I used the financial application on my calculator: Betty would receive 120 monthly payments of $2374.04 if the interest rate increased to 7.5%.

12. Regular payment investment: The regular payment amount is $150.
The payment frequency is annual, or once per year.
The number of payments is 50.
The payments are made at the end of each payment period.
The annual interest rate is 8.8%.
The compounding frequency is annual, or once per year.
The future value is unknown.
The investment is worth $113 920.88.
Monthly Income: *The regular payment amount is unknown.*
The present value is $113 920.88.
The payment frequency is monthly, or 12 times per year.
The number of payments is 120.
The payments are made at the end of each payment period.
The annual interest rate is 4.8%.
The compounding frequency is monthly, or 12 times per year.
The future value is 0.
I used the financial application on my calculator: Stu's grandmother will receive 120 monthly payments of $1197.20. She will receive $143 664.00 altogether in payments.

Chapter Self-Test, page 68

1. a) $\frac{72}{6} = 12$
The investment will double in about 12 years.
The principal is $40 000.
The annual interest rate is 6%.
The compounding period is annual, or once per year.
The term (in years) is unknown.
The future value is $80 000.
I used the financial application on my calculator: Hal's investment will double in 11.9 years.
b) $A = P + Prt$
A is $80 000; P is $40 000; r *is* 6% or 0.06
$80\,000 = 40\,000 + (40\,000)(0.06)(t)$
$40\,000 = 2400t$
$t = 16.666\ldots$
With simple interest, Hal's investment will double in 16.67 years.

2. Option A: The principal is $12 000.
The annual interest rate is 6%.
The compounding period is semi-annual, or 2 times per year.
The term (in years) is unknown.
The future value is $50 000.
I used the financial application on my calculator: The option A investment will grow to $50 000 in 48.28 periods or 24.14 years.
Option B: The principal is $12 000.
The annual interest rate is 5.1%.
The compounding period is quarterly, or 4 times per year.
The term (in years) is unknown.
The future value is $50 000.
I used the financial application on my calculator: The option B investment will grow to $50 000 in 112.64 periods or 28.16 years.
Val should choose option A because she will reach her financial goal about 4 years sooner.

3. a) Principal: $5(12)(20) = \$1200$
Warren invested $1200.
The regular payment amount is $5.
The payment frequency is monthly, or 12 times per year.
The number of payments is 240.
The payments are made at the end of each payment period.
The annual interest rate is 5.8%.
The compounding frequency is monthly, or 12 times per year.
The future value is unknown.
Warren's investment is currently worth $2256.24.
Interest: $2256.24 – 1200 = 1056.24$
Rate of return = $\frac{1056.24}{1200.00}$
Rate of return = 0.880…
Warren's rate of return on his investment is 88%.
b) Warren invested a total of $1200. If he made monthly deposits for five years, each deposit would be:
$\frac{1200}{(5)(12)} = 20$
The regular payment amount is $20.
The payment frequency is monthly, or 12 times per year.
The number of payments is 60.
The payments are made at the end of each payment period.
The annual interest rate is 5.8%.
The compounding frequency is monthly, or 12 times per year.
The future value is unknown.
Warren's investment would be currently worth $1388.25.
c) *The regular payment amount is unknown.*
The payment frequency is monthly, or 12 times per year.
The number of payments is 60.
The payments are made at the end of each payment period.
The annual interest rate is 5.8%.
The compounding frequency is monthly, or 12 times per year.
The future value is $2256.24.
I used the financial application on my calculator: Warren would have needed to make monthly payments of $32.50.

4. a) Alex: GIC: The principal is $5000.
The annual interest rate is 2.6%.
The compounding period is annual, or once per year.

The term (in years) is 9 years.
The future value is unknown.
The GIC is worth $6299.36.
CSB: The principal is $2000.
The annual interest rate is 3.1%.
The compounding period is semi-annual, or 2 times per year.
The term (in years) is 4 years.
The future value is unknown.
The CSB is worth $2261.88.
Savings account: The regular payment amount is $15.
The payment frequency is weekly, or 52 times per year.
The number of payments is 260.
The payments are made at the end of each payment period.
The annual interest rate is 1.4%.
The compounding frequency is weekly, or 52 times per year.
The future value is unknown.
The account is worth $4039.18.
Total: 6299.36 + 2261.88 + 4039.18 = 12 600.42
The total value of Alex's portfolio is $12 600.42.
Jamie: Bond: $A = P(1 + rt)$
P is $3000; r is 2.7% or 0.027; t is 9
$A = 3000(1 + (0.027)(9))$
$A = 3729$
The bond is worth $3729.
CSB: The principal is $700.
The annual interest rate is 2.8%.
The compounding period is semi-annual, or 2 times per year.
The term (in years) is 3 years.
The future value is unknown.
The CSB is worth $760.90.
Savings account: The regular payment amount is $100.
The payment frequency is monthly, or 12 times per year.
The number of payments is 72.
The payments are made at the end of each payment period.
The annual interest rate is 1.7%.
The compounding frequency is monthly, or 12 times per year.
The future value is unknown.
The account is worth $7574.37.
Total: 3729 + 760.90 + 7574.37 = 12 064.27
The total value of Jamie's portfolio is $12 064.27.
b) Alex:
Principal: 5000 + 2000 + 15(52)(5) = 10 900
Interest: 12 600.42 – 10 900 = 1700.42

$$\text{Rate of return} = \frac{1700.42}{10\ 900}$$

Rate of return = 0.156…
Alex's rate of return on his investment is 15.6%.
Jamie:
Principal: 3000 + 700 + 100(12)(6) = 10 900
Interest: 12 064.27 – 10 900 = 1164.27

$$\text{Rate of return} = \frac{1164.27}{10\ 900}$$

Rate of return = 0.1068…
Jamie's rate of return on her investment is 10.7%.
Alex has a greater rate of return on his portfolio than Jamie does.

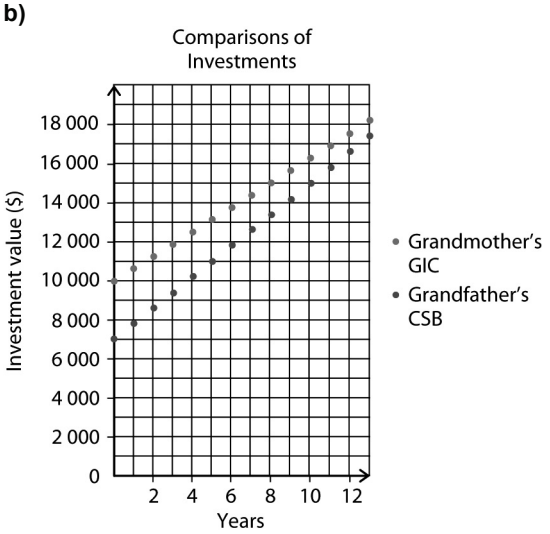
Chapter Review, page 71

1. a) $A = P + Prt$
A is $2850; P is $1500; t is 6
$2850 = 1500 + (1500)(r)(6)$
$1350 = 9000r$
$r = 0.15$
The CSB earned an annual interest rate of 15%.
b) Trish would get $2850. The interest is paid annually so the amount will be the same whether she redeems the CSB when she is 18 or 18 and a half.

2. a)

	GIC	**CSB**
Principal ($)	10 000	7000
Interest Rate per Annum	0.063	0.114
Value at End of Year		
1	10 630.00	7798.00
3	11 890.00	9394.00
5	13 150.00	10 990.00
7	14 410.00	12 586.00
9	15 670.00	14 182.00
11	16 930.00	15 778.00
13	18 190.00	17 374.00

After 13 years, the GIC is worth $18 190 and the CSB is worth $17 374.
b)



Time (years)	Value of Investment ($)	
	GIC	**CSB**
1	10 630.00	7798.00
3	11 890.00	9394.00
5	13 150.00	10 990.00
7	14 410.00	12 586.00
9	15 670.00	14 182.00
11	16 930.00	15 778.00
13	18 190.00	17 374.00