of credit.

b) e.g., Christian should use the line of credit, because both options have the same number of payments, the line of credit is cheaper.

4. Number of months = 2
Number of weeks = 8.666...
Number of days = 60.833...

Rent daily:
Total cost = $60(60.833...)$
Total cost = \$3650

Rent weekly:
Total cost = $375(8.666...)$
Total cost = \$3250

Buy used:
Assume that Erin will keep the boat after the two months at her parents' cottage.

The present value is \$2200.
The regular payment amount is unknown.
The payment frequency is 12 times a year.
The number of payments is 6.
The payments are made at the end of the payment periods.
The annual interest rate is 5.2%.
The compounding frequency is 12 times a year.
The future value is \$0.
Using the financial application on a graphing calculator, the regular payment amount is \$372.247... or \$372.25.
Erin will pay $\$372.247... (6) = \$2233.486...$ or \$2233.49 for the sailboat.

Value after 6 months = $2200(1 - 0.25)^{0.5}$
Value after 6 months = \$1905.255...

Total cost = $2233.486... - 1905.255...$
Total cost = \$328.231...
If Erin sells her boat after she pays off the loan, her total cost is \$328.231... or \$328.23.

Erin should buy a used Laser sailboat, because the cost is lower, she can use it for many years, and she will be able to sell it to make some money back.

Chapter Review, page 136

1. a) The present value is \$1985.
The regular payment amount is \$403.75.
The payment frequency is 12 times a year.
The number of payments is 5.
The payments are made at the end of the payment periods.
The annual interest rate is unknown.
The compounding frequency is 365 times a year.
The future value is \$0.
Using the financial application on a graphing calculator, the interest rate being charged is 6.757... or 6.76%

b) $I = A - P$
 $I = 403.75(5) - 1985$
 $I = 2018.75 - 1985$
 $I = \$33.75$
Aaron will pay \$33.75 in interest.

2. a) The present value is \$1025.00.
The regular payment amount is \$50.
The payment frequency is 12 times a year.
The number of payments is unknown.
The payments are made at the end of the payment periods.
The annual interest rate is 18.9%.
The compounding frequency is 365 times a year.
The future value is \$512.50.
Using the financial application on a graphing calculator, the number of payments is 13.718... or 14.

Amber will have paid off half the cost of her gown after 14 months.
b) The present value is \$1025.
The regular payment amount is \$50.
The payment frequency is 12 times a year.
The number of payments is unknown.
The payments are made at the end of the payment periods.
The annual interest rate is 18.9%.
The compounding frequency is 365 times a year.
The future value is \$0.
Using the financial application on a graphing calculator, the number of payments is 24.994... or 25.

Amber will pay off the total amount after 25 months.

c) $I = A - P$
 $I = 50(24.994...) - 1025$
 $I = 1249.706... - 1025$
 $I = \$224.706...$
Amber will pay \$224.71 in interest.

3. a) Credit card A:

The present value is \$4875.
The regular payment amount is \$350.
The payment frequency is 12 times a year.
The number of payments is unknown.
The payments are made at the end of the payment periods.
The annual interest rate is 9.4%.
The compounding frequency is 365 times a year.
The future value is \$0.
Using the financial application on a graphing calculator, the number of payments required is 14.809... or 15.
The total cost of use is
 $\$350(14.809\dots) = \$5183.478\dots$ or \$5183.48

Credit card B:

The present value is \$4875.
The regular payment amount is \$350.
The payment frequency is 12 times a year.
The number of payments is unknown.
The payments are made at the end of the payment periods.
The annual interest rate is 14.5%.
The compounding frequency is 365 times a year.
The future value is \$0.
Using the financial application on a graphing calculator, the number of payments required is 15.352... or 16.
The total cost of use is
 $\$350(15.352\dots) = \$5373.456\dots$ or \$5373.46.

Difference = $5373.456\dots - 5183.478\dots$
Difference = \$189.978...

Greg will save \$189.98 if he uses card A.

b) i) Credit card B with rebate of \$100:

The present value is $4875 - 100$, or \$4775.
The regular payment amount is \$350.
The payment frequency is 12 times a year.
The number of payments is unknown.
The payments are made at the end of the payment periods.
The annual interest rate is 14.5%.
The compounding frequency is 365 times a year.
The future value is \$0.

Using the financial application on a graphing calculator, the number of payments required is 15.007... or 16.

The total cost of use is
 $\$350(15.007\dots) = \$5252.599\dots$ or \$5252.60.

No. e.g. He would still save \$68.93 using card A.

ii) Credit card B with rebate of \$200:

The present value is $4875 - 200$, or \$4675.
The regular payment amount is \$350.
The payment frequency is 12 times a year.
The number of payments is unknown.
The payments are made at the end of the payment periods.
The annual interest rate is 14.5%.
The compounding frequency is 365 times a year.
The future value is \$0.

Using the financial application on a graphing calculator, the number of payments required is 14.663... or 15.

The total cost of use is
 $\$350(14.663\dots) = \$5132.245\dots$ or \$5132.25.

Card B is now the better choice.

Yes. e.g. He would save \$50.97 using card B.

4. Bank loan:

The present value is \$1736.
The regular payment amount is \$250.
The payment frequency is 12 times a year.
The number of payments is unknown.
The payments are made at the end of the payment periods.
The annual interest rate is 5.6%.
The compounding frequency is 12 times a year.
The future value is \$0.
Using the financial application on a graphing calculator, the number of payments required is 7.075... or 8. The interest paid is \$32.87.

Credit card:

For the first 3 months, Madison is making payments on her credit card, with no interest being charged.

The present value is $1736 - 3(250)$, or \$986.

The regular payment amount is \$250.

The payment frequency is 12 times a year.

The number of payments is unknown.

The payments are made at the end of the payment periods.

The annual interest rate is 16.2%.

The compounding frequency is 365 times a year.

The future value is \$0.

Using the financial application on a graphing calculator, the number of payments with interest required is 4.081... or 5.

The number of monthly payments is $3 + 5$, or 8.

The interest paid is \$34.28.

Bank loan. e.g., She will pay \$1.41 less overall.

5. Costs without consolidating:

Card Red:

The present value is \$4196.17.

The regular payment amount is unknown.

The payment frequency is 12 times a year.

The number of payments is 24.

The payments are made at the end of the payment periods.

The annual interest rate is 18.9%.

The compounding frequency is 365 times a year.

The future value is \$0.

Using the financial application on a graphing calculator, the regular payment amount is \$211.614... or \$211.62.

The total cost of use is

$\$211.614\dots(24) = \$5078.740\dots$ or \$5078.75.

Card Yellow:

The present value is \$2756.46.

The regular payment amount is unknown.

The payment frequency is 12 times a year.

The number of payments is 24.

The payments are made at the end of the payment periods.

The annual interest rate is 19.9%.

The compounding frequency is 365 times a year.

The future value is \$0.

Using the financial application on a graphing calculator, the regular payment amount is \$140.373... or \$140.38.
The total cost of use is
 $\$140.373...(24) = \$3368.966...$ or \$3368.97.

Card Blue:

The present value is \$6568.74.
The regular payment amount is unknown.
The payment frequency is 12 times a year.
The number of payments is 24.
The payments are made at the end of the payment periods.
The annual interest rate is 16.9%.
The compounding frequency is 365 times a year.
The future value is \$0.

Using the financial application on a graphing calculator, the regular payment amount is \$324.822... or \$324.83.
The total cost of use is
 $\$324.822...(24) = \$7795.742...$ or \$7795.75.

Total cost = $5078.740... + 3368.966... + 7795.742...$
Total cost = \$16 243.449...
The present value is $4196.17 + 2756.46 + 6568.74$, or
\$13 521.37.

The regular payment amount is unknown.
The payment frequency is 12 times a year.
The number of payments is 24.
The payments are made at the end of the payment periods.
The annual interest rate is 7.3%.
The compounding frequency is 12 times a year.
The future value is \$0.

Using the financial application on a graphing calculator, the regular payment amount is \$607.227... or \$607.23.
The total cost of use is
 $\$607.227...(24) = \$14 573.453...$ or \$14 573.46.

Savings = $16 243.449... - 14 573.453...$
Savings = \$1669.996...
Jordan and Taylor will save \$1670.00 by consolidating their debt.

6. Rent (for 2 years):
Total cost = $75(58)(2)$
Total cost = \$8700

Buy:

Assuming regular monthly payments.
The present value is \$6400.
The regular payment amount is unknown.
The payment frequency is 12 times a year.
The number of payments is 24.
The payments are made at the end of the payment periods.
The annual interest rate is 4.9%.
The compounding frequency is 12 times a year.
The future value is \$0.

Using the financial application on a graphing calculator, the regular payment amount is \$280.490... or \$280.50.
The total cost of use is \$6731.77.

Value after 2 years = $6400(1 - 0.4)^2$
Value after 2 years = \$2304

Total cost = $6731.77 - 2304$
Total cost = \$4427.77

Lease:

Total cost = $2500 + 200(24)$
Total cost = \$7300

Casey should purchase a snowplow; it is less expensive than leasing or renting over 2 years.

7. Buy new:

Cost = $130(9)$
Cost = \$1170

Return = $130(9)(0.3)$
Return = \$351

Total cost = $1170 - 351$
Total cost = \$819

Buy used:

Cost = $130(9)(0.75)$
Cost = \$877.50

Return = $130(9)(0.75)(0.15)$
Return = \$131.625

Total cost = $877.50 - 131.625$
Total cost = \$745.88

Rent:

Total cost = $130(9)(0.4)$
Total cost = \$468

Kayla should rent because it is cheaper.

Chapter Task, page 137

A. Cost for buying used:

The present value is \$2300.
The regular payment amount is \$150.
The payment frequency is 12 times a year.
The number of payments is unknown.
The payments are made at the end of the payment periods.
The annual interest rate is 8.3%.
The compounding frequency is 12 times a year.
The future value is \$0.
Using the financial application on a graphing calculator, the number of payments is 16.264... or 17. The total interest paid is \$139.735... or \$139.74.
The total cost of use is
 $(16.264...)(150) = \$2439.735...$ or \$2439.74.

Cost for leasing:

Cost per year = $800 + (6)(300)$
Cost per year = \$2600

Total cost = $(4)(2600)$
Total cost = \$10 400