

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.

	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
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).

	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
METROPOLITAN MOVERS										
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

Section 3.2

Review Questions 1-10

Exercises 1-3

SECTION 3.2 REVIEW QUESTIONS (page 69)

1. *The equation analysis sheet is necessary because it helps you analyze and record changes in a company's financial position.*

2. *Assets, liabilities, and capital are transferred from the balance sheet to the equation analysis sheet.*

3. *After each transaction is recorded on the equation analysis sheet, new column totals are calculated and these totals are balanced according to the fundamental accounting equation ($A = L + OE$). If the totals balance, then each transaction was balanced.*

4. *A transaction does not always change both sides of the accounting equation. For example, a transaction might increase one asset and decrease another by the same amount. In this case, the right side of the accounting equation (liabilities and equity) would be totally unchanged.*

5. *If the repair is paid for at a later date, then it will only affect the right side of the accounting equation. Liabilities increase by \$375 and owner's equity decreases by \$375.*

6. *The first step is to record the changes in any of the assets, liabilities, or both. The second step is to determine if the equity has changed. The third step is to make sure that at least two of the individual items have changed. The fourth step is to make sure that the equation is still in balance.*

7. *A good clue as to whether capital had changed is whether the business is better off or worse off as a result of the transaction.*

8. *If assets increase by \$10 000 with no corresponding change to liabilities, then capital must increase by \$10 000.*

9. *In addition to their memory, good accountants rely on common sense, clear thinking, and a thorough understanding of accounting theory.*

10. *Accounting must be done accurately to ensure financial records are correct and reliable.*

ASSETS						=	LIABILITIES		+	OWNER'S EQUITY
SHEILA'S INTERIOR DECORATING	Cash	A/R E. Kerluck	Supplies	Office Furniture	Automobile		A/P Home Supply	A/P Pine Motors		S. Kostiuk Capital
Opening Balance	2 050	150	600	1 200			1 000			3 000
Transaction 1			175				175			
<i>New Balances</i>	2 050	150	775	1 200			1 175	0		3 000
Transaction 2	-450			450						
<i>New Balances</i>	1 600	150	775	1 650			1 175	0		3 000
Transaction 3	150	-150								
<i>New Balances</i>	1 750	0	775	1 650			1 175	0		3 000
Transaction 4	300									300
<i>New Balances</i>	2 050		775	1 650			1 175			3 300
Transaction 5	-500				6 500			6 000		
<i>New Balances</i>	1 550		775	1 650	6 500		1 175	6 000		3 300
Transaction 6	-700						-700			
<i>New Balances</i>	850		775	1 650	6 500		475	6 000		3 300
Transaction 7	-200									-200
<i>New Balances</i>	650		775	1 650	6 500		475	6 000		3 100

A., B.

ASSETS						=	LIABILITIES		+	OWNER'S EQUITY
TRIANGLE REAL ESTATE	Cash	A/R J. Singh	A/R N. Swartz	Supplies	Office Furniture		A/P Acme Supply	A/P Office Discounts		J. Morse Capital
Opening Balance	1 216	1 500	800	4 175	11 969		1 750	875		17 035
Transaction 1	500		-500							
<i>New Balances</i>	<i>1 716</i>	<i>1 500</i>	<i>300</i>	<i>4 175</i>	<i>11 969</i>		<i>1 750</i>	<i>875</i>		<i>17 035</i>
Transaction 2	-300						-300			
<i>New Balances</i>	<i>1 416</i>	<i>1 500</i>	<i>300</i>	<i>4 175</i>	<i>11 969</i>		<i>1 450</i>	<i>875</i>		<i>17 035</i>
Transaction 3				495				495		
<i>New Balances</i>	<i>1 416</i>	<i>1 500</i>	<i>300</i>	<i>4 670</i>	<i>11 969</i>		<i>1 450</i>	<i>1 370</i>		<i>17 035</i>
Transaction 4	4 700									4 700
<i>New Balances</i>	<i>6 116</i>	<i>1 500</i>	<i>300</i>	<i>4 670</i>	<i>11 969</i>		<i>1 450</i>	<i>1 370</i>		<i>21 735</i>
Transaction 5	-950				950					
<i>New Balances</i>	<i>5 166</i>	<i>1 500</i>	<i>300</i>	<i>4 670</i>	<i>12 919</i>		<i>1 450</i>	<i>1 370</i>		<i>21 735</i>
Transaction 6	-380									-380
<i>New Balances</i>	<i>4 786</i>	<i>1 500</i>	<i>300</i>	<i>4 670</i>	<i>12 919</i>		<i>1 450</i>	<i>1 370</i>		<i>21 355</i>
Transaction 7	-290									-290
<i>New Balances</i>	<i>4 496</i>	<i>1 500</i>	<i>300</i>	<i>4 670</i>	<i>12 919</i>		<i>1 450</i>	<i>1 370</i>		<i>21 065</i>
Transaction 8	1 500	-1 500								
<i>New Balances</i>	<i>5 996</i>	<i>0</i>	<i>300</i>	<i>4 670</i>	<i>12 919</i>		<i>1 450</i>	<i>1 370</i>		<i>21 065</i>

C.

TRIANGLE REAL ESTATE

BALANCE SHEET

OCTOBER 1, 20-

<i>Assets</i>					<i>Liabilities</i>								
<i>Cash</i>	\$	5	9	96	-	<i>A/P—Acme Supply</i>	\$	1	4	50	-		
<i>A/R—N. Swartz</i>			8	0	0	-	<i>A/P—Office Discounts</i>		1	3	70	-	
<i>Supplies</i>			4	6	70	-	<i>Total Liabilities</i>	\$	2	8	20	-	
<i>Office Furniture</i>			12	9	19	-							
							<i>Owner's Equity</i>						
							<i>J. Morse, Capital</i>		21	0	65	-	
<i>Total Assets</i>	\$	23	8	8	5	-	<i>Total Liabilities and Equity</i>	\$	23	8	8	5	-

A., B.

ASSETS								=	LIABILITIES	+	OWNER'S EQUITY
ALLIANCE APPLIANCE SERVICES	Cash	A/R N. Chang	A/R P. O'Neill	Equipment	Truck	Land	Building		Bank Loan	Mortgage Payable	W. Dalli Capital
Opening Balance	6 540	1 100	529	8 316	19 750	140 000	180 000		15 000	192 700	148 535
Transaction 1	-2 500										-2 500
Transaction 2	529		- 529								
Transaction 3		390									390
Transaction 4	4 000				-19 750						-15 750
Transaction 5	-900									-900	
Transaction 6	-700										-700
Transaction 7	-5 000				40 000				35 000		
Total	1 969	1 490	0	8 316	40 000	140 000	180 000		50 000	191 800	129 975

Exercise 3, p. 71

C.

ALLIANCE APPLIANCE SERVICE

BALANCE SHEET

OCTOBER 21, 20-

<i>Assets</i>						<i>Liabilities</i>							
Cash	\$	1	9	6	9	-	Bank Loan	\$	50	0	0	0	-
A/R—N. Chang		1	4	9	0	-	Mortgage Payable		191	8	0	0	-
Equipment		8	3	1	6	-	Total Liabilities		\$242	8	0	0	-
Truck		40	0	0	0	-							
Land		140	0	0	0	-	<i>Owner's Equity</i>						
Building		180	0	0	0	-	W. Dalli, Capital		129	9	7	5	-
Total Assets		\$371	7	7	5	-	Total Liabilities and Equity		\$371	7	7	5	-

Key Figure Check: Total
Liabilities is \$128 050

Transaction	Cash	Tools	Equipment	Tractor	Land	Building	A/P Kent Building Supplies	A/P McIntosh Farms Ltd.	A/P Superior Lots Ltd.	Bank Loan	Mortgage Payable	M. Whiting, Capital
April 1												
April 2												
April 3												
April 5												
April 7												
April 9												
April 11												
April 15												
April 16												
April 19												
April 22												
April 29												
Totals												

Key Figure Check: Total
Liabilities is \$128 050

Transaction	Cash	Tools	Equipment	Tractor	Land	Building	A/P Kent Building Supplies	A/P McIntosh Farms Ltd.	A/P Superior Lots Ltd.	Bank Loan	Mortgage Payable	M. Whiting, Capital
April 1	65000											65000
April 2	-4500				17000				12500			
April 3	42000									42000		
April 5	-6250			32000				25750				
April 7	-33450					78450					45000	
April 9	-3500		3500									
April 11	-3000											-3000
April 15	-1300	4200					2900					
April 16	625		-625									
April 19	10000											10000
April 22	-750							-750				
April 29		650					650					
Totals	64875	4850	2875	32000	17000	78450	3550	25000	12500	42000	45000	72000

A Spreadsheet for Transaction Analysis

3.3

Spreadsheets were developed to give people easy access to the computer's extraordinary ability with numbers. Accountants can build impressive financial models to perform calculations quickly and accurately. The following example gives you an opportunity to gain more experience with transactions on an equation analysis sheet. At the same time, you will add to your spreadsheet skills.

Business Background

Anna Antonelli provides clerical accounting services. To record transactions, she uses accounting software like the programs you will learn about in Chapter 7. To help new employees learn spreadsheets, Anna developed a model to help them analyze transactions. Load spreadsheet model, *anna.xls* into your computer. It will look similar to Figure 3.11 shown on the next page.

All spreadsheets look similar. This textbook uses Excel. If you use a different spreadsheet program, check your program's Help menu or use a search engine on the internet for equivalent instructions.

ANTONELLI'S ACCOUNTING SERVICES	ASSETS					Total Assets	LIABILITIES			Total Liabilities	OWNER'S EQUITY		Zero Proof
	Cash	A/R Jones Travel	A/R F. Leonel	Supplies	Equipment		A/P Best Offices	A/P Eastside News	Bank Loan		A. Antonelli, Capital	Total Equity	
Beginning	275	300	350	700	900	2 525	175		900	675	1 850	1 850	0
Transaction 1						2 525				675		1 850	0
Transaction 2						2 525				675		1 850	0
Transaction 3						2 525				675		1 850	0
Transaction 4						2 525				675		1 850	0
Transaction 5						2 525				675		1 850	0
Transaction 6						2 525				675		1 850	0
Transaction 7						2 525				675		1 850	0
Transaction 8						2 525				675		1 850	0
Transaction 9						2 525				675		1 850	0
Transaction 10						2 525				675		1 850	0
Transaction 11						2 525				675		1 850	0
Transaction 12						2 525				675		1 850	0
Ending	275	300	350	700	900	2 525	175	0	900	675	1 850	1 850	0

Figure 3.11

The spreadsheet model for Antonelli's Accounting Services