

Equation Analysis Sheet

3.2

Your next step in the study of accounting is to learn how various business transactions affect and change the financial position. To begin, look at Figure 3.1, the simplified balance sheet of Metropolitan Movers of Windsor, Ontario.

| METROPOLITAN MOVERS BALANCE SHEET SEPTEMBER 29, 20-- | | | |
|--|-----------------|------------------------------|-----------------|
| <i>Assets</i> | | <i>Liabilities</i> | |
| Cash | \$13 500 | Accounts Payable | |
| Accounts Receivable | | – Central Supply | \$ 1 750 |
| – B. Cava | 1 300 | Bank Loan | 18 370 |
| – K. Lincoln | 2 500 | Total Liabilities | \$20 120 |
| Equipment | 11 500 | <i>Owner's Equity</i> | |
| Trucks | 24 500 | J. Hofner, Capital | 33 180 |
| Total Assets | <u>\$53 300</u> | Total Liabilities and Equity | <u>\$53 300</u> |

Figure 3.1
The balance sheet of Metropolitan Movers

The balance sheet of Metropolitan Movers shows the values of the assets, liabilities, and equity at the end of the business day on September 29th. As business transactions occur on September 30th, there will be changes in the values of assets, liabilities, and equity. The balance sheet is not a suitable type of record on which to record these changes. Therefore, let us arrange the balance sheet items in a different manner. We will transfer the assets, liabilities, and capital from the balance sheet onto what we will call an equation analysis sheet. An **equation analysis sheet** is a tool for displaying individual transactions and the new financial position resulting from each transaction. At this stage of your accounting studies, the equation analysis sheet is ideal for analyzing and recording changes in financial position. In Chapter 4, you will modify your recording methods.

Figure 3.2 shows the balance sheet items for Metropolitan Movers entered on an equation analysis sheet. Note that this arrangement is in the form of the fundamental accounting equation.

| | ASSETS | | | | | = | LIABILITIES | | + | OWNER'S EQUITY |
|---------------------|--------|----------------|-------------------|-----------|--------|---|--------------------------|--------------|---|-----------------------|
| METROPOLITAN MOVERS | Cash | A/R B. Cava | A/R K. Lincoln | Equipment | Trucks | | A/P Central Supply | Bank Loan | | J. Hofner, Capital |
| Sep 29 Balances | 13 500 | 1 300 | 2 500 | 11 500 | 24 500 | | 1 750 | 18 370 | | 33 180 |

Figure 3.2
Equation analysis sheet for Metropolitan Movers

Updating the Equation Analysis Sheet

Accounts Receivable and Accounts Payable may be abbreviated A/R and A/P for now. You will learn the standard format for listing these terms in Chapter 8.

Let us now examine how transactions affect financial position.

TRANSACTION 1: Metropolitan Movers pays \$1200 cash to reduce the Bank Loan.

After this payment is made, the financial position shown in Figure 3.2 will no longer be correct. Two changes are necessary: Cash must be reduced by \$1200 and the amount owed to the bank must also be reduced by \$1200. These changes are recorded on the equation analysis sheet shown in Figure 3.3 below.

| ASSETS | | | | | | = | LIABILITIES | | + | OWNER'S EQUITY |
|---------------------|--------------|-------------|----------------|-----------|--------|---|--------------------|-----------|---|--------------------|
| METROPOLITAN MOVERS | Cash | A/R B. Cava | A/R K. Lincoln | Equipment | Trucks | | A/P Central Supply | Bank Loan | | J. Hofner, Capital |
| Sep 29 Balances | 13 500 | 1 300 | 2 500 | 11 500 | 24 500 | | 1 750 | 18 370 | | 33 180 |
| Trans. 1 | -1200 | | | | | | | -1200 | | |
| Balance | 12300 | 1300 | 2500 | 11500 | 24500 | | 1750 | 17170 | | 33180 |
| | <u>52100</u> | | | | | | <u>52100</u> | | | |

- ① Cash ↓ 1200 , Bank Loan ↓ 1200
- ② All other accounts remained the same
- *③ The accounting equation is in balance.

TRANSACTION 2: K. Lincoln, who owes Metropolitan Movers \$2500, pays \$1100 in partial payment of the debt.

Can you figure out the changes to be made on the equation analysis sheet? Try to do this mentally before looking at Figure 3.4 below.

| | ASSETS | | | | | = | LIABILITIES | + | OWNER'S EQUITY |
|---------------------|--------|-------------|----------------|-----------|--------|---|--------------------|-----------|--------------------|
| METROPOLITAN MOVERS | Cash | A/R B. Cava | A/R K. Lincoln | Equipment | Trucks | | A/P Central Supply | Bank Loan | J. Hofner, Capital |
| Sep 29 Balances | 13 500 | 1 300 | 2 500 | 11 500 | 24 500 | | 1 750 | 18 370 | 33 180 |
| Transaction 1 | -1 200 | | | | | | | -1 200 | |
| New Balances | 12 300 | 1 300 | 2 500 | 11 500 | 24 500 | | 1 750 | 17 170 | 33 180 |
| Trans 2 | +1100 | | -1100 | | | | | | |
| Balance | 13400 | 1300 | 1400 | 11500 | 24500 | | 1750 | 17170 | 33180 |
| | 52100 | | | | | | 52100 | | |

TRANSACTION 3: Equipment costing \$1950 is purchased for cash.

Again, try to make the changes mentally before looking at the entries recorded in Figure 3.5 below.

| | ASSETS | | | | | = | LIABILITIES | + | OWNER'S EQUITY |
|---------------------|--------------|-------------|----------------|--------------|--------------|---|--------------------|--------------|--------------------|
| METROPOLITAN MOVERS | Cash | A/R B. Cava | A/R K. Lincoln | Equipment | Trucks | | A/P Central Supply | Bank Loan | J. Hofner, Capital |
| Sep 29 Balances | 13 500 | 1 300 | 2 500 | 11 500 | 24 500 | | 1 750 | 18 370 | 33 180 |
| Transaction 1 | -1 200 | | | | | | | -1 200 | |
| New Balances | 12 300 | 1 300 | 2 500 | 11 500 | 24 500 | | 1 750 | 17 170 | 33 180 |
| Transaction 2 | 1 100 | | -1 100 | | | | | | |
| New Balances | 13 400 | 1 300 | 1 400 | 11 500 | 24 500 | | 1 750 | 17 170 | 33 180 |
| Trans 3 | -1950 | | | +1950 | | | | | |
| Balance | 11450 | 1300 | 1400 | 13450 | 24500 | | 1750 | 17170 | 33180 |

} 52100
} 52100

TRANSACTION 4: A pick-up truck is purchased at a cost of \$18 000. Metropolitan Movers pays \$10 000 cash and arranges a loan from its bank to cover the balance of the purchase price.

(Note: This is considered to be a single transaction. The bank will pay \$8000 directly to the truck dealer, who will be paid in full.) Again, try to work out the changes mentally before looking at the equation analysis sheet in Figure 3.6.

| METROPOLITAN MOVERS | ASSETS | | | | | = | LIABILITIES | | + | OWNER'S EQUITY |
|---------------------|--------|----------------|-------------------|-----------|--------|--------------------------|--------------|--|-----------------------|----------------|
| | Cash | A/R B. Cava | A/R K. Lincoln | Equipment | Trucks | A/P Central Supply | Bank Loan | | J. Hofner, Capital | |
| Sep 29 Balances | 13 500 | 1 300 | 2 500 | 11 500 | 24 500 | 1 750 | 18 370 | | 33 180 | |
| Transaction 1 | -1 200 | | | | | | -1 200 | | | |
| New Balances | 12 300 | 1 300 | 2 500 | 11 500 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 2 | 1 100 | | -1 100 | | | | | | | |
| New Balances | 13 400 | 1 300 | 1 400 | 11 500 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 3 | -1 950 | | | 1 950 | | | | | | |
| New Balances | 11 450 | 1 300 | 1 400 | 13 450 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Trans 4 | -10000 | | | | +18000 | | +8000 | | | |
| Balances | 1450 | 1300 | 1400 | 13450 | 42500 | 1750 | 25170 | | 33180 | |
| | 60160 | | | | | | 60100 | | | |

TRANSACTION 5: Metropolitan Movers completes a storage service for B. Cava at a price of \$1500. A bill is sent to Cava to indicate the additional amount that is owed.

Work out the changes necessary and compare them with the equation analysis sheet in Figure 3.7 (on the next page).

| METROPOLITAN MOVERS | ASSETS | | | | | = | LIABILITIES | | + | OWNER'S EQUITY |
|---------------------|-------------|--------------|----------------|--------------|--------------|--------------------|--------------|--|--------------------|----------------|
| | Cash | A/R B. Cava | A/R K. Lincoln | Equipment | Trucks | A/P Central Supply | Bank Loan | | J. Hofner, Capital | |
| Sep 29 Balances | 13 500 | 1 300 | 2 500 | 11 500 | 24 500 | 1 750 | 18 370 | | 33 180 | |
| Transaction 1 | -1 200 | | | | | | -1 200 | | | |
| New Balances | 12 300 | 1 300 | 2 500 | 11 500 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 2 | 1 100 | | -1 100 | | | | | | | |
| New Balances | 13 400 | 1 300 | 1 400 | 11 500 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 3 | -1 950 | | | 1 950 | | | | | | |
| New Balances | 11 450 | 1 300 | 1 400 | 13 450 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 4 | -10 000 | | | | 18 000 | | 8 000 | | | |
| New Balances | 1 450 | 1 300 | 1 400 | 13 450 | 42 500 | 1 750 | 25 170 | | 33 180 | |
| Trans 5 | | +1500 | | | | | | | +1500 | |
| Balance | 1450 | 1800 | 1400 | 13450 | 42500 | 1750 | 25170 | | 34680 | |

Understanding changes like the ones in Transaction 5 is vital to becoming a good accountant. Transaction 5 may be analyzed as follows:

1. B. Cava owes \$1500 more to Metropolitan Movers. Therefore the figure for Accounts Receivable—B. Cava is increased by \$1500.
2. No other asset or liability is affected.
3. J. Hofner’s capital is increased by \$1500, as explained below.

There are two ways to explain this increase in capital. First, be aware that Metropolitan Movers is in the business of providing a service to earn profit. When the service to B. Cava has been completed, the \$1500 is legally owed and a gain has been made. Metropolitan Movers has earned this money. This gain is recorded by increasing the capital of the owner, J. Hofner. **Revenue**

Second, in Section 2.3 you learned that equity is a residual claim. In other words, the owner gets to claim the “leftovers.” Mathematically, the Total Assets figure has increased by \$1500. Since there are no additional liabilities, the owner claims this extra \$1500, keeping the accounting equation in balance.

*** Revenues represent an increase to owner's equity**

Drawing " **TRANSACTION 6: J. Hofner, the owner, withdraws \$500 for personal use.** "
 Work out the necessary changes and then check your work against the equation analysis sheet in Figure 3.8 below.

| METROPOLITAN MOVERS | ASSETS | | | | | = | LIABILITIES | | + | OWNER'S EQUITY |
|---------------------|-------------|-------------|----------------|--------------|--------------|--------------------|--------------|--|--------------------|----------------|
| | Cash | A/R B. Cava | A/R K. Lincoln | Equipment | Trucks | A/P Central Supply | Bank Loan | | J. Hofner, Capital | |
| Sep 29 Balances | 13 500 | 1 300 | 2 500 | 11 500 | 24 500 | 1 750 | 18 370 | | 33 180 | |
| Transaction 1 | -1 200 | | | | | | -1 200 | | | |
| New Balances | 12 300 | 1 300 | 2 500 | 11 500 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 2 | 1 100 | | -1 100 | | | | | | | |
| New Balances | 13 400 | 1 300 | 1 400 | 11 500 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 3 | -1 950 | | | 1 950 | | | | | | |
| New Balances | 11 450 | 1 300 | 1 400 | 13 450 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 4 | -10 000 | | | | 18 000 | | 8 000 | | | |
| New Balances | 1 450 | 1 300 | 1 400 | 13 450 | 42 500 | 1 750 | 25 170 | | 33 180 | |
| Transaction 5 | | 1 500 | | | | | | | 1 500 | |
| New Balances | 1 450 | 2 800 | 1 400 | 13 450 | 42 500 | 1 750 | 25 170 | | 34 680 | |
| <i>Trans 6</i> | <i>-500</i> | | | | | | | | <i>-500</i> | |
| Balance | 950 | 2800 | 1400 | 13450 | 42500 | 1750 | 25170 | | 34180 | |

In analyzing Transaction 6, observe that

1. Cash is decreased by \$500, the amount withdrawn.
2. No other asset or liability is affected.
3. Capital is decreased by \$500. Assets have been withdrawn from the business. There is less to claim. Obviously, the creditors' claims are unaffected by the drop in assets. The owner must assume a smaller claim, leaving the accounting equation in balance.

Drawings represent a decrease in Owner's equity

TRANSACTION 7: One of the trucks requires an engine adjustment costing \$375. The repair is paid for in cash when the truck is picked up.

Work out the necessary changes and then check your work against the equation analysis sheet in Figure 3.9 below.

| METROPOLITAN MOVERS | ASSETS | | | | | = | LIABILITIES | | + | OWNER'S EQUITY |
|---------------------|---------|-------------|----------------|-----------|--------|--------------------|-------------|--|--------------------|----------------|
| | Cash | A/R B. Cava | A/R K. Lincoln | Equipment | Trucks | A/P Central Supply | Bank Loan | | J. Hofner, Capital | |
| Sep 29 Balances | 13 500 | 1 300 | 2 500 | 11 500 | 24 500 | 1 750 | 18 370 | | 33 180 | |
| Transaction 1 | -1 200 | | | | | | -1 200 | | | |
| New Balances | 12 300 | 1 300 | 2 500 | 11 500 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 2 | 1 100 | | -1 100 | | | | | | | |
| New Balances | 13 400 | 1 300 | 1 400 | 11 500 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 3 | -1 950 | | | 1 950 | | | | | | |
| New Balances | 11 450 | 1 300 | 1 400 | 13 450 | 24 500 | 1 750 | 17 170 | | 33 180 | |
| Transaction 4 | -10 000 | | | | 18 000 | | 8 000 | | | |
| New Balances | 1 450 | 1 300 | 1 400 | 13 450 | 42 500 | 1 750 | 25 170 | | 33 180 | |
| Transaction 5 | | 1 500 | | | | | | | 1 500 | |
| New Balances | 1 450 | 2 800 | 1 400 | 13 450 | 42 500 | 1 750 | 25 170 | | 34 680 | |
| Transaction 6 | -500 | | | | | | | | -500 | |
| New Balances | 950 | 2 800 | 1 400 | 13 450 | 42 500 | 1 750 | 25 170 | | 34 180 | |
| Trans 7 | -375 | | | | | | | | -375 | |
| Balance | 575 | 2800 | 1400 | 13450 | 42500 | 1750 | 25170 | | 33805 | |

In analyzing Transaction 7, observe that

1. Cash is decreased by \$375, the amount paid for the repair.
2. No other asset or liability is affected. The value of the truck on the equation analysis sheet is not increased because the engine received a tune-up.
3. Capital is decreased by \$375. Cash paid has decreased the amount of Total Assets. Since there is a smaller amount of assets to claim, and the creditors' claims are unaffected, the owner's claim must decrease in response to the reduction of assets. Expense
4. After the changes are recorded, the accounting equation is still in balance.

* An expense represents a reduction to Owner's equity.

Updating the Balance Sheet

The figures for an updated balance sheet for Metropolitan Movers are taken from the last line of the equation analysis sheet. Figure 3.10 below shows the new balance sheet.

| METROPOLITAN MOVERS BALANCE SHEET SEPTEMBER 30, 20– | | | |
|---|-----------------|------------------------------|-----------------|
| <i>Assets</i> | | <i>Liabilities</i> | |
| Cash | \$ 575 | Accounts Payable | |
| Accounts Receivable | | – Central Supply | \$ 1 750 |
| – B. Cava | 2 800 | Bank Loan | <u>25 170</u> |
| – K. Lincoln | 1 400 | Total Liabilities | \$26 920 |
| Equipment | 13 450 | <i>Owner's Equity</i> | |
| Trucks | 42 500 | J. Hofner, Capital | <u>33 805</u> |
| Total Assets | <u>\$60 725</u> | Total Liabilities and Equity | <u>\$60 725</u> |

Summary of Steps in Analyzing a Transaction

The following steps will help you to analyze any transaction:

Step 1 *Identify all asset and liability items that must be changed and make all necessary changes.*

When thinking about the transaction, try to be logical and use common sense.

- Carefully analyze the information given for any transaction.
- Classify each item affected as an asset or a liability.
- Decide whether each item affected is to be increased or decreased.

Step 2 *See if the owner's equity has changed.*

Remember the accounting equation. For example, if assets decrease and there is a corresponding liability decrease, the owner's equity will not change. However, if assets decrease and liabilities are unchanged, the equation must be balanced by a decrease in owner's equity. Eventually, you will come to recognize whether or not owner's equity has changed. Generally, if a business is better off after a transaction, owner's equity has increased. If a business is worse off after a transaction, owner's equity has decreased.

Step 3 *Make certain that at least two of the individual items have changed.*

It is possible for several items—assets, liabilities, or owner's equity—to change, but there can never be only one change.

Step 4 *Make sure that the equation is still in balance.*

The fundamental accounting equation must be respected: assets must equal liabilities plus owner's equity.

Homework

Chapter 3 Review

Review Exercises 1-6

Challenge Exercise 7

| | |
|-----------|----------------------------|
| CHAPTER 3 | REVIEW EXERCISES (page 78) |
|-----------|----------------------------|

Using Your Knowledge**Exercise 1, p. 78**

Transaction 1: A customer, F. Vanweers, paid a debt of \$250.

Transaction 2: There was \$150 worth of supplies purchased on credit from Norpaints.

Transaction 3: B. Provost, the owner, invested \$300 cash into the business or the business sold services for \$300 cash.

Transaction 4: The business performed a service for C. Sully for \$115, who has 30 days to make payment.

Transaction 5: The company's debt to B. M. Co. was paid in full.

Exercise 2, p. 79

Transaction 1: The business performed a service for L. Swan for \$1800. Swan paid \$500 in cash and owes the remaining \$1300.

Transaction 2: The auto valued at \$7000 in the business's records was sold to High Finance for \$6500. The debt to High Finance of \$5000 was eliminated as part of the transaction, leaving B. Lee with \$1500 cash and a \$500 loss on the sale of the auto.

Transaction 3: A \$20 000 auto was bought with \$1000 cash and a \$19 000 bank loan.

Transaction 4: The owner withdrew \$150 for personal use or one of the business's expenses was paid for in cash.

Transaction 5: Supplies worth \$50 were damaged or destroyed.

Exercise 3, p. 80

| | Total Assets | | | = | Total Liabilities | | | + | Total Equity | | |
|---|--------------|------|----|-------|-------------------|----|----|-------|--------------|----|----|
| | + | - | NC | | + | - | NC | | + | - | NC |
| 1. Paid the telephone bill that arrived today, \$45. | | -45 | | | | | | | -45 | | |
| 2. Paid \$350 cash for supplies. | | | NC | | | NC | | | | NC | |
| 3. Paid \$500 to reduce the bank loan. | | -500 | | | -500 | | | | | | |
| 4. Sold services for \$1000 cash. | 1 000 | | | | | | | 1 000 | | | |
| 5. Receivable customer pays us \$600 cash. | | | NC | | | NC | | | | NC | |
| 6. Paid the invoice that arrived today for legal fees, \$800. | | -800 | | | | | | | -800 | | |
| 7. Sold services for \$2000 on credit. | 2 000 | | | | | | | 2 000 | | | |
| 8. Paid a creditor \$750 to reduce the amount owed to him. | | -750 | | | -750 | | | | | | |
| 9. Bought \$4500 of equipment on credit. | 4 500 | | | 4 500 | | NC | | | | NC | |
| 10. Office furniture valued at \$400 was damaged and discarded. | | -400 | | | | | | | -400 | | |

Exercise 4, p. 80

Four transactions that could cause a decrease in owner's equity are the loss on the sale of an asset, the owner withdrawing money from the business for personal use, the destruction of an asset, or an expense incurred by the business.

Exercise 5, p. 80

Two transactions that could cause an increase in owner's equity are an increase in revenue due to the sale of business services or the owner investing money in the business.

Exercise 6, p. 81

- A. *This source document is a cheque.*
- B. *Smokey Valley Ski Club issued the cheque.*
- C. *Midwest-West Ski Lifts and Equipment received the cheque.*
- D. *The cheque is likely paying for the ski equipment or the chair lifts bought from Midwest-West Ski Lifts and Equipment. It is also possible that the cheque is paying for repair services provided by Mid-West Ski Lifts and Equipment.*
- E. *Both b and c are possible. Since most businesses purchase assets like this on credit and pay for them later, b is more likely.*
-
-

A., B.

| MERRYMEN WINDOW WASHING | ASSETS | | | | | | = | LIABILITIES | | | + | OWNER'S EQUITY | |
|-------------------------|---------|-------------|-----------------|----------|---------|-----------|------------------|--------------|-------------|-----------------|-------------------|----------------|--|
| | Cash | A/R T. Kwan | A/R D. Pedersen | Supplies | Truck | Equipment | A/P Cleanall Co. | A/P Hipp Co. | A/P NRC Co. | Simplex Finance | C. Savich Capital | | |
| Opening Balances | 2 750 | 420 | 75 | 880 | 15 050 | 12 947 | 124 | 475 | | 8 560 | 22 963 | | |
| Transaction 1 | -800 | | | | | | | | | -800 | | | |
| Transaction 2 | | | | +400 | | | | +400 | | | | | |
| Transaction 3 | +200 | -200 | | | | | | | | | | | |
| Transaction 4 | -300 | | | | | +2 125 | | | +1 825 | | | | |
| Transaction 5 | +100 | | | | | -550 | | | | | -450 | | |
| Transaction 6 | +575 | | -75 | | | | | | | | +500 | | |
| Transaction 7 | +14 500 | | | | -15 050 | | | | | | -550 | | |
| Transaction 8 | -7 760 | | | | | | | | | -7 760 | | | |
| Transaction 9 | -8 000 | | | | +23 000 | | | | | +15 000 | | | |
| Transaction 10 | -875 | | | | | | | -875 | | | | | |
| Transaction 11 | | | | -50 | | | | | | | -50 | | |
| New Balances | 390 | 220 | | 1 230 | 23 000 | 14 522 | 124 | | 1 825 | 15 000 | 22 413 | | |

C.

MERRYMEN WINDOW WASHING
BALANCE SHEET
DECEMBER 1, 20-

| Assets | | | | | Liabilities | | | | |
|--------------|----|----|---|-------|------------------------------|----|------|---|-------|
| Cash | \$ | 3 | 9 | 0 - | A/P—Cleanall Co. | \$ | 1 | 2 | 4 - |
| A/R—T. Kwan | | | 2 | 2 0 - | A/P—NRC Co. | | 1 | 8 | 2 5 - |
| Supplies | | 1 | 2 | 3 0 - | Loan Payable—Simplex Finance | | 15 | 0 | 0 0 - |
| Truck | | 23 | 0 | 0 0 - | Total Liabilities | | \$16 | 9 | 4 9 - |
| Equipment | | 14 | 5 | 2 2 - | | | | | |
| | | | | | Owner's Equity | | | | |
| | | | | | C. Savich, Capital | | 22 | 4 | 1 3 - |
| Total Assets | \$ | 39 | 3 | 6 2 - | Total Liabilities and Equity | \$ | 39 | 3 | 6 2 - |