

CHAPTER 3: THE CASH BUDGET

Text Problem Solutions

1. Littleton Electronics' ending cash balance as of January 31, 2010 (the end of its fiscal year 2009) was \$20,000. Its expected cash collections and payments for the next six months are given in the following table.

Month	Collections	Payments
February	\$16,000	\$18,500
March	17,500	19,700
April	22,500	24,200
May	26,000	25,900
June	32,000	26,700
July	37,500	28,400

- a. Calculate the firm's expected ending cash balance for each month

Worksheet:

	A	B	C	D	E	F	G	H
1	A)							
2	Littleton Electronics							
3	Forecasted Ending Cash Balance							
4	February 2010 to July 2010							
5		January	February	March	April	May	June	July
6	Beginning Cash		20,000	17,500	15,300	13,600	13,700	19,000
7	Add: Collections		16,000	17,500	22,500	26,000	32,000	37,500
8	Less: Payments		18,500	19,700	24,200	25,900	26,700	28,400
9	Unadjusted Cash Balance		17,500	15,300	13,600	13,700	19,000	28,100
10	Ending Cash Balance	20,000	17,500	15,300	13,600	13,700	19,000	28,100

Formulas:

	A	B	C	D	E	F	G	H
1	A)							
2	Littleton Electronics							
3	Forecasted Ending Cash Balance							
4	February 2010 to July 2010							
5		January	February	March	April	May	June	July
6	Beginning Cash	=B10	=C10	=D10	=E10	=F10	=G10	=H10
7	Add: Collections	16000	17500	22500	26000	32000	37500	
8	Less: Payments	18500	19700	24200	25900	26700	28400	
9	Unadjusted Cash Balance	=C6+C7-C8	=D6+D7-D8	=E6+E7-E8	=F6+F7-F8	=G6+G7-G8	=H6+H7-H8	
10	Ending Cash Balance	20000	=C9	=D9	=E9	=F9	=G9	=H9

b. Assuming that the firm must maintain an ending cash balance of at least \$20,000, how much must they borrow during each month?

Worksheet:

12	B)							
13	Littleton Electronics							
14	Forecasted Ending Cash Balance							
15	February 2010 to July 2010							
16		January	February	March	April	May	June	July
17	Beginning Cash		20,000	20,000	20,000	20,000	20,100	25,400
18	Add: Collections		16,000	17,500	22,500	26,000	32,000	37,500
19	Less: Payments		18,500	19,700	24,200	25,900	26,700	28,400
20	Unadjusted Cash Balance		17,500	17,800	18,300	20,100	25,400	34,500
21	Add: Borrowing		2,500	2,200	1,700	-	-	-
22	Ending Cash Balance	20,000	20,000	20,000	20,000	20,100	25,400	34,500
23								
24	Minimum Cash	20,000						

Formulas:

12	B)						
13							
14							Fore
15							E
16		January	February	March			
17	Beginning Cash		=B22		=C22		
18	Add: Collections		=C7		=D7		
19	Less: Payments		=C8		=D8		
20	Unadjusted Cash Balance		=C17+C18-C19		=D17+D18-D19		
21	Add: Borrowing		=IF(C20<\$B\$24,\$B\$24-C20,0)		=IF(D20<\$B\$24,\$B\$24-D20,0)		
22	Ending Cash Balance	20000	=C20+C21		=D20+D21		
23							
24	Minimum Cash	20000					

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Littleton Electronics			
Forecasted Ending Cash Balance			
February 2010 to July 2010			
April	May	June	July
=D22	=E22	=F22	=G22
=E7	=F7	=G7	=H7
=E8	=F8	=G8	=H8
=E17+E18-E19	=F17+F18-F19	=G17+G18-G19	=H17+H18-H19
=IF(E20<\$B\$24,\$B\$24-E20,0)	=IF(F20<\$B\$24,\$B\$24-F20,0)	=IF(G20<\$B\$24,\$B\$24-G20,0)	=IF(H20<\$B\$24,\$B\$24-H20,0)
=E20+E21	=F20+F21	=G20+G21	=H20+H21

c. If the firm must pay 7% annual interest on its short-term borrowing, how does this affect your ending cash balance calculations?

Worksheet:

26	C)							
27	Littleton Electronics							
28	Forecasted Ending Cash Balance							
29	February 2010 to July 2010							
30		January	February	March	April	May	June	July
31	Beginning Cash		20,000	20,000	20,000	20,000	20,062	25,325
32	Add: Collections		16,000	17,500	22,500	26,000	32,000	37,500
33	Less: Short-term Interest		-	15	28	38	38	38
34	Less: Payments		18,500	19,700	24,200	25,900	26,700	28,400
35	Unadjusted Cash Balance		17,500	17,785	18,272	20,062	25,325	34,387
36	Add: Borrowing		2,500	2,215	1,728	-	-	-
37	Ending Cash Balance	20,000	20,000	20,000	20,000	20,062	25,325	34,387
38								
39	Cumulative Borrowing		2,500	4,715	6,442	6,442	6,442	6,442
40								
41	Minimum Cash	20,000						
42	Annual Interest Rate	7%						
43	Monthly Interest Rate	0.58%						

Formulas:

26	C)			
27				
28				Foreca
29				Febr
30		January	February	March
31	Beginning Cash		=B37	=C37
32	Add: Collections		=C7	=D7
33	Less: Short-term Interest		=\$B\$43*B39	=\$B\$43*C39
34	Less: Payments		=C8	=D8
35	Unadjusted Cash Balance		=C31+C32-SUM(C33:C34)	=D31+D32-SUM(D33:D34)
36	Add: Borrowing		=IF(C35<\$B\$41,\$B\$41-C35,0)	=IF(D35<\$B\$41,\$B\$41-D35,0)
37	Ending Cash Balance	20000	=C35+C36	=D35+D36
38				
39	Cumulative Borrowing		=B39+C36	=C39+D36
40				
41	Minimum Cash	20000		
42	Annual Interest Rate	0.07		
43	Monthly Interest Rate	=B42/12		

Littleton Electronics				
asted Ending Cash Balance				
ruary 2010 to July 2010				
	April	May	June	July
=D37	=E37	=F37	=G37	=H37
=E7	=F7	=G7	=H7	=I7
=\$B\$43*D39	=\$B\$43*E39	=\$B\$43*F39	=\$B\$43*G39	=\$B\$43*H39
=E8	=F8	=G8	=H8	=I8
=E31+E32-SUM(E33:E34)	=F31+F32-SUM(F33:F34)	=G31+G32-SUM(G33:G34)	=H31+H32-SUM(H33:H34)	=I31+I32-SUM(I33:I34)
=IF(E35<\$B\$41,\$B\$41-E35,0)	=IF(F35<\$B\$41,\$B\$41-F35,0)	=IF(G35<\$B\$41,\$B\$41-G35,0)	=IF(H35<\$B\$41,\$B\$41-H35,0)	=IF(I35<\$B\$41,\$B\$41-I35,0)
=E35+E36	=F35+F36	=G35+G36	=H35+H36	=I35+I36
=D39+E36	=E39+F36	=F39+G36	=G39+H36	=H39+I36

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d. Finally, how would your ending cash balance change if the firm uses any cash in excess of the minimum to pay off its short-term borrowing in each month?

Worksheet:

45	D)							
46	Littleton Electronics							
47	Forecasted Ending Cash Balance							
48	February 2010 to July 2010							
49		January	February	March	April	May	June	July
50	Beginning Cash		20,000	20,000	20,000	20,000	20,000	20,000
51	Add: Collections		16,000	17,500	22,500	26,000	32,000	37,500
52	Less: Short-term Interest		-	15	28	38	37	7
53	Less: Payments		18,500	19,700	24,200	25,900	26,700	28,400
54	Unadjusted Cash Balance		17,500	17,785	18,272	20,062	25,263	29,093
55	Add: Borrowing		2,500	2,215	1,728	(62)	(5,263)	(1,117)
56	Ending Cash Balance	20,000	20,000	20,000	20,000	20,000	20,000	27,977
57								
58	Cumulative Borrowing		2,500	4,715	6,442	6,380	1,117	-
59								
60	Minimum Cash	20,000						
61	Annual Interest Rate	7%						
62	Monthly Interest Rate	0.58%						

Formulas:

45	D)		
46			
47			
48			
49		January	February
50	Beginning Cash		=B56
51	Add: Collections		=C7
52	Less: Short-term Interest		=B\$62*B58
53	Less: Payments		=C8
54	Unadjusted Cash Balance		=C50+C51-SUM(C52:C53)
55	Add: Borrowing		=IF(C54<B\$60,B\$60-C54,IF(C54-B\$60>=B58,-B58,-(C54-B\$60)))
56	Ending Cash Balance	20000	=C54+C55
57			
58	Cumulative Borrowing		=B58+C55
59			
60	Minimum Cash	20000	
61	Annual Interest Rate	0.07	
62	Monthly Interest Rate	=B61/12	

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Littleton Electronics	
Forecasted Ending Cash Balance	
February 2010 to July 2010	
March	April
=C56	=D56
=D7	=E7
=\$B\$62*C58	=\$B\$62*D58
=D8	=E8
=D50+D51-SUM(D52:D53)	=E50+E51-SUM(E52:E53)
=IF(D54<\$B\$60,\$B\$60-D54,IF(D54-\$B\$60>=C58,-C58,-(D54-\$B\$60)))	=IF(E54<\$B\$60,\$B\$60-E54,IF(E54-\$B\$60>=D58,-D58,-(E54-\$B\$60)))
=D54+D55	=E54+E55
=C58+D55	=D58+E55
May	June
=E56	=F56
=F7	=G7
=\$B\$62*E58	=\$B\$62*F58
=F8	=G8
=F50+F51-SUM(F52:F53)	=G50+G51-SUM(G52:G53)
=IF(F54<\$B\$60,\$B\$60-F54,IF(F54-\$B\$60>=E58,-E58,-(F54-\$B\$60)))	=IF(G54<\$B\$60,\$B\$60-G54,IF(G54-\$B\$60>=F58,-F58,-(G54-\$B\$60)))
=F54+F55	=G54+G55
=E58+F55	=F58+G55

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July
=G56
=H7
=B\$62*G58
=H8
=H50+H51-SUM(H52:H53)
=IF(H54<B\$60,B\$60-H54,IF(H54-B\$60>=G58,-G58,-(H54-B\$60)))
=H54+H55
=G58+H55

2. Loblaw Manufacturing has asked you to create a cash budget in order to determine its borrowing needs over June to October period. You have gathered the following information.

Month	Sales	Other Payments
June	160,000	80,000
July	130,000	65,000
August	95,000	60,000
September	84,000	45,000
October	76,000	48,000
November 2010	90,000	

April and May sales were \$125,000 and \$140,000, respectively. The firm collects 30% of its sales during the month, 60% the following month, and 10% two months after the sale. Each month it purchases inventory equal to 65% of the next month's expected sales. The company pays for 40% of its inventory purchases in the same month and 60% in the following month. However, the firm's suppliers give it a 2% discount if it pays during the same month as the purchase. A minimum cash balance of \$25,000 must be maintained each month, and the firm pays 8% annually for short-term borrowing from its bank.

- a. Create a cash budget for June to October 2010. The cash budget should account for short-term borrowing and payback of outstanding loans. The firm ended May with a \$30,000 cash balance.

Worksheet:

	A	B	C	D	E	F	G	H	I	J
1	Loblaw Manufacturing									
2	Cash Budget									
3	June 2010 to October 2010									
4			April	May	June	July	August	September	October	November
5	Sales		125,000	140,000	160,000	130,000	95,000	84,000	76,000	90,000
6	Collections:									
7	Cash	30%			48,000	39,000	28,500	25,200	22,800	
8	First Month	60%			84,000	96,000	78,000	57,000	50,400	
9	Second Month	10%			12,500	14,000	16,000	13,000	9,500	
10	Total Collections				144,500	149,000	122,500	95,200	82,700	
11	Purchases	65%		104,000	84,500	61,750	54,600	49,400	58,500	
12	Payments:									
13	During Month	40%			33,124	24,206	21,403	19,365	22,932	
14	Month After	60%			62,400	50,700	37,050	32,760	29,640	
15	Total Payments				95,524	74,906	58,453	52,125	52,572	
16	Collections				144,500	149,000	122,500	95,200	82,700	
17	Disbursements:									
18	Inventory Payments				95,524	74,906	58,453	52,125	52,572	
19	Short-term Interest				-	173	114	88	101	
20	Other Payments				80,000	65,000	60,000	45,000	48,000	
21	Total Disbursements				175,524	140,079	118,567	97,213	100,673	
22	Beginning Cash Balance				30,000	25,000	25,000	25,000	25,000	
23	Net Additions to Cash				(31,024)	8,921	3,933	(2,013)	(17,973)	
24	Unadjusted Cash Balance			30,000	(1,024)	33,921	28,933	22,987	7,027	
25	Add: Current Borrowing			-	26,024	(8,921)	(3,933)	2,013	17,973	
26	Ending Cash Balance			30,000	25,000	25,000	25,000	25,000	25,000	

28	Cumulative Borrowing	
29	Minimum Cash Balance	25,000
30	Discount for Paying in Same Month	2.00%
31	Annual Interest Rate	8.00%
32	Monthly Interest Rate	0.67%
33	Total Interest Cost	477

	June	July	August	September	October
	26,024	17,103	13,171	15,183	33,157

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Formulas:

	A	B	C	D	E	F
1	Loblaw Manufacturing					
2	Cash Budget					
3	June 2010 to October 2010					
4		April	May	June	July	
5	Sales		125000	140000	160000	130000
6	Collections:					
7	Cash	0.3			=B\$7*E5	=B\$7*F5
8	First Month	0.6			=B\$8*D5	=B\$8*E5
9	Second Month	0.1			=B\$9*C5	=B\$9*D5
10	Total Collections				=SUM(E7:E9)	=SUM(F7:F9)
11	Purchases	0.65		=B\$11*E5	=B\$11*F5	=B\$11*G5
12	Payments:					
13	During Month	0.4			=B\$13*E11*(1-B\$30)	=B\$13*F11*(1-B\$30)
14	Month After	=1-B13			=B\$14*D11	=B\$14*E11
15	Total Payments				=SUM(E13:E14)	=SUM(F13:F14)
16	Collections				=E10	=F10
17	Disbursements:					
18	Inventory Payments				=E15	=F15
19	Short-term Interest				=B\$32*D28	=B\$32*E28
20	Other Payments				80000	65000
21	Total Disbursements				=SUM(E18:E20)	=SUM(F18:F20)
22	Beginning Cash Balance				=D26	=E26
23	Net Additions to Cash				=E16-E21	=F16-F21
24	Unadjusted Cash Balance			30000	=E22+E23	=F22+F23

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G	H	I	J
010			
August	September	October	November
95000	84000	76000	90000
=B\$7*G5	=B\$7*H5	=B\$7*I5	
=B\$8*F5	=B\$8*G5	=B\$8*H5	
=B\$9*E5	=B\$9*F5	=B\$9*G5	
=SUM(G7:G9)	=SUM(H7:H9)	=SUM(I7:I9)	
=B\$11*H5	=B\$11*I5	=B\$11*J5	
=B\$13*G11*(1-B\$30)	=B\$13*H11*(1-B\$30)	=B\$13*I11*(1-B\$30)	
=B\$14*F11	=B\$14*G11	=B\$14*H11	
=SUM(G13:G14)	=SUM(H13:H14)	=SUM(I13:I14)	
=G10	=H10	=I10	
=G15	=H15	=I15	
=B\$32*F28	=B\$32*G28	=B\$32*H28	
60000	45000	48000	
=SUM(G18:G20)	=SUM(H18:H20)	=SUM(I18:I20)	
=F26	=G26	=H26	
=G16-G21	=H16-H21	=I16-I21	
=G22+G23	=H22+H23	=I22+I23	

To save space, the formulas of rows 25 and 26 have been summarized as follows:

25	Add: Current Borrowing
26	Ending Cash Balance

May
=IF(D24<\$B\$29,\$B\$29-D24,IF(C28>0,-MIN(D24-\$B\$29,C28),0))
=D24+D25

June
=IF(E24<\$B\$29,\$B\$29-E24,IF(D28>0,-MIN(E24-\$B\$29,D28),0))
=E24+E25

July
=IF(F24<\$B\$29,\$B\$29-F24,IF(E28>0,-MIN(F24-\$B\$29,E28),0))
=F24+F25

August

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=IF(G24<\$B\$29,\$B\$29-G24,IF(F28>0,-MIN(G24-\$B\$29,F28),0))
 =G24+G25

September

=IF(H24<\$B\$29,\$B\$29-H24,IF(G28>0,-MIN(H24-\$B\$29,G28),0))
 =H24+H25

October

=IF(I24<\$B\$29,\$B\$29-I24,IF(H28>0,-MIN(I24-\$B\$29,H28),0))
 =I24+I25

D	E	F	G	H	I
May	June	July	August	September	October
=C28+D25	=D28+E25	=E28+F25	=F28+G25	=G28+H25	=H28+I25

28 Cumulative Borrowing

29	Minimum Cash Balance	25000
30	Discount for Paying in Same Month	0.02
31	Annual Interest Rate	0.08
32	Monthly Interest Rate	=B31/12
33	Total Interest Cost	=SUM(E19:I19)

b. Bob Loblaw, the president, is considering stretching out its inventory payments. He believes that it may be less expensive to borrow from suppliers than from the bank. He has asked you to use the Scenario Manager to see what the total interest cost for this time period would be if the company paid for 0%, 10%, 30%, or 40% of its inventory purchases in the same month. The balance would be paid in the following month. Create a scenario summary and describe whether or not the results support Bob's beliefs.

	A	B	C	D	E	F	G
1	Scenario Summary						
2			0% Payments During Month	10% Payments During Month	20% Payments During Month	30% Payments During Month	40% Payments During Month
4	Changing Cells:						
5	SBS13		0%	10%	20%	30%	40%
6	Result Cells:						
7	Total Interest Cost		959	838	718	597	477
8	Notes: Current Values column represents values of changing cells at						
9	time Scenario Summary Report was created. Changing cells for each						
10	scenario are highlighted in gray.						

It is clear that the total interest cost rises as the company shifts more of its inventory payments to the future. Therefore, it is more costly to borrow from suppliers than from the bank. The company should not engage in this strategy.

3. Huggins and Griffin Financial Planners have forecasted revenues for the first six months of 2010, as shown in the following table.

Month	Revenue
November 2009	\$48,000
December	45,000
January 2010	25,000
February	27,000
March	30,000
April	38,000
May	40,000
June	45,000

The firm collects 60% of its sales immediately, 39% one month after the sale, and 1% are written off as bad debts two months after the sale. The firm assumes that wages and benefits paid to clerical personnel will be \$7,000 per month while commissions to sales associates average 25% of collectable sales. Each of the two partners is paid \$5,000 per month or 20% of net sales, whichever is greater. Commissions and partner salaries are paid one month after the revenue is earned. Rent expense for their office space is \$3,500 per month, and lease expense for office equipment is \$800. Utilities average \$250 per month, except in May and June when they average only \$150. The ending cash balance in December 2009 was \$12,000.

- a. Create a cash budget for January to June 2010, and determine the firm's ending cash balance in each month assuming that the partners wish to maintain a minimum cash balance of \$10,000.
- b. Huggins and Griffin are thinking of obtaining a line of credit from their bank. Based on their expectations for the first six months of the year, what is the minimum amount that would be necessary? Round your answer to the next highest \$1,000 and ignore interest charges on short-term debt. (Hint: Look up the ROUNDUP function in the online help.)

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Worksheet:

	A	B	C	D	E	F	G	H	I	J
1	Huggins and Griffin Financial Planners									
2	Cash Budget									
3	For the Period January 2010 to June 2010									
4			November	December	January	February	March	April	May	June
5	Revenues	100%	\$ 48,000	\$ 45,000	\$25,000	\$27,000	\$30,000	\$38,000	\$40,000	\$45,000
6	Collections:									
7	Cash	60%			15,000	16,200	18,000	22,800	24,000	27,000
8	First Month	39%			17,550	9,750	10,530	11,700	14,820	15,600
9	Bad Debt	1%								
10	Net Collections				32,550	25,950	28,530	34,500	38,820	42,600
11	Disbursements:									
12	Clerical Wages				7,000	7,000	7,000	7,000	7,000	7,000
13	Sales Commissions	30%			13,365	7,425	8,019	8,910	11,286	11,880
14	Partner Salaries	20%			17,820	10,000	10,692	11,880	15,048	15,840
15	Rent Expense				3,500	3,500	3,500	3,500	3,500	3,500
16	Office Equipment Lease				800	800	800	800	800	800
17	Utilities				250	250	250	250	150	150
18	Total Disbursements				42,735	28,975	30,261	32,340	37,784	39,170
19	Beginning Cash Balance				12,000	10,000	10,000	10,000	12,160	13,196
20	Add: Collections				32,550	25,950	28,530	34,500	38,820	42,600
21	Less: Disbursements				42,735	28,975	30,261	32,340	37,784	39,170
22	Unadjusted Cash Balance				1,815	6,975	8,269	12,160	13,196	16,626
23	Add: Current Borrowing				8,185	3,025	1,731	-	-	-
24	Ending Cash Balance				12,000	10,000	10,000	10,000	12,160	13,196

Formulas:

	A	B	C	D	E
1					
2					
3					
4			November	December	January
5	Revenues	1	48000	45000	=O5*\$B\$5
6	Collections:				
7	Cash	0.6			=\$B\$7*E5
8	First Month	=1-B7-B9			=\$B\$8*D5
9	Bad Debt	0.01			
10	Net Collections				=SUM(E7:E9)
11	Disbursements:				
12	Clerical Wages				=\$B\$32
13	Sales Commissions	0.3			=\$B\$13*D5*(1-\$B\$9)
14	Partner Salaries	0.2			=MAX(\$B\$29,\$B\$14*D5*(1-\$B\$9))*2
15	Rent Expense				=\$B33
16	Office Equipment Lease				=\$B34
17	Utilities				=IF(OR(E4="May",E4="June"),\$B\$36,\$B\$35)
18	Total Disbursements				=SUM(E12:E17)
19	Beginning Cash Balance				=D24
20	Add: Collections				=E10
21	Less: Disbursements				=E18
22	Unadjusted Cash Balance				=E19+E20-E21
23	Add: Current Borrowing				=IF(E22<\$B\$28,\$B\$28-E22,0)
24	Ending Cash Balance			12000	=E22+E23
25					
26	Cumulative Borrowing				=D26+E23

CHAPTER 3: THE CASH BUDGET
Text Problem Solutions

F	G
Huggins and Griffin Financial Planners	
Cash Budget	
For the Period January 2010 to June 2010	
February	March
=P5*\$B\$5	=Q5*\$B\$5
=B\$7*F5	=B\$7*G5
=B\$8*E5	=B\$8*F5
=SUM(F7:F9)	=SUM(G7:G9)
=B\$32	=B\$32
=B\$13*E5*(1-B\$9)	=B\$13*F5*(1-B\$9)
=MAX(B\$29,B\$14*E5*(1-B\$9))*2	=MAX(B\$29,B\$14*F5*(1-B\$9))*2
=B33	=B33
=B34	=B34
=IF(OR(F4="May",F4="June"),B\$36,B\$35)	=IF(OR(G4="May",G4="June"),B\$36,B\$35)
=SUM(F12:F17)	=SUM(G12:G17)
=E24	=F24
=F10	=G10
=F18	=G18
=F19+F20-F21	=G19+G20-G21
=IF(F22<B\$28,B\$28-F22,0)	=IF(G22<B\$28,B\$28-G22,0)
=F22+F23	=G22+G23
=E26+F23	=F26+G23

CHAPTER 3: THE CASH BUDGET
Text Problem Solutions

H	I	J
April	May	June
=R5*\$B\$5	=S5*\$B\$5	=T5*\$B\$5
=B\$7*H5	=B\$7*I5	=B\$7*J5
=B\$8*G5	=B\$8*H5	=B\$8*I5
=SUM(H7:H9)	=SUM(I7:I9)	=SUM(J7:J9)
=B\$32	=B\$32	=B\$32
=B\$13*G5*(1-B\$9)	=B\$13*H5*(1-B\$9)	=B\$13*I5*(1-B\$9)
=MAX(\$B\$29,\$B\$14*G5*(1-B\$9))*2	=MAX(\$B\$29,\$B\$14*H5*(1-B\$9))*2	=MAX(\$B\$29,\$B\$14*I5*(1-B\$9))*2
=B\$33	=B\$33	=B\$33
=B\$34	=B\$34	=B\$34
=IF(OR(H4="May",H4="June"),\$B\$36,\$B\$35)	=IF(OR(I4="May",I4="June"),\$B\$36,\$B\$35)	=IF(OR(J4="May",J4="June"),\$B\$36,\$B\$35)
=SUM(H12:H17)	=SUM(I12:I17)	=SUM(J12:J17)
=G24	=H24	=I24
=H10	=I10	=J10
=H18	=I18	=J18
=H19+H20-H21	=I19+I20-I21	=J19+J20-J21
=IF(H22<\$B\$28,\$B\$28-H22,0)	=IF(I22<\$B\$28,\$B\$28-I22,0)	=IF(J22<\$B\$28,\$B\$28-J22,0)
=H22+H23	=I22+I23	=J22+J23
=G26+H23	=H26+I23	=I26+J23

26	Cumulative Borrowing	
27	Notes:	
28	Minimum Cash Balance	10000
29	Minimum Partner Salary	5000
30	Maximum Borrowing Need	=ROUNDUP(MAX(E26:J26),-3)
31		
32	Monthly Clerical Wages	7000
33	Rent Expense	3500
34	Office Equipment	800
35	Utilities	250
36	Utilities (May & June)	150

c. Create three scenarios (best case, base case, and worst case) assuming that revenues are 10% better than expected, exactly as expected, or 10% worse than expected. What is the maximum that the firm would need to borrow to maintain its minimum cash balance in all three cases? Use the Scenario Manager and create a summary of your results. Would this change your answer in part b?

Text Problem Solutions

	A	B	C	D	E	F
1	Scenario Summary					
2			Current Values:	Best Case	Base Case	Worst Case
4	Changing Cells:					
5	Sales_Adjustment		100%	110%	100%	90%
6	Result Cells:					
7	Maximum_Borrowing_Need		13,000	10,000	13,000	18,000
8	Notes: Current Values column represents values of changing cells at					
9	time Scenario Summary Report was created. Changing cells for each					
10	scenario are highlighted in gray.					

4. You were recently hired to improve the financial condition of Idaho Springs Hardware, a small chain of three hardware stores in Colorado. On your first day the owner, Chuck Vitaska, told you that the biggest problem facing the firm has been periodic unexpected cash shortages that have made it necessary for him to delay wage payments to his employees. Having recently received a degree in finance, you immediately realize that your first priority is to develop a cash budget and to arrange for a short-term borrowing agreement with the firm’s bank. After looking at the firm’s past financial records, you developed a sales forecast for the remainder of the year, as is presented in the following table.

Month	Sales
June 2010	\$62,000
July	73,000
August	76,000
September	70,000
October	59,000
November	47,000
December	41,000

In addition to the seasonality of sales, you have observed several other patterns. Individuals account for 40% of the firm’s sales, and they pay in cash. The other 60% of sales are to contractors with credit accounts, and they have up to 60 days to pay. As a result, about 20% of sales to contractors are paid one month after the sale, and the other 80% is paid two months after the sale. Each month the firm purchases inventory equal to about 45% of the following month’s sales. About 30% of this inventory is paid for in the month of delivery, while the remaining 70% is paid one month later.

Each month the company pays its hourly employees a total of \$9,000, including benefits. Its salaried employees are paid \$12,000, also including benefits. In the past, the company had to borrow to build its stores and for the initial inventories. This debt has resulted in monthly interest payments of \$4,000 and monthly principal payments of \$221. On average, maintenance at the stores is expected to cost about \$700 per month, except in the October to December period when

CHAPTER 3: THE CASH BUDGET
Text Problem Solutions

snow removal costs will add about \$200 per month. Sales taxes are 7% of quarterly sales and must be paid in June, September, and December. Other taxes are also paid during those months and are expected to be about 4% of quarterly sales in each of those months. The owner wishes to maintain a cash balance of at least \$12,000 to limit the risk of cash shortages. The cash balance at the end of May is expected to be \$15,000 (before any borrowing or investing).

a. Create a simple cash budget for Idaho Springs Hardware for June to December. Note that your records indicate that sales in April and May were \$51,000 and \$57,000, respectively. January 2011 sales are expected to be \$36,000. What would be the ending cash balances if the firm does not borrow to maintain its \$12,000 minimum?

Worksheet:

	A	B	C	D	E	F	G	H	I	J	K	L
1	Idaho Springs Hardware											
2	Cash Budget											
3	For the Period June 2010 to November 2010											
4			April	May	June	July	August	September	October	November	December	January
5	Revenues	100%	\$51,000	\$57,000	\$62,000	\$73,000	\$76,000	\$70,000	\$59,000	\$47,000	\$41,000	\$36,000
6	Collections:											
7	Cash	40%			24,800	29,200	30,400	28,000	23,600	18,800	16,400	
8	First Month	12%			6,840	7,440	8,760	9,120	8,400	7,080	5,640	
9	Second Month	48%			24,480	27,360	29,760	35,040	36,480	33,600	28,320	
10	Total Collections				56,120	64,000	68,920	72,160	68,480	59,480	50,360	
11												
12	Inventory Purchases	45%		\$27,900	\$32,850	\$34,200	\$31,500	\$26,550	\$21,150	\$18,450	\$16,200	
13	Payments:											
14	Cash	30%			9,855	10,260	9,450	7,965	6,345	5,535	4,860	
15	First Month	70%			19,530	22,995	23,940	22,050	18,585	14,805	12,915	
16	Total Payments				29,385	33,255	33,390	30,015	24,930	20,340	17,775	

	A	B	C	D	E	F	G	H	I	J	K
18	Cash Inflows:										
19	Collections from Sales				56,120	64,000	68,920	72,160	68,480	59,480	50,360
20											
21	Cash Outflows:										
22	Inventory Payments				29,385	33,255	33,390	30,015	24,930	20,340	17,775
23	Hourly Wages and Benefits				9,000	9,000	9,000	9,000	9,000	9,000	9,000
24	Salaries and Benefits				12,000	12,000	12,000	12,000	12,000	12,000	12,000
25	Interest on Long-term Debt				4,000	4,000	4,000	4,000	4,000	4,000	4,000
26	Principal on Long-term Debt				221	221	221	221	221	221	221
27	Maintenance				700	700	700	700	700	700	700
28	Snow Removal				-	-	-	-	200	200	200
29	Sales Tax Payments	7%			11,900	-	-	15,330	-	-	10,290
30	Other taxes	4%			6,800	-	-	8,760	-	-	5,880
31	Total Outflows				74,006	59,176	59,311	80,026	51,051	46,461	60,066
32											
33	Beginning Cash Balance				15,000	(2,886)	1,938	11,547	3,681	21,110	34,129
34	Add: Cash Inflows				56,120	64,000	68,920	72,160	68,480	59,480	50,360
35	Less: Cash Outflows				74,006	59,176	59,311	80,026	51,051	46,461	60,066
36	Ending Cash Balance				15,000	(2,886)	1,938	11,547	3,681	21,110	24,423

CHAPTER 3: THE CASH BUDGET
Text Problem Solutions

38	Minimum Cash Balance	12,000
39		
40	Hourly Wages and Benefits	9,000
41	Salaries and Benefits	12,000
42	Interest on Long-term Debt	4,000
43	Principal on Long-term Debt	221
44	Maintenance	700
45	Snow Removal Costs	200

Formulas:

	A	B	C	D	E	F
1						Ida
2						
3						For the Period
4		April	May	June	July	
5	Revenues	1	51000	57000	=B\$5*O5	=B\$5*P5
6	Collections:					
7	Cash	0.4			=B\$7*E5	=B\$7*F5
8	First Month	0.12			=B\$8*D5	=B\$8*E5
9	Second Month	0.48			=B\$9*C5	=B\$9*D5
10	Total Collections				=SUM(E7:E9)	=SUM(F7:F9)
11						
12	Inventory Purchases	0.45		=B\$12*E5	=B\$12*F5	=B\$12*G5
13	Payments:					
14	Cash	0.3			=B\$14*E12	=B\$14*F12
15	First Month	0.7			=B\$15*D12	=B\$15*E12
16	Total Payments				=SUM(E14:E15)	=SUM(F14:F15)

G	H	I	J	K	L
Who Springs Hardware					
Cash Budget					
Period June 2010 to November 2010					
August	September	October	November	December	January
=B\$5*Q5	=B\$5*R5	=B\$5*S5	=B\$5*T5	=B\$5*U5	=B\$5*V5
=B\$7*G5	=B\$7*H5	=B\$7*I5	=B\$7*J5	=B\$7*K5	
=B\$8*F5	=B\$8*G5	=B\$8*H5	=B\$8*I5	=B\$8*J5	
=B\$9*E5	=B\$9*F5	=B\$9*G5	=B\$9*H5	=B\$9*I5	
=SUM(G7:G9)	=SUM(H7:H9)	=SUM(I7:I9)	=SUM(J7:J9)	=SUM(K7:K9)	
=B\$12*H5	=B\$12*I5	=B\$12*J5	=B\$12*K5	=B\$12*L5	
=B\$14*G12	=B\$14*H12	=B\$14*I12	=B\$14*J12	=B\$14*K12	
=B\$15*F12	=B\$15*G12	=B\$15*H12	=B\$15*I12	=B\$15*J12	
=SUM(G14:G15)	=SUM(H14:H15)	=SUM(I14:I15)	=SUM(J14:J15)	=SUM(K14:K15)	

	A	B	C	D	E
18	Cash Inflows:				
19	Collections from Sales				=E10
20					
21	Cash Outflows:				
22	Inventory Payments				=E16
23	Hourly Wages and Benefits				=B40
24	Salaries and Benefits				=B41
25	Interest on Long-term Debt				=B42
26	Principal on Long-term Debt				=B43
27	Maintenance				=B44
28	Snow Removal				=IF(MONTH(E4)>=10,\$B\$45,0)
29	Sales Tax Payments	0.07			=IF(MOD(MONTH(E\$4),3)=0,\$B29*SUM(C\$5:E\$5),0)
30	Other taxes	0.04			=IF(MOD(MONTH(E\$4),3)=0,\$B30*SUM(C\$5:E\$5),0)
31	Total Outflows				=SUM(E22:E30)
32					
33	Beginning Cash Balance				=D36
34	Add: Cash Inflows				=E19
35	Less: Cash Outflows				=E31
36	Ending Cash Balance		15000		=E33+E34-E35

CHAPTER 3: THE CASH BUDGET

Text Problem Solutions

F	G
=F10	=G10
=F16	=G16
=\$B40	=\$B40
=\$B41	=\$B41
=\$B42	=\$B42
=\$B43	=\$B43
=\$B44	=\$B44
=IF(MONTH(F4)>=10,\$B\$45,0)	=IF(MONTH(G4)>=10,\$B\$45,0)
=IF(MOD(MONTH(F\$4),3)=0,\$B29*SUM(D\$5:F\$5),0)	=IF(MOD(MONTH(G\$4),3)=0,\$B29*SUM(E\$5:G\$5),0)
=IF(MOD(MONTH(F\$4),3)=0,\$B30*SUM(D\$5:F\$5),0)	=IF(MOD(MONTH(G\$4),3)=0,\$B30*SUM(E\$5:G\$5),0)
=SUM(F22:F30)	=SUM(G22:G30)
=E36	=F36
=F19	=G19
=F31	=G31
=F33+F34-F35	=G33+G34-G35

H	I
=H10	=I10
=H16	=I16
=\$B40	=\$B40
=\$B41	=\$B41
=\$B42	=\$B42
=\$B43	=\$B43
=\$B44	=\$B44
=IF(MONTH(H4)>=10,\$B\$45,0)	=IF(MONTH(I4)>=10,\$B\$45,0)
=IF(MOD(MONTH(H\$4),3)=0,\$B29*SUM(F\$5:H\$5),0)	=IF(MOD(MONTH(I\$4),3)=0,\$B29*SUM(G\$5:I\$5),0)
=IF(MOD(MONTH(H\$4),3)=0,\$B30*SUM(F\$5:H\$5),0)	=IF(MOD(MONTH(I\$4),3)=0,\$B30*SUM(G\$5:I\$5),0)
=SUM(H22:H30)	=SUM(I22:I30)
=G36	=H36
=H19	=I19
=H31	=I31
=H33+H34-H35	=I33+I34-I35

J	K	L
=J10	=K10	
=J16	=K16	
=\$B40	=\$B40	
=\$B41	=\$B41	
=\$B42	=\$B42	
=\$B43	=\$B43	
=\$B44	=\$B44	
=IF(MONTH(J4)>=10,\$B\$45,0)	=IF(MONTH(K4)>=10,\$B\$45,0)	
=IF(MOD(MONTH(J\$4),3)=0,\$B29*SUM(H\$5:J\$5),0)	=IF(MOD(MONTH(K\$4),3)=0,\$B29*SUM(I\$5:K\$5),0)	
=IF(MOD(MONTH(J\$4),3)=0,\$B30*SUM(H\$5:J\$5),0)	=IF(MOD(MONTH(K\$4),3)=0,\$B30*SUM(I\$5:K\$5),0)	
=SUM(J22:J30)	=SUM(K22:K30)	
=I36	=J36	
=J19	=K19	
=J31	=K31	
=J33+J34-J35	=K33+K34-K35	

b. Now assume that the firm can borrow from the bank at a rate of 9% per annum to maintain its liquidity and meet its required minimum cash balance. In addition, if the firm has funds in excess of the minimum, it will use the excess to pay off any previous balance.

Worksheet:

	A	B	C	D	E	F
1	Idaho Spring					
2	Cash Flow					
3	For the Period June 20					
4			April	May	June	July
5	Revenues	100%	\$ 51,000	\$ 57,000	\$ 62,000	\$ 73,000
6	Collections:					
7	Cash	40%			24,800	29,200
8	First Month	12%			6,840	7,440
9	Second Month	48%			24,480	27,360
10	Total Collections				56,120	64,000
11						
12	Inventory Purchases	45%		\$ 27,900	\$ 32,850	\$ 34,200
13	Payments:					
14	Cash	30%			9,855	10,260
15	First Month	70%			19,530	22,995
16	Total Payments				29,385	33,255

CHAPTER 3: THE CASH BUDGET

Text Problem Solutions

	G	H	I	J	K	L
gs Hardware						
Budget						
010 to November 2010						
	August	September	October	November	December	January
	\$ 76,000	\$ 70,000	\$ 59,000	\$ 47,000	\$ 41,000	\$ 36,000
	30,400	28,000	23,600	18,800	16,400	
	8,760	9,120	8,400	7,080	5,640	
	29,760	35,040	36,480	33,600	28,320	
	68,920	72,160	68,480	59,480	50,360	
	\$ 31,500	\$ 26,550	\$ 21,150	\$ 18,450	\$ 16,200	
	9,450	7,965	6,345	5,535	4,860	
	23,940	22,050	18,585	14,805	12,915	
	33,390	30,015	24,930	20,340	17,775	

	A	B	C	D	E	F	G	H	I	J	K	L
18	Cash Inflows											
19	Collections from Sales				56,120	64,000	68,920	72,160	68,480	59,480	50,360	
20												
21	Cash Outflows:											
22	Inventory Payments				29,385	33,255	33,390	30,015	24,930	20,340	17,775	
23	Hourly Wages and Benefits				9,000	9,000	9,000	9,000	9,000	9,000	9,000	
24	Salaries and Benefits				12,000	12,000	12,000	12,000	12,000	12,000	12,000	
25	Interest on Long-term Debt				4,000	4,000	4,000	4,000	4,000	4,000	4,000	
26	Principal on Long-term Debt				221	221	221	221	221	221	221	
27	Interest on Short-term Debt				-	112	76	5	64	-	-	
28	Maintenance				700	700	700	700	700	700	700	
29	Snow Removal				-	-	-	-	200	200	200	
30	Sales Tax Payments	7%			11,900	-	-	15,330	-	-	10,290	
31	Other taxes	4%			6,800	-	-	8,760	-	-	5,880	
32	Total Outflows				74,006	59,288	59,387	80,031	51,115	46,461	60,066	
33												
34	Beginning Cash Balance				15,000	12,000	12,000	12,000	12,000	20,853	33,872	
35	Add: Cash Inflows				56,120	64,000	68,920	72,160	68,480	59,480	50,360	
36	Less: Cash Outflows				74,006	59,288	59,387	80,031	51,115	46,461	60,066	
37	Unadjusted Cash Balance			15,000	(2,886)	16,712	21,533	4,129	29,365	33,872	24,166	
38	Current Borrowing			-	14,886	(4,712)	(9,533)	7,871	(8,512)	-	-	
39	Ending Cash Balance			15,000	12,000	12,000	12,000	12,000	20,853	33,872	24,166	

CHAPTER 3: THE CASH BUDGET
Text Problem Solutions

	A	B	C	D	E	F	G	H	I	J	K
41	Cumulative Borrowing			-	14,886	10,174	641	8,512	-	-	-
42	Minimum Cash Balance	12,000									
43	Annual Rate on Borrowing	9.00%									
44	Monthly Rate on Borrowing	0.75%									
45	Hourly Wages and Benefits	9,000									
46	Salaries and Benefits	12,000									
47	Interest on Long-term Debt	4,000									
48	Principal on Long-term Debt	221									
49	Maintenance	700									
50	Snow Removal Costs	200									

Formulas:

	A	B	C	D	E	F
1						Idaho Sp
2						Ca
3						For the Period Jun
4			April	May	June	July
5	Revenues	1	51000	57000	=B\$5*O5	=B\$5*P5
6	Collections:					
7	Cash	0.4			=B\$7*E5	=B\$7*F5
8	First Month	0.12			=B\$8*D5	=B\$8*E5
9	Second Month	=1-SUM(B7:B8)			=B\$9*C5	=B\$9*D5
10	Total Collections				=SUM(E7:E9)	=SUM(F7:F9)
11						
12	Inventory Purchases	0.45		=B\$12*E5	=B\$12*F5	=B\$12*G5
13	Payments:					
14	Cash	0.3			=B\$14*E12	=B\$14*F12
15	First Month	=1-B14			=B\$15*D12	=B\$15*E12
16	Total Payments				=SUM(E14:E15)	=SUM(F14:F15)

CHAPTER 3: THE CASH BUDGET
Text Problem Solutions

G	H	I	J	K	L
prings Hardware					
ash Budget					
ie 2010 to November 2010					
August	September	October	November	December	January
=B\$5*Q5	=B\$5*R5	=B\$5*S5	=B\$5*T5	=B\$5*U5	=B\$5*V5
=B\$7*G5	=B\$7*H5	=B\$7*I5	=B\$7*J5	=B\$7*K5	
=B\$8*F5	=B\$8*G5	=B\$8*H5	=B\$8*I5	=B\$8*J5	
=B\$9*E5	=B\$9*F5	=B\$9*G5	=B\$9*H5	=B\$9*I5	
=SUM(G7:G9)	=SUM(H7:H9)	=SUM(I7:I9)	=SUM(J7:J9)	=SUM(K7:K9)	
=B\$12*H5	=B\$12*I5	=B\$12*J5	=B\$12*K5	=B\$12*L5	
=B\$14*G12	=B\$14*H12	=B\$14*I12	=B\$14*J12	=B\$14*K12	
=B\$15*F12	=B\$15*G12	=B\$15*H12	=B\$15*I12	=B\$15*J12	
=SUM(G14:G15)	=SUM(H14:H15)	=SUM(I14:I15)	=SUM(J14:J15)	=SUM(K14:K15)	

	A	B	C	D	E
18	Cash Inflows				
19	Collections from Sales			=E10	
20					
21	Cash Outflows:				
22	Inventory Payments			=E16	
23	Hourly Wages and Benefits			=B45	
24	Salaries and Benefits			=B46	
25	Interest on Long-term Debt			=B47	
26	Principal on Long-term Debt			=B48	
27	Interest on Short-term Debt			=B\$44*D41	
28	Maintenance			=B49	
29	Snow Removal			=IF(MONTH(E4)>=10,\$B\$50,0)	
30	Sales Tax Payments	0.07		=IF(MOD(MONTH(E\$4),3)=0,\$B30*SUM(C\$5:E\$5),0)	
31	Other taxes	0.04		=IF(MOD(MONTH(E\$4),3)=0,\$B31*SUM(C\$5:E\$5),0)	
32	Total Outflows			=SUM(E22:E31)	
33					
34	Beginning Cash Balance			=D39	
35	Add: Cash Inflows			=E19	
36	Less: Cash Outflows			=E32	
37	Unadjusted Cash Balance		15000	=E34+E35-E36	

CHAPTER 3: THE CASH BUDGET
Text Problem Solutions

F	G
=F10	=G10
=F16	=G16
=\$B45	=\$B45
=\$B46	=\$B46
=\$B47	=\$B47
=\$B48	=\$B48
=\$B\$44*E41	=\$B\$44*F41
=\$B49	=\$B49
=IF(MONTH(F4)>=10,\$B\$50,0)	=IF(MONTH(G4)>=10,\$B\$50,0)
=IF(MOD(MONTH(F\$4),3)=0,\$B30*SUM(D\$5:F\$5),0)	=IF(MOD(MONTH(G\$4),3)=0,\$B30*SUM(E\$5:G\$5),0)
=IF(MOD(MONTH(F\$4),3)=0,\$B31*SUM(D\$5:F\$5),0)	=IF(MOD(MONTH(G\$4),3)=0,\$B31*SUM(E\$5:G\$5),0)
=SUM(F22:F31)	=SUM(G22:G31)
=E39	=F39
=F19	=G19
=F32	=G32
=F34+F35-F36	=G34+G35-G36

	H	I
18		
19	=H10	=I10
20		
21		
22	=H16	=I16
23	=\$B45	=\$B45
24	=\$B46	=\$B46
25	=\$B47	=\$B47
26	=\$B48	=\$B48
27	=\$B\$44*G41	=\$B\$44*H41
28	=\$B49	=\$B49
29	=IF(MONTH(H4)>=10,\$B\$50,0)	=IF(MONTH(I4)>=10,\$B\$50,0)
30	=IF(MOD(MONTH(H\$4),3)=0,\$B30*SUM(F\$5:H\$5),0)	=IF(MOD(MONTH(I\$4),3)=0,\$B30*SUM(G\$5:I\$5),0)
31	=IF(MOD(MONTH(H\$4),3)=0,\$B31*SUM(F\$5:H\$5),0)	=IF(MOD(MONTH(I\$4),3)=0,\$B31*SUM(G\$5:I\$5),0)
32	=SUM(H22:H31)	=SUM(I22:I31)
33		
34	=G39	=H39
35	=H19	=I19
36	=H32	=I32
37	=H34+H35-H36	=I34+I35-I36

CHAPTER 3: THE CASH BUDGET

Text Problem Solutions

	J	K	L
18			
19	=J10	=K10	
20			
21			
22	=J16	=K16	
23	=\$B45	=\$B45	
24	=\$B46	=\$B46	
25	=\$B47	=\$B47	
26	=\$B48	=\$B48	
27	=\$B\$44*I41	=\$B\$44*J41	
28	=\$B49	=\$B49	
29	=IF(MONTH(J4)>=10,\$B\$50,0)	=IF(MONTH(K4)>=10,\$B\$50,0)	
30	=IF(MOD(MONTH(J\$4),3)=0,\$B30*SUM(H\$5:J\$5),0)	=IF(MOD(MONTH(K\$4),3)=0,\$B30*SUM(I\$5:K\$5),0)	
31	=IF(MOD(MONTH(J\$4),3)=0,\$B31*SUM(H\$5:J\$5),0)	=IF(MOD(MONTH(K\$4),3)=0,\$B31*SUM(I\$5:K\$5),0)	
32	=SUM(J22:J31)	=SUM(K22:K31)	
33			
34	=I39	=J39	
35	=J19	=K19	
36	=J32	=K32	
37	=J34+J35-J36	=K34+K35-K36	

To save space, the formulas of rows 38 and 39 have been summarized as follows:

38	Current Borrowing
39	Ending Cash Balance

May	
=IF(D37<\$B\$42,\$B\$42-D37,IF(AND(D37>\$B\$42,C41>0),-MIN(D37-\$B\$42,C41),0))	
=D37+D38	

June	
=IF(E37<\$B\$42,\$B\$42-E37,IF(AND(E37>\$B\$42,D41>0),-MIN(E37-\$B\$42,D41),0))	
=E37+E38	

July	
=IF(F37<\$B\$42,\$B\$42-F37,IF(AND(F37>\$B\$42,E41>0),-MIN(F37-\$B\$42,E41),0))	
=F37+F38	

August	
=IF(G37<\$B\$42,\$B\$42-G37,IF(AND(G37>\$B\$42,F41>0),-MIN(G37-\$B\$42,F41),0))	
=G37+G38	

CHAPTER 3: THE CASH BUDGET
Text Problem Solutions

September
=IF(H37<\$B\$42,\$B\$42-H37,IF(AND(H37>\$B\$42,G41>0),-MIN(H37-\$B\$42,G41),0))
=H37+H38

October
=IF(I37<\$B\$42,\$B\$42-I37,IF(AND(I37>\$B\$42,H41>0),-MIN(I37-\$B\$42,H41),0))
=I37+I38

November
=IF(J37<\$B\$42,\$B\$42-J37,IF(AND(J37>\$B\$42,I41>0),-MIN(J37-\$B\$42,I41),0))
=J37+J38

December
=IF(K37<\$B\$42,\$B\$42-K37,IF(AND(K37>\$B\$42,J41>0),-MIN(K37-\$B\$42,J41),0))
=K37+K38

	A	B	C	D	E	F	G	H	I	J	K
41	Cumulative Borrowing			0	=D41+E38	=E41+F38	=F41+G38	=G41+H38	=H41+I38	=I41+J38	=J41+K38

	A	B
42	Minimum Cash Balance	12000
43	Annual Rate on Borrowing	0.09
44	Monthly Rate on Borrowing	=B43/12
45	Hourly Wages and Benefits	9000
46	Salaries and Benefits	12000
47	Interest on Long-term Debt	4000
48	Principal on Long-term Debt	221
49	Maintenance	700
50	Snow Removal Costs	200

c. While negotiating a line of credit, the firm's bank offered to sweep any cash in excess of the minimum into a money market fund that will return an average of 4% per year after expenses. If you accept this offer, how will it affect the firm's ending cash balances and need to borrow in each month? Note that the firm must have paid off all short-term loans before any excess cash can be invested, and invested funds will be used instead of borrowing when needed.

Text Problem Solutions

d. After completing the cash budget, you begin to think of ways to further reduce the firm’s borrowing needs. One idea that comes to mind is changing the firm’s credit policy with contractors because they seem to always pay at the last minute. Three scenarios come to mind: (1) In the best case, contractors are required to pay for 100% of their purchases during the month after the sale. You believe that this would cause a 5% decline in sales. (2) In the base case, everything remains as already outlined. (3) In the worst case, contractors would be required to pay for 100% of their purchases during the month after the sale, and you believe that this would cause a 20% drop in sales. You decide to use the Scenario Manager to evaluate these scenarios. To summarize the impact of the change, you will examine the impact on the firm’s maximum borrowing needs and cumulative net interest cost (after accounting for investment earnings). In your opinion, should the firm change its credit policy?

Worksheet:

	A	B	C	D	E	F
1	Idaho Spring					
2	Cash B					
3	For the Period June 20					
4			April	May	June	July
5	Revenues	100%	\$ 51,000	\$ 57,000	\$ 62,000	\$ 73,000
6	Collections:					
7	Cash	40%			24,800	29,200
8	First Month	12%			6,840	7,440
9	Second Month	48%			24,480	27,360
10	Total Collections				56,120	64,000
11						
12	Inventory Purchases	45%		\$ 27,900	\$ 32,850	\$ 34,200
13	Payments:					
14	Cash	30%			9,855	10,260
15	First Month	70%			19,530	22,995
16	Total Payments				29,385	33,255

G	H	I	J	K	L
gs Hardware					
Budget					
010 to November 2010					
August	September	October	November	December	January
\$ 76,000	\$ 70,000	\$ 59,000	\$ 47,000	\$ 41,000	\$ 36,000
30,400	28,000	23,600	18,800	16,400	
8,760	9,120	8,400	7,080	5,640	
29,760	35,040	36,480	33,600	28,320	
68,920	72,160	68,480	59,480	50,360	
\$ 31,500	\$ 26,550	\$ 21,150	\$ 18,450	\$ 16,200	
9,450	7,965	6,345	5,535	4,860	
23,940	22,050	18,585	14,805	12,915	
33,390	30,015	24,930	20,340	17,775	

CHAPTER 3: THE CASH BUDGET

Text Problem Solutions

	A	B	C	D	E	F	G	H	I	J	K
18	Cash Inflows										
19	Collections from Sales				56,120	64,000	68,920	72,160	68,480	59,480	50,360
20	Short-term Investing Income				10	-	-	-	-	30	73
21	Total Inflows				56,130	64,000	68,920	72,160	68,480	59,510	50,433
22											
23	Cash Outflows:										
24	Inventory Payments				29,385	33,255	33,390	30,015	24,930	20,340	17,775
25	Hourly Wages and Benefits				9,000	9,000	9,000	9,000	9,000	9,000	9,000
26	Salaries and Benefits				12,000	12,000	12,000	12,000	12,000	12,000	12,000
27	Interest on Long-term Debt				4,000	4,000	4,000	4,000	4,000	4,000	4,000
28	Principal on Long-term Debt				221	221	221	221	221	221	221
29	Interest on Short-term Debt				-	112	76	5	64	-	-
30	Maintenance				700	700	700	700	700	700	700
31	Snow Removal				-	-	-	-	200	200	200
32	Sales Tax Payments	7%			11,900	-	-	15,330	-	-	10,290
33	Other taxes	4%			6,800	-	-	8,760	-	-	5,880
34	Total Outflows				74,006	59,288	59,387	80,031	51,115	46,461	60,066
35											
36	Beginning Cash Balance				12,000	12,000	12,000	12,000	12,000	12,000	12,000
37	Add: Cash Inflows				56,130	64,000	68,920	72,160	68,480	59,510	50,433
38	Less: Cash Outflows				74,006	59,288	59,387	80,031	51,115	46,461	60,066
39	Unadjusted Cash Balance				(5,876)	16,712	21,533	4,129	29,365	25,049	2,367
40	Current Borrowing				14,876	(4,712)	(9,533)	7,871	(8,502)	-	-
41	Current Investing				(3,000)	-	-	-	8,864	13,049	(9,633)
42	Ending Cash Balance				12,000	12,000	12,000	12,000	12,000	12,000	12,000

	A	B	C	D	E	F	G	H	I	J	K
44	Cumulative Borrowing				14,876	10,164	631	8,502	-	-	-
45	Cumulative Investments				-	-	-	-	8,864	21,912	12,279
46	Minimum Cash Balance			12,000							
47	Annual Rate on Borrowing			9.00%							
48	Monthly Rate on Borrowing			0.75%							
49	Annual Rate on Investing			4%							
50	Monthly Rate on Investing			0.33%							
51	Maximum Borrowing Need			14,876							
52	Hourly Wages and Benefits			9,000							
53	Salaries and Benefits			12,000							
54	Interest on Long-term Debt			4,000							
55	Principal on Long-term Debt			221							
56	Maintenance			700							
57	Snow Removal Costs			200							
58	Cumulative Net Interest Cost			256							

Formulas:

	A	B	C	D	E	F
1						Idaho Sp
2						Cas
3						For the Period Jun
4			40269	40299	40330	40360
5	Revenues	1	51000	57000	=B\$5*O5	=B\$5*P5
6	Collections:					
7	Cash	0.4			=B\$7*E5	=B\$7*F5
8	First Month	0.12			=B\$8*D5	=B\$8*E5
9	Second Month	=1-SUM(B7:B8)			=B\$9*C5	=B\$9*D5
10	Total Collections				=SUM(E7:E9)	=SUM(F7:F9)
11						
12	Inventory Purchases	0.45		=B\$12*E5	=B\$12*F5	=B\$12*G5
13	Payments:					
14	Cash	0.3			=B\$14*E12	=B\$14*F12
15	First Month	=1-B14			=B\$15*D12	=B\$15*E12
16	Total Payments				=SUM(E14:E15)	=SUM(F14:F15)

G	H	I	J	K	L
orings Hardware					
sh Budget					
e 2010 to November 2010					
40391	40422	40452	40483	40513	40544
=B\$5*Q5	=B\$5*R5	=B\$5*S5	=B\$5*T5	=B\$5*U5	=B\$5*V5
=B\$7*G5	=B\$7*H5	=B\$7*I5	=B\$7*J5	=B\$7*K5	
=B\$8*F5	=B\$8*G5	=B\$8*H5	=B\$8*I5	=B\$8*J5	
=B\$9*E5	=B\$9*F5	=B\$9*G5	=B\$9*H5	=B\$9*I5	
=SUM(G7:G9)	=SUM(H7:H9)	=SUM(I7:I9)	=SUM(J7:J9)	=SUM(K7:K9)	
=B\$12*H5	=B\$12*I5	=B\$12*J5	=B\$12*K5	=B\$12*L5	
=B\$14*G12	=B\$14*H12	=B\$14*I12	=B\$14*J12	=B\$14*K12	
=B\$15*F12	=B\$15*G12	=B\$15*H12	=B\$15*I12	=B\$15*J12	
=SUM(G14:G15)	=SUM(H14:H15)	=SUM(I14:I15)	=SUM(J14:J15)	=SUM(K14:K15)	

CHAPTER 3: THE CASH BUDGET
Text Problem Solutions

	A	B	C	D	E
18	Cash Inflows				
19	Collections from Sales				=E10
20	Short-term Investing Income				=\$B\$50*D45
21	Total Inflows				=SUM(E19:E20)
22					
23	Cash Outflows:				
24	Inventory Payments				=E16
25	Hourly Wages and Benefits				=\$B52
26	Salaries and Benefits				=\$B53
27	Interest on Long-term Debt				=\$B54
28	Principal on Long-term Debt				=\$B55
29	Interest on Short-term Debt				=\$B\$48*D44
30	Maintenance				=\$B56
31	Snow Removal				=IF(MONTH(E4)>=10,\$B\$57,0)
32	Sales Tax Payments	0.07			=IF(MOD(MONTH(E\$4),3)=0,\$B32*SUM(C\$5:E\$5),0)
33	Other taxes	0.04			=IF(MOD(MONTH(E\$4),3)=0,\$B33*SUM(C\$5:E\$5),0)
34	Total Outflows				=SUM(E24:E33)
35					
36	Beginning Cash Balance				=D42
37	Add: Cash Inflows				=E21
38	Less: Cash Outflows				=E34

F	G
=F10	=G10
=\$B\$50*E45	=\$B\$50*F45
=SUM(F19:F20)	=SUM(G19:G20)
=F16	=G16
=\$B52	=\$B52
=\$B53	=\$B53
=\$B54	=\$B54
=\$B55	=\$B55
=\$B\$48*E44	=\$B\$48*F44
=\$B56	=\$B56
=IF(MONTH(F4)>=10,\$B\$57,0)	=IF(MONTH(G4)>=10,\$B\$57,0)
=IF(MOD(MONTH(F\$4),3)=0,\$B32*SUM(D\$5:F\$5),0)	=IF(MOD(MONTH(G\$4),3)=0,\$B32*SUM(E\$5:G\$5),0)
=IF(MOD(MONTH(F\$4),3)=0,\$B33*SUM(D\$5:F\$5),0)	=IF(MOD(MONTH(G\$4),3)=0,\$B33*SUM(E\$5:G\$5),0)
=SUM(F24:F33)	=SUM(G24:G33)
=E42	=F42
=F21	=G21
=F34	=G34

	H	I
18		
19	=H10	=I10
20	=\$B\$50*G45	=\$B\$50*H45
21	=SUM(H19:H20)	=SUM(I19:I20)
22		
23		
24	=H16	=I16
25	=\$B52	=\$B52
26	=\$B53	=\$B53
27	=\$B54	=\$B54
28	=\$B55	=\$B55
29	=\$B\$48*G44	=\$B\$48*H44
30	=\$B56	=\$B56
31	=IF(MONTH(H4)>=10,\$B\$57,0)	=IF(MONTH(I4)>=10,\$B\$57,0)
32	=IF(MOD(MONTH(H\$4),3)=0,\$B32*SUM(F\$5:H\$5),0)	=IF(MOD(MONTH(I\$4),3)=0,\$B32*SUM(G\$5:I\$5),0)
33	=IF(MOD(MONTH(H\$4),3)=0,\$B33*SUM(F\$5:H\$5),0)	=IF(MOD(MONTH(I\$4),3)=0,\$B33*SUM(G\$5:I\$5),0)
34	=SUM(H24:H33)	=SUM(I24:I33)
35		
36	=G42	=H42
37	=H21	=I21
38	=H34	=I34

	J	K
18		
19	=J10	=K10
20	=\$B\$50*I45	=\$B\$50*J45
21	=SUM(J19:J20)	=SUM(K19:K20)
22		
23		
24	=J16	=K16
25	=\$B52	=\$B52
26	=\$B53	=\$B53
27	=\$B54	=\$B54
28	=\$B55	=\$B55
29	=\$B\$48*I44	=\$B\$48*J44
30	=\$B56	=\$B56
31	=IF(MONTH(J4)>=10,\$B\$57,0)	=IF(MONTH(K4)>=10,\$B\$57,0)
32	=IF(MOD(MONTH(J\$4),3)=0,\$B32*SUM(H\$5:J\$5),0)	=IF(MOD(MONTH(K\$4),3)=0,\$B32*SUM(I\$5:K\$5),0)
33	=IF(MOD(MONTH(J\$4),3)=0,\$B33*SUM(H\$5:J\$5),0)	=IF(MOD(MONTH(K\$4),3)=0,\$B33*SUM(I\$5:K\$5),0)
34	=SUM(J24:J33)	=SUM(K24:K33)
35		
36	=I42	=J42
37	=J21	=K21
38	=J34	=K34

CHAPTER 3: THE CASH BUDGET

Text Problem Solutions

To save space, the formulas of rows 39-42 have been summarized as follows:

	A
39	Unadjusted Cash Balance
40	Current Borrowing
41	Current Investing
42	Ending Cash Balance

	D
	May
39	15000
40	=IF(AND(D39<\$B\$46,C45=0),\$B\$46-D39,IF(AND(D39<\$B\$46,C45>0),MAX(\$B\$46-D39-C45,0),IF(AND(D39>\$B\$46,C44>0),-MIN(D39-\$B\$46,C44),0)))
41	=IF(D39+D40>\$B\$46,D39+D40-\$B\$46,IF(AND(D39+D40<\$B\$46,C45>D39+D40-\$B\$46),D39+D40-\$B\$46,0))
42	=D39+D40-D41

	E
	June
39	=E36+E37-E38
40	=IF(AND(E39<\$B\$46,D45=0),\$B\$46-E39,IF(AND(E39<\$B\$46,D45>0),MAX(\$B\$46-E39-D45,0),IF(AND(E39>\$B\$46,D44>0),-MIN(E39-\$B\$46,D44),0)))
41	=IF(E39+E40>\$B\$46,E39+E40-\$B\$46,IF(AND(E39+E40<\$B\$46,D45>E39+E40-\$B\$46),E39+E40-\$B\$46,0))
42	=E39+E40-E41

	F
	July
39	=F36+F37-F38
40	=IF(AND(F39<\$B\$46,E45=0),\$B\$46-F39,IF(AND(F39<\$B\$46,E45>0),MAX(\$B\$46-F39-E45,0),IF(AND(F39>\$B\$46,E44>0),-MIN(F39-\$B\$46,E44),0)))
41	=IF(F39+F40>\$B\$46,F39+F40-\$B\$46,IF(AND(F39+F40<\$B\$46,E45>F39+F40-\$B\$46),F39+F40-\$B\$46,0))
42	=F39+F40-F41

	G
	August
39	=G36+G37-G38
40	=IF(AND(G39<\$B\$46,F45=0),\$B\$46-G39,IF(AND(G39<\$B\$46,F45>0),MAX(\$B\$46-G39-F45,0),IF(AND(G39>\$B\$46,F44>0),-MIN(G39-\$B\$46,F44),0)))
41	=IF(G39+G40>\$B\$46,G39+G40-\$B\$46,IF(AND(G39+G40<\$B\$46,F45>G39+G40-\$B\$46),G39+G40-\$B\$46,0))

42	=G39+G40-G41
----	--------------

H	
September	
39	=H36+H37-H38
40	=IF(AND(H39<\$B\$46,G45=0),\$B\$46-H39,IF(AND(H39<\$B\$46,G45>0),MAX(\$B\$46-H39-G45,0),IF(AND(H39>\$B\$46,G44>0),-MIN(H39-\$B\$46,G44),0)))
41	=IF(H39+H40>\$B\$46,H39+H40-\$B\$46,IF(AND(H39+H40<\$B\$46,G45>H39+H40-\$B\$46),H39+H40-\$B\$46,0))
42	=H39+H40-H41

I	
October	
39	=I36+I37-I38
40	=IF(AND(I39<\$B\$46,H45=0),\$B\$46-I39,IF(AND(I39<\$B\$46,H45>0),MAX(\$B\$46-I39-H45,0),IF(AND(I39>\$B\$46,H44>0),-MIN(I39-\$B\$46,H44),0)))
41	=IF(I39+I40>\$B\$46,I39+I40-\$B\$46,IF(AND(I39+I40<\$B\$46,H45>I39+I40-\$B\$46),I39+I40-\$B\$46,0))
42	=I39+I40-I41

J	
November	
39	=J36+J37-J38
40	=IF(AND(J39<\$B\$46,I45=0),\$B\$46-J39,IF(AND(J39<\$B\$46,I45>0),MAX(\$B\$46-J39-I45,0),IF(AND(J39>\$B\$46,I44>0),-MIN(J39-\$B\$46,I44),0)))
41	=IF(J39+J40>\$B\$46,J39+J40-\$B\$46,IF(AND(J39+J40<\$B\$46,I45>J39+J40-\$B\$46),J39+J40-\$B\$46,0))
42	=J39+J40-J41

K	
December	
39	=K36+K37-K38
40	=IF(AND(K39<\$B\$46,J45=0),\$B\$46-K39,IF(AND(K39<\$B\$46,J45>0),MAX(\$B\$46-K39-J45,0),IF(AND(K39>\$B\$46,J44>0),-MIN(K39-\$B\$46,J44),0)))
41	=IF(K39+K40>\$B\$46,K39+K40-\$B\$46,IF(AND(K39+K40<\$B\$46,J45>K39+K40-\$B\$46),K39+K40-\$B\$46,0))
42	=K39+K40-K41

	A	B	C	D	E	F	G	H	I	J	K
44	Cumulative Borrowing			=C44+D40	=D44+E40	=E44+F40	=F44+G40	=G44+H40	=H44+I40	=I44+J40	=J44+
45	Cumulative Investments			=C45+D41	=D45+E41	=E45+F41	=F45+G41	=G45+H41	=H45+I41	=I45+J41	=J45+

CHAPTER 3: THE CASH BUDGET

Text Problem Solutions

	A	B
46	Minimum Cash Balance	12000
47	Annual Rate on Borrowing	0.09
48	Monthly Rate on Borrowing	=B47/12
49	Annual Rate on Investing	0.04
50	Monthly Rate on Investing	=B49/12
51	Maximum Borrowing Need	=MAX(D44:K44)
52	Hourly Wages and Benefits	9000
53	Salaries and Benefits	12000
54	Interest on Long-term Debt	4000
55	Principal on Long-term Debt	221
56	Maintenance	700
57	Snow Removal Costs	200
58	Cumulative Net Interest Cost	=SUM(E29:K29)