Chapter 7 Answers

Get Set, pages 123–124

1. a) 156 weeks   **b)** 416 weeks   **c)** 780 weeks   **d)** 1196 weeks

2. a) $5666.67   **b)** $130.77   **c)** $465.75   **d)** $17 000

3. a) 48 payments   **b)** 24 payments   **c)** 104 payments

d) 208 payments   **e)** 8 payments   **f)** 4 payments

4. a)

x	$y = 4^x$	First Differences	Common Ratio
0	1		
		3	4
1	4		
		12	4
2	16		
		48	4
3	64		
		192	4
4	256		
		768	4
5	1024		

b)

x	$y = 0.4^x$	First Differences	Common Ratio
0	1		
		−0.6	0.4
1	0.4		
		−0.24	0.4
2	0.16		
		−0.096	0.4
3	0.064		
		−0.0384	0.4
4	0.0256		
		−0.01536	0.4
5	0.01024		

5. a) less than

b) greater than

c) less than

d) greater than

6. a) 642.2696   **b)** 5 185 181.1850   **c)** 24.5289   **d)** 5518.1959

7. a) $413.22   **b)** $3593.59   **c)** $18 119.90

8.

x	$y = 250 + 250(0.5)^x$
0	500
1	375
2	312.5
3	281.25
4	265.625
5	257.8125

9.
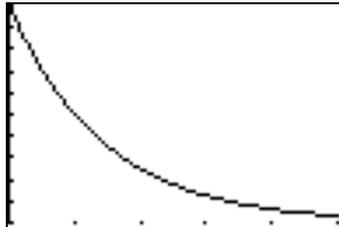
Xmin = 0, Xmax = 5, Xscl = 1, Ymin = 250, Ymax = 500, Yscl = 25

7.1 Annuities, pages 125–127
Warm-Up
1. a) 3.58   **b)** 19.69   **c)** 5.55
2. a) $m + 6n$ **b)** $8k - 4j$ **c)** $5e - 13f - 3$

3. a) (4, 0)   **b)** $-\dfrac{3}{2}$ **c)** $\dfrac{2}{3}$

4. 111.78 m^3

5. a) $\dfrac{1}{3}$ **b)** $\dfrac{5}{6}$

6. 8, 13
7. Interest that is earned on the principal and on the sum total of all interests paid in the previous interest periods.

8. a) $x = 6$ **b)** $x = \dfrac{16}{7}$

Practise
1. $39818.08
2. a) $3639.09   **b)** $7641.33
3. $414.68
4. $47.98
5. a) $1773.47   **b)** $644 082.61
6. a) $181.53   **b)** $8713.44   **c)** $713.44
7. a) $9715.23   **b)** $29 919.30
c) Interest is earned on the deposits and the previous months' interest, the amount after three years will be more than triple the amount after one year.
d) $1119.30
8. $25 804.02
9. a) B
b) A: N should be 36.
C: PMT should be set to END.
D: P/Y should be 12.
10. D

7.2 The Conditions of an Annuity, pages 128–130
Warm-Up
1. –5.36, –0.08, –0.002, 0.07, 14.96, 14.98,
2. a) $8ab - 7b + 4a$ **b)** $-8b + 12$ **c)** $-x + 2y$
3. two roots
4. 153.18 m^2

5. a) $\dfrac{1}{13}$ **b)** $\dfrac{3}{13}$

6. $6(s + x) = 36$, where s is the side length of the original hexagon
7. C
8. $45 437.10

Practise
1. a) $479.71   **b)** $250.01   **c)** $204.15
d) $161.90   **e)** $143.16
2. a) $256.52   **b)** $502.40   **c)** $624.50
d) $814.10   **e)** $942.20
3. a) 153.9 months   **b)** 121.2 months   **c)** 100.2 months
d) 79.8 months   **e)** 59.8 months
4. a) $16 170   **b)** $12 420   **c)** $10 080
d) $7905   **e)** $5880
5. a) $391.32   **b)** $396.02   **c)** $405.53
d) $417.60   **e)** $422.48
6. a) $3479.20   **b)** $3761.20   **c)** $4331.80
d) $5056.00   **e)** $5348.80
7. a) $370.28   **b)** $1773.44   **c)** $42.64   **d)** $1738.24
e) The payments are made bi-weekly but the interest is compounded monthly. This means the principal is paid faster and less interest is charged on the loan.
8. a) 32 months   **b)** $86.83   **c)** $3125.88
d) 32 months; $85.05; save $64.08
9. a) $6912.71, $16 812.01, $30 988.26
b) $17 280   **c)** $13 708.26
10. a) $1973.69, $16 651.63, $37 671.57; $24 960; $12 711.57
b) $6683.32   **c)** $7680.00   **d)** $996.68
11. a) $504.54   **b)** $48 435.84   **c)** $13 935.84
d) $3722.40   **e)** $436.10
f) Advantage: The monthly payments are more affordable than the eight year and six year loans. Disadvantage: He will pay much more interest.


7.3 Mortgages and Amortization, pages 131–134
Warm-Up
1. a) 26   **b)** 37
2. a) $-3x^2 - 8x + 3$ **b)** $12x^2 + 6x - 11$ **c)** $-7y$
3. A shift up 2 units.
4. 17.1 m
5. mean: 35.7; median: 32; mode: 32
6. $52 = 4E - 4$, where E represents Elsa's age
7. A
8. a) $228.16; $713.76   **b)** $231.58; $836.88   **c)** $235.02; $960.72

Practise
1. a) i) $1759.28   **ii)** $105 556.80   **iii)** $40 188.64   **iv)** $65 367.39
b) i) $2087.99   **ii)** $125 279.40   **iii)** $30 737.13   **iv)** $94 542.40
c) i) $1058.22   **ii)** $63 493.20   **iii)** $15 692.56   **iv)** $47 800.92
c) i) $2426.11   **ii)** $145 566.60   **iii)** $30 679.28   **iv)** $114 887.57
2. a) 296 000   **b)** $367 000   **c)** $226 000   **d)** $572 000
3. a) $1921.29   **b)** $23 055.48   **c)** $5360.62
d) $17 694.86   **e)** $354 639.38
4. a) $467.24   **b)** $5606.88   **c)** 206.90   **d)** $5400.00

e)

Lin-Mei's Loan
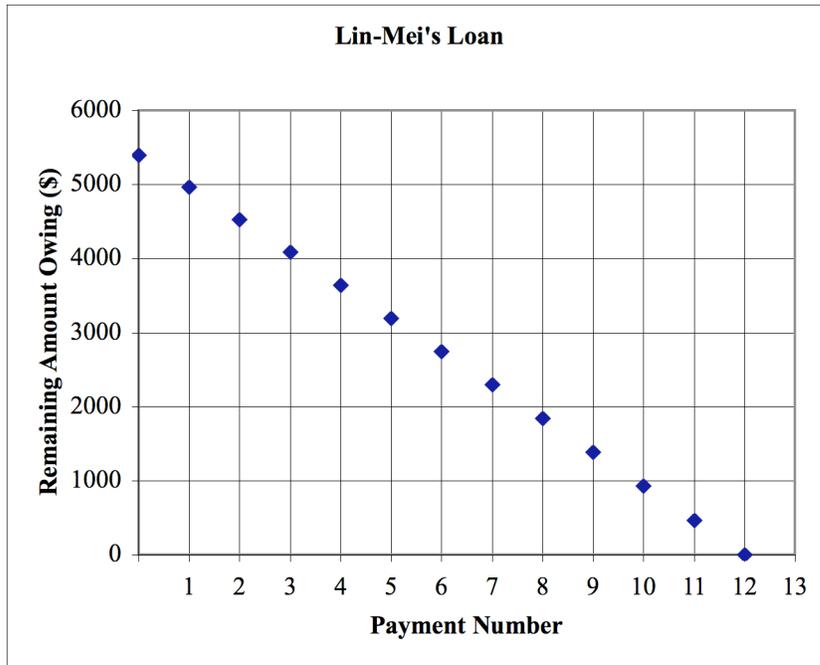
5. a) $14 250   **b)** $270 750   **c)** $1249.44   **d)** $195 783.60
6. a) $405 000   **b)** $2426.29   **c)** $375 884.52   **d)** $2398.27
7. a) $1012.12   **b)** $242 908.80   **c)** $82 358.80
d) $S = 169\ 00(1.035)^n$, where S is the selling price of the condominium and n is the number of years after the original purchase
e) $336 000   **f)** $167 000
8. a) principal: $5582.24; interest: $13 304.31   **b)** principal: $12 231.44; interest: $6655.12
c) year 12; principal: $9666.67; interest: $9219.88

7.4 The Conditions of a Mortgage, pages 135–138
Warm-Up

1. a) 15   **b)** $\dfrac{1}{6}$

2. a) $x = \dfrac{2}{3}$ **b)** $x = -\dfrac{3}{2}$ **c)** $x = -11$

3. (4, 11)
4. 40 L
5. mean: 36.1; median: 27; modes: 5, 41
6. 44 m^2
7. C
8. a) $1698.49   **b)** $611 456.40

Practise
1. a) $2350.88   **b)** $846 316.80   **c)** $2590.37   **d)** $239.49
e) $777 111.00   **f)** $69 205.80
2. a) $199 000   **b)** $1019.99   **c)** $1176.85   **d)** $23 553.00
3. a) $300   **b)** $279.92   **c)** $600

d) $553.85   **e)** $600

4. a) $15 600; $14 555.84; $15 600; $14 400.10; $14 400

b) Accelerated weekly payments. The amount paid in one year is the same as with accelerated bi-weekly payments but accelerated weekly payments are more frequent. This means less interest will be calculated, more of each payment will go to the principal sooner, and the mortgage will be paid off faster.

5. a) $1586.12   **b) i)** 237 months   **ii)** 216 months

c)
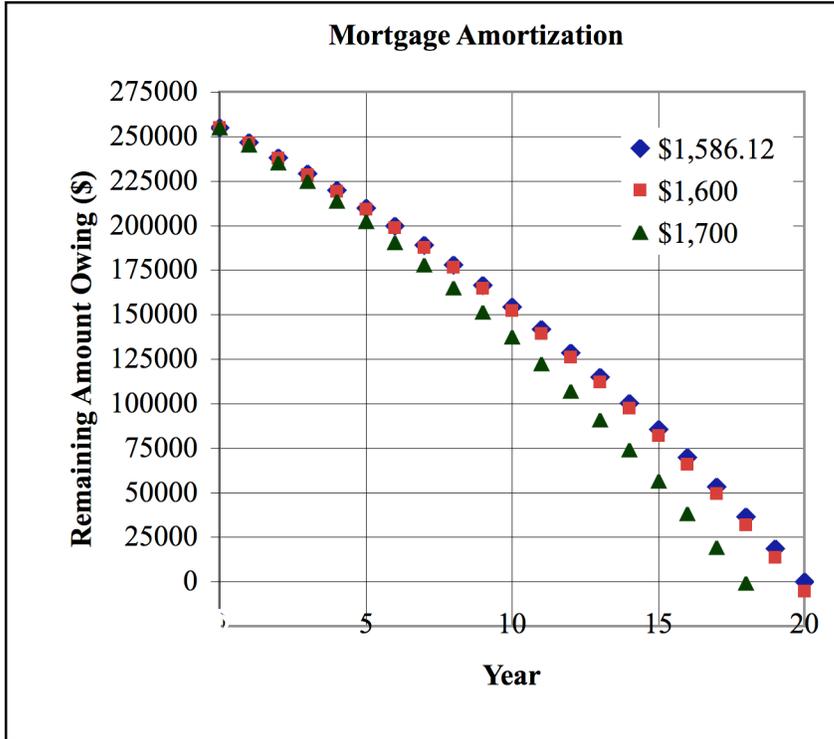
6. a) $434.13   **b)** $20 331.10

7. a) i) $1513.04   **ii)** $1891.30   **iii)** $1513.04   **b)** $2647.82

8. a) $1069.52   **b)** approximately 15.2 years   **c)** $58 506

9. a) $2058.19   **b) i)** $841.14   **ii)** $2444.11   **iii)** $26 312.04

c) The graphs are almost identical.   **d)** The graphs are almost identical.

e) The graph for accelerated weekly payments decreases more rapidly than the graph for monthly payments and reaches zero by year 18, 2 years before the graph for monthly payments.

f) $262 845.47

10. a) i) $2281.33.34   **ii)** $1139.32   **iii)** $1051.58

iv) $526.47   **v)** $1140.67   **vi)** $570.24

b) i) $834 402.00   **ii)** $684 402.00   **iii)** $678 929.26

iv) $678 935.71   **v)** $625 771.56   **vi)** $625 667.33

c) $208 734.67

d) N = 999.2042997

   I% = 5.75

   PV = 365000

   PMT = –600

   FV = 0

   **P/Y**=52

   C/Y = 2

PMT:END

11. a) i) $174 591.82   **ii)** $217 706.31   **iii)** $254 948.28   **iv)** $287 117.61
b) A longer amortization period means Laura can get a larger mortgage with the same monthly payment. She can afford to buy a house instead of a condominium or to buy a condominium in a more expensive neighbourhood.

Chapter 7 Review, pages 139–142
1. a)


```
   Today   1     2     3     4     5
          year years years years years

       $350  $350  $350 $350 $350
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$$\$350.00$$
$$\$350(1.06)^1 = \$371.00$$
$$\$350(1.06)^2 = \$393.26$$
$$\$350(1.06)^3 = \$416.86$$
$$\$350(1.06)^4 = \underline{\$441.87}$$
Total = $1972.98
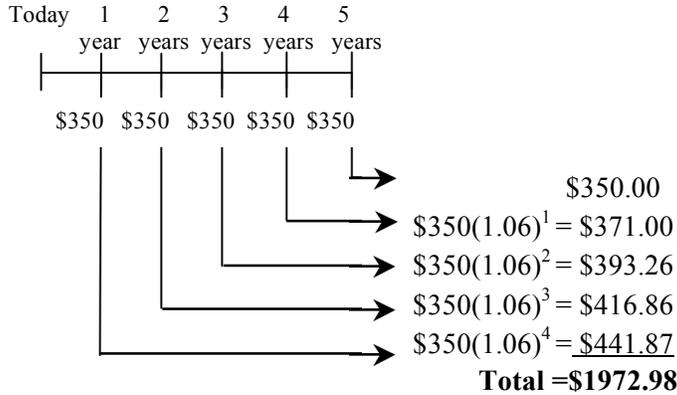
b) C

2. a) $29 875.22	**b)** $30 408.33	**c)** $179 397.64	**d)** $5922.95
3. a) $260.15	**b)** $6243.60	**c)** $243.60	
4. a) i) 88 months	**ii)** 71 months	**iii)** 51 months	**iv)** 40 months
b) i) $700	**ii)** $5600	**iii)** $3800	**iv)** $3000
5. a) i) 716 weeks	**ii)** 279 weeks	**iii)** 159 weeks	**iv)** 111 weeks
b) i) $13 120	**ii)** $4850	**iii)** $2750	**iv)** $1850
6. a) $807.64	**b)** $58 150.08	**c)** $6150.0	
d) $2071.68	**e)** $627.81	**f)** $2119.68	
7. a) i) $2342.25	**ii)** $562 140	**iii)** $320 000	**iv)** $242 140
b) i) $1560.50	**ii)** $468 150	**iii)** $275 000	**iv)** $193 150
c) i) $2087.39	**ii)** $751 460.40	**iii)** $487 000	**iv)** $264 460.40
8. a) $1171.28	**b)** $291 052.20	**c)** $92 152.20	**d)** $325 920.81
9. a) $368.47	**b)** $4421.64	**c)** $221.67	**d)** $4200
10. a) $12 750	**b)** $242 250	**c)** $1177.74	**d)** $288 523.74
11. a) $375 000	**b)** $1872.26	**c)** $365 411.39	**d)** $1920.40
12. a) $1351.31	**b)** $7846.04	**c)** $22 065.40	**d)** $198 588.56
13. a) i) $475.00	**ii)** $438.46	**iii)** $950.00	
iv) $876.92	**v)** $950.00		
b) i) $24 700.00	**ii)** $22799.92	**iii)** $24 700.00	
iv) $22 799.92	**v)** $22 800.00		
14. a) $523.80	**b)** $16 730.34		
15. a) $1593.80 each month		**b)** $1471.20	