**Working Capital Management**

**Learning Problems**

**Answer Keys**

**Problem: Managing the Float at Anders Inc.**

1.

|  |  |  |
| --- | --- | --- |
| Disbursement float (uncashed cheques) | (7) (125,000) | +875,000 |
| Collection float (uncollected receipts) | 1. (145,000)
 | -145,000 |
|  | Net float | +730,000 |

2.

The net positive float indicates that Anders’ cash bank balance is greater than its book balance. It has CAD 730,000 more in cash each day that it can use in operations or invest.

Anders could increase the net float by stretching the disbursement float further by mailing cheques from distant locations using remote disbursements. The collection float could be reduced by arranging same day cheque settlement with their bank.

The net float measure does not include the benefit from accelerating the collection of receipts by reducing the processing or mail float of their customers. This could be done by introducing electronic payment, having cheques scanned and sent electronically, using preauthorized cheques, or implementing locked boxes or collection offices. Before implementing these measures, their cost must be compared to their benefits,

**Problem: Locked Boxes at Edson Telecom**

1. Yes – benefits (CAD 1,445,000) exceed the costs (CAD 1,250,000).

Present value of savings from collecting earlier

(850) (425) = 361,250

(7 – 3) (361,250) = 1,445,000

**Note:** Edson initially collects CAD 361,250 per day after waiting seven days. If locked boxes are introduced and Edson only has to wait three days to collect, they will receive CAD 1,445,000 extra immediately and then will continue to collect CAD 361,250 each day in perpetuity with only a three-day delay. The benefits from introducing locked boxes are immediate and one-time, so CAD 1,445,000 is the present value of any future benefits. This amount should be compared against any costs.

Present value of cost locked boxes

(1 + i)365 – 1 = .025

i =.000068

(850) (.10) / (.000068) = 1,250,000

**Note:** The cost of the locked box is CAD 85 per day (850 x .10) in perpetuity, so the discount rate that should be used is .0068% which is a daily rate with daily compounding.

**Problem: Investing in Treasury Bills at ABBA Company**

1. ($1+\frac{(100,000 - \left(99,245.48 + 200.00\right))}{99,245.48}$)365/180 – 1 = .0114 or 1.14%

(.0153) (180/365) (100,000) = 754.52

100,000 – 754.52 = 99,245.48

**Note:** The treasury bill trades at a discount of 1.53% of the face value of CAD 100,000 or CAD 99,245.48. This discount rate is an annual rate so it must be prorated by 180 days. The company will invest CAD 99,245.48 and receive back CAD 100,000 in 180 days. Their profit is the difference minus the CAD 200 fee paid to the dealer. This net profit is related to the initial investment of CAD 99,245.48 and then expressed on an annual basis by compounding it for the number 180-day periods in the year.

**Problem: Optimal Credit Terms at Dexter Industries**

1. Yes, the credit terms should be extended.

|  |  |
| --- | --- |
| Incremental contribution margin1 | 11,250.00 |
| Incremental bad debts expense2 | <810.00> |
| Incremental collection costs | <1,250.00> |
| Incremental cost of financing A/R3 | <369.86> |
| Incremental cost of financing inventory4 | <67.50> |
| **Incremental revenue (costs)** | 8,752.64 |

1 (150,000 – 135,000) (.75)

**Note:** The contribution margin and not the gross profit percent is used to measure the incremental profit resulting from additional sales. It includes variable costs only.

2 (.009) (135,000) – (.0135) (150,000)

3 (135,000) ($\frac{30}{365}$) = 11,095.89

(150,000) ($\frac{45}{365}$) = 18,493.15

(11,095.89 – 18,493.15) (.05) = <369.86>

**Note:** The AR turnover in days ratio is used to calculate the increase in A/R needed to support the longer credit terms. Interest must be paid on the LOC used to finance the increase in AR.

$AR turnover in days= \frac{365}{\frac{Sales}{AR}}$ or $Accounts receivable=\left(\frac{AR turnover in days}{365}\right)(Sales)$

4 (135,000) (1 - .55) / 5 = 12,150

(150,000) (1 - .55) / 5 = 13,500

(12,150 – 13,500) (.05) = <67.50>

**Note:** The inventory turnover ratio is used to calculate the inventory needed to support the increased sales. Cost of sales equals sales times 1.0 minus the gross profit percent. Interest must be paid on the LOC used to finance the increase in inventory.

Inventory turnover = $\frac{Cost of sales}{Inventory}$ or Inventory = $\frac{Cost of sales}{Inventory turnover}$

**Problem: Optimal Credit Terms at Jackson Inc.**

1. Yes, the credit terms should be extended.

|  |  |
| --- | --- |
| Incremental contribution margin1 | 225,000.00 |
| Incremental sales discount2 | <24,050.00> |
| Incremental bad debts expense3 | <44,000.00> |
| Incremental cost of A/R4 | <9,876.71> |
| Incremental cost of inventory5 | <3,600.00> |
| **Incremental revenue (costs)** | 143,473.29 |

1 (3,500,000 – 2,600,000) (.25)

2 (2,600,000) (.85) (.02) = 44,200

(3,500,000) (.65) (.03) = 68,250

44,200 – 68,250 = <24,050>

3 (2,600,000) (.01) = 26,000

(3,500,000) (.02) = 70,000

26,000 – 70,000 = <44,000>

4 (2,600,000) (14/365) = 99,726.03

(3,500,000) (31/365) = 297,260.27

(99,726.03 – 297,260.27) (.05) = <9,876.71>

5 $\frac{\left(2,600,000\right)(.4)}{5}$ = 208,000

$\frac{\left(3,500,000\right)(.4)}{5}$ = 280,000

(208,000 – 280,000) (.05) = <3,600>

**Problem: Optimal Credit Terms at Hoboken Company**

1. Yes, the credit terms should be shortened.

|  |  |
| --- | --- |
| Incremental contribution margin1 | <7,000.00> |
| Incremental sales discount2 | 4,500.00 |
| Incremental bad debts expense3 | 1,862.50 |
| Incremental cost of A/R4 | 1,171.23 |
| Incremental cost of inventory6 | 145.83 |
| **Incremental revenue (costs)** | 679.56 |

1 (465,000 – 500,000) (.20)

2 (500,000) (.3) (.03) = 4,500

(465,000) (.0) (.0) = 0

4,500 – 0 = 4,500

3 (500,000) (.02) = 10,000

(465,000) (.0175) = 8,137.50

10,000 – 8,137.50 = 1,862.50

4 (500,000) (545/365) = 61,643.84

(465,000) (30/365) = 38,219.18

(61,643.84 – 38,219.18) (.05) = 1,171.23

5 (.7) (60) + (.3) (10) = 45

6 $\frac{\left(500,000\right)(.5)}{6}$ = 41,666.67

$\frac{\left(465,000\right)(.5)}{6}$ = 38,750.00

(41,666.67 – 38,750.00) (.05) = 145.83

**Problem: EOQ, Safety Stock, Re-order Point at Holland Ltd.**

1.

$\sqrt{\frac{\left(2\right) \left(D\right)(R)}{C}}=\sqrt{\frac{\left(2\right) \left(13,000\right)(5.35)}{2.45}}$ = 238

2.

|  |
| --- |
| **Expected Demand During Re-order Period** |
| 100 X .05 | 5.00 |
| 150 X .25 | 37.50 |
| 2501 X .40 | 100.00 |
| 350 X .25 | 87.50 |
| 400 X .05 | 20.00 |
| Expected demand | 250.00 |

1 (13,000 / 260) (5)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Safety Stock Levels in Units** | **Probability of Stockout1** | **Stockout in Units1** | **Stockout Costs Per Unit** | **Orders Per Year2** | **Expected Stockout Costs3** | **Carrying Costs4** | **Total Cost** |
| 0 | .25.05 | 100150 | 21.0021.00 | 54.6254.62 | 28,675.508,602.65 | 0.00 | 28,675.508,602.65 0.0037,278.15 |
| 100 | .05 | 50 | 21.00 | 54.62 | 2,867.55 | 245.00 | 2,867.55 245.003,112.55 |
| 150 | .00 | 0 | 21.00 | 54.62 | 0 | 367.50 | 0.00\_\_367.50367.50 |

1 These are based on the expected demand of 250 units during the re-order period.

2Annual demand / EOQ

3(Probability of stockout) (Stockouts in units) (Stockout costs per unit) (Orders per year)

4(Safety stock) (Carrying costs per unit)

A safety stock of 150 units will minimize total stockout and carrying costs.

1. 250 + 150 = 400 units

**Note:** This is calculated as expected demand plus the safety stock determined in Part 1.

1. Stockout costs were very high compared to carrying costs, so the maximum safety stock level of 150 units is justified. If stockout costs fall and carry costs rise as they may with expensive products due to financing and security costs, the safety stock level may be less than the maximum. Assuming a stable re-order period, the safety stock should not exceed the difference between the maximum and average demand during the re-order period. If the re-order period is unstable, the maximum safety stock will increase.

**Problem: EOQ, Safety Stock, Re-order Point at Ashern Inc.**

1.

$\sqrt{\frac{\left(2\right) \left(26,000\right)(57.76)}{(.05)(95.32)}}$ = 794

1. (13) (125) – (10) (100) = 625 units

**Note:** The re-order period is no longer stable, so the safety stock is equal to the maximum re-order period of 13 days times the maximum demand of 125 units minus the average order period of 10 days times the average daily demand of 100 units. Re-stocking costs are very high in comparison to carrying costs, so carrying costs were not considered and all stock-out costs were eliminated.

1. (10) (100) + 625 = 1,625 units

**Note:** The re-order point equals the average order period times the average daily demand plus the safety stock. Average daily demand was given but it can also be calculated as 26,000 units yearly demand divided by 260 business days per year.

**Problem: Specific Assignment Accounts Receivable at York Ltd.**

1.

$\frac{3,685.07 + 3,500}{245,000}$ = .0293 $(1+ .0293)^{365/90}$ – 1 = .1243 or 12.43%

(245,000) (.061) ($\frac{90}{365}$) = 3,685.07

(.01) (350,000) = 3,500

(350,000) (.7) = 245,000

**Note:** The interest rate for 90 days is the cost of borrowing which includes the interest costs plus the processing fee divided by the value of the loan. This interest rate is compounded for the number of 90-day periods in a year to determine the annual interest rate.

1. The 1.0% processing fee significantly raised the effective annual cost of borrowing. These are higher-risk receivables so the bank required a specific assignment instead of a general assignment. A specific assignment involves a more thorough credit assessment and a lien against the assets. With this improved security arrangement, the company can usually borrow a higher percentage of the value of the receivables, so the added cost may be worth it. York’s customers could also be notified to pay the bank directly if the bank is uncertain of payment, but this could be disruptive for customers and cause them to question the firm’s financial stability.

**Problem: Specific Assignment Inventory at Hansen Inc.**

1.

$\frac{7,896.58 + 3,000}{525,000}$ = .0208 $(1+ .0208)^{365/90}$ – 1 = .0871 or 8.71%

(525,000) (.061) ($\frac{90}{365}$) = 7,896.58

(750,000) (.7) = 525,000

1. The bank wants to ensure the price received for the inventory is reasonable and the proceeds are used to pay down the loan first. Companies sometimes sell stock at below-market prices during a period of financial distress when they are short of cash.

**Problem: Factoring of Accounts Receivable at Willobey Industries**

1.

|  |  |
| --- | --- |
| Accounts receivable | 250,000.00 |
| Reserve (20% of 250,000) | 50,000.00 |
| Advance (80% of 250,000) | 200,000.00 |
| Factoring fee (.014 of 250,000) | 3,500.00 |
| Interest expense (.065) ($\frac{90}{365})$ (200,000) | 3,205.48 |

$\frac{3,500.00 + 3,205.48}{200,000}$ = .0335 $(1+ .0335)^{365/90}$ – 1 = .1430 or 14.30%

**Note:** The factoring fee is charged on the total receivables as they are all assessed and managed by the factor. Interest is only charged on the advance because is the actual value of the loan over 90 days.

2.

50,000 – 3,500 – 3,205.48 – 38,500 = 4,794.52

**Note:** A reserve of CAD 50,000 was held back to allow for the factoring fee, interest, and any cash discounts, sales returns and allowances, and bad debts given by the factor. The residual is returned to the company.

**Problem: Operating Loans versus Factoring at Hecla Ltd.**

1. Factoring is the preferred form of financing.

|  |  |  |
| --- | --- | --- |
|  | **Operating Loan** | **Factoring** |
| Sales volume |  CAD 15,000,000 | CAD 15,750,0007 |
| A/R turnover in days | 28.8 days1 | 25.92 days8 |
| Average A/R | CAD 1,200,0002 | CAD 1,134,0009 |
| Loan | CAD 900,0003 | CAD 963,90010 |
|  |
| Customer discounts | CAD 120,0004 | 0 |
| Factor commission | 0 | CAD 393,75011 |
| Interest expense | CAD 37,8005 | CAD 62,65412 |
| Collection department | CAD 207,500 | 0 |
| Bad debts | CAD 225,0006 | 0 |
| **Total cost** | CAD 590,300 | CAD 456,404 |

1 (.4) (15) + (.6) (38)

2(28.8) (15,000,000) / 360

3(1,200,000) (.75)

4(15,000,000) (.40) (.02)

5(900,000) (.042)

6(15,000,000) (.015)

7(15,000,000) (1 + .05)

8(28.8) (1 - .10)

9(25.92) (15,750,000) / 360

10 (1,134,000) (.85)

11(.025) (15,750,000)

12(.065) (963,900)

Hecla had to pay a large factor commission, but this was compensated for by having no customer discounts, collection department expenses, or bad debts. The factor’s credit management efficiencies made this arrangement cost-effective for both groups.

**Problem: Issuing Commercial Paper at Jackson Company**

1.

(1 +$\frac{63,997.50}{\left(10,500,000 - 63,997.50\right)}$) 365/90 – 1 = 0.0251 or 2.51%

|  |  |  |
| --- | --- | --- |
| Discount | (.0179) (90/365) (10,500,000) | 46,343.84 |
| Dealer fee | (.0015) (90/365) (10,500,000) | 3,883.56 |
| Backup LOC fee | (.0025) (90/365) (10,500,000) | 6,472.60 |
| Credit assessment fee | (.000695) (10,500,000) | 7,297.50 |
|  | **Total cost** | 63,997.50 |

**Note:** The dealer who sells the commercial paper gives the company the face value of the paper (CAD 10,500,000) minus the total issuance costs (CAD 63,997.50). The total issuance costs relative to the amount received is the interest rate for 90 days. It is compounded for the number of 90-day periods in the year to give the annual rate.

1. Companies sometimes operate their commercial paper programs themselves to eliminate the dealer fees to lower the effective annual cost. There are still large fixed costs related to operating such a program, so only companies with sizeable financing requirements would benefit from this option.