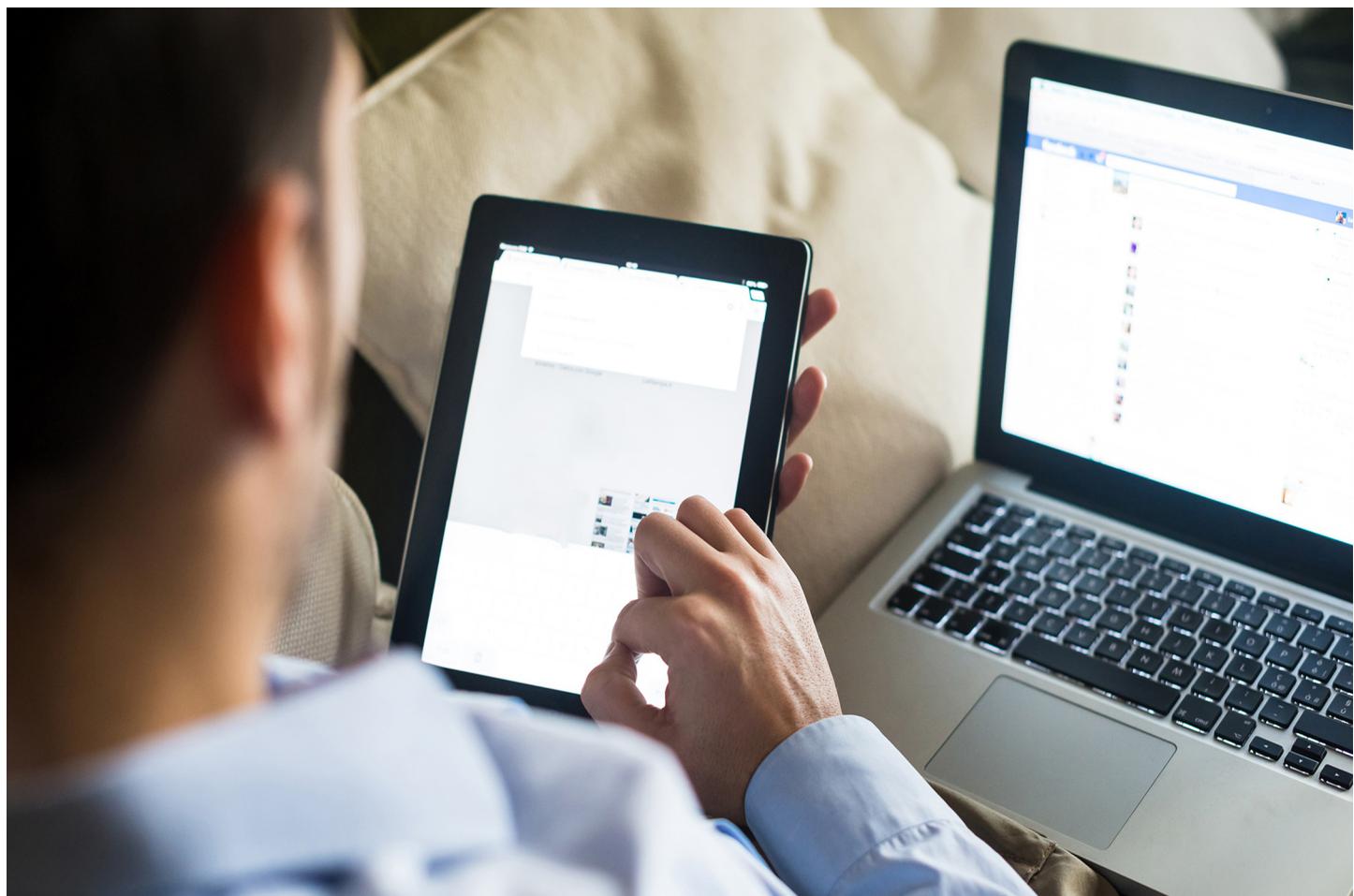


Fundamentals of accounting



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Fundamentals of accounting

Introduction

In this free course, *Fundamentals of accounting*, we introduce you to the essential concepts and skills of bookkeeping and accounting in four weeks. To start with you will learn about the fundamental difference between bookkeeping and accounting. In Week 1 you will also learn how the purpose of management accounting differs from that of financial accounting. In Week 2 you will gain some practical skills in numeracy, including learning about rearranging simple equations such as the accounting equation. In Week 3 you will gain knowledge and understanding of the fundamental concepts that underpin double-entry accounting. You will also learn the rules of double-entry bookkeeping and how to record transactions in ledger accounts. In the fourth and final week you will learn how to prepare a trial balance and the balance sheet (also known as the statement of financial position). In the final week you will also be introduced to the income statement (also known as the profit and loss statement) and how it fits with the accounting equation and the balance sheet.

This OpenLearn course is an adapted extract from the Open University course [B124 Fundamentals of accounting](#).

Learning outcomes

After studying this course, you should be able to:

- understand and explain the purpose and role of bookkeeping and accounting, both financial and management, within any business
- understand and apply the key numerical skills required for accounting
- understand and describe the three concepts that form the basis of double-entry accounting (the business entity concept, the accounting equation and the duality concept)
- record transactions in the appropriate ledger accounts using the double-entry accounting system
- balance off ledger accounts at the end of an accounting period and prepare a trial balance and balance sheet.

Week 1: The purpose and role of bookkeeping and accounting

Introduction

In this week you will learn about the key differences between bookkeeping and accounting and how accounting gives answers to four fundamental financial questions. You will also learn how a business can make a profit yet have negative cash flow. The final aspect of this week's learning is how financial accounting differs from management accounting in a number of important ways.

1.1 Bookkeeping and accounting

Bookkeeping is the process of identifying and recording transactions and other financial events affecting an enterprise in a systematic way. Transactions refer to the trading activities or buying and selling that every business needs to record. A financial event could be any change in the value of a business, such as theft or damage to property, that also needs to be recorded. For hundreds of years the owners of businesses have needed to rely on financial records kept by bookkeepers. Such records have little value unless they are accurate and reliable.

Accounting is broader than bookkeeping and refers to the process of classifying, interpreting, summarising and reporting on transactions and other financial events. This is done in order to generate useful information from the many different types of purchases and sales that are individually recorded by bookkeepers.

An example of useful information is a daily sales report for a particular product in order to determine if an advertising campaign has made any difference to sales. By producing such a report, the sales transaction data recorded by the bookkeeper is organised into a meaningful form that will help the accountant to decide if sales for the relevant period have changed as a result of the advertising.

The following animated video summarises the broad purpose and role of accounting today.

Video content is not available in this format.

[Video 1 Accounting today](#)



The responsibility of accountants is to prepare reports that contain useful information for a range of decision makers and stakeholders inside and outside the business. Such reports need to give a complete answer to four crucial financial questions that will be discussed in the next section. Only in answering these fundamental questions is the accountant able to generate reports that meet the varying information needs of different stakeholders.

1.2 The four fundamental financial questions

Users of financial information, both inside and outside organisations, want answers from accountants to the following four fundamental financial questions:

Question 1: What does an enterprise own i.e. what are its assets?

Question 2: What does an enterprise owe i.e. what are its liabilities?

Question 3: How did the enterprise perform i.e. what is its profit or loss?

Question 4: How did the enterprise obtain and use cash i.e. what is its cash flow?

All the assets and liabilities of a business are summarised in a primary financial report called a balance sheet, also known as the statement of financial position. Such a report, as well as the underlying accounting records, give the answers for the first two fundamental accounting questions above.

Box 1 The difference between assets and liabilities

An asset is a resource with financial value that is owned by a business with the expectation that it will provide future financial benefit. A liability is a financial claim owing to lenders and suppliers of goods or services on credit.

Later in this course you will learn the system, double-entry accounting, which keeps track of all assets and liabilities in double-entry records that are used as the basis of the balance sheet. At this stage it is more important that you develop a good understanding of the difference between assets and liabilities.

Activity 1 Understanding assets and liabilities

For the items below, type in the box provided whether they are assets or liabilities.

Table 1 Choosing between assets and liabilities

Interactive content is not available in this format.

Answer

Table 1 Choosing between assets and liabilities

Item	Asset or liability
Building	Asset
Overdraft	Liability
Receivables (debtors)	Asset
Mortgage	Liability
Inventory (goods for sales)	Asset
Patent	Asset
Payables (creditors)	Liability
Machinery	Asset

Discussion

Buildings and machinery are assets that are common in a business. A patent, which is an exclusive right to make, use or sell an invention for a specified period, is a less common asset. While buildings and machinery are tangible or physical assets, a patent is classified as an intangible (non-physical) asset. Receivables or debtors refers to the total money owed to a business by credit customers and is thus an asset.

Inventory are goods for sale in a business and are thus assets that are owned.

All the other items are liabilities. An overdraft is when a bank balance is negative and the customer owes the bank a sum of money. A mortgage is a loan agreement secured on a business premise, for instance, in which the lender can take possession of the premise if the borrower fails to pay back the loan as agreed. Payables or creditors is the total money owed by a business to credit suppliers of goods or services.

The answer to the third fundamental question, 'What is its profit or loss?' is provided by the income statement, which is the second primary financial report. This report gives summary totals of all the income and expense items in a business that have been aggregated from the underlying double-entry accounting records. If total income (also known as revenue) is greater than total expenses then this positive difference is referred to as a profit. If total income is less than total costs, then this negative difference is referred to as a loss.

Box 2 Stop and reflect

What is the difference between the cash made or lost in a period and the profit or loss in the same period?

The amount of cash any business has made or lost in a period is simple to calculate. It is merely the difference in cash held at the beginning and the end of that period. If the cash position is greater at the end of the period than the beginning, then the business has generated a positive cash flow. If less, then the result will be a negative cash flow.

The profit or loss made in the same period is all income earned less all expenses incurred in generating that income. (It is important to recognise that 'all income' and 'all expenses' include cash as well as credit transactions.) If total income is greater than total expenses in a period, then a profit has been made regardless of whether a positive or negative cash flow has occurred. If less, a loss has been suffered irrespective again of whatever may have happened to the cash position of the enterprise.

1.3 Income and expenses in accounting

An important aspect of double-entry accounting is that income and expenses are recognised when they occur (and not when cash is paid or received) and then reported in the financial period to which they relate. Consider a credit sale that occurs in the annual accounting period ending 31 December 2016 but payment is only received by the customer the following year. Such a sale is recognised and reported in the accounting period in which it takes place whether or not cash has been received by the end of the period.

All businesses have to also keep track of their cash flow (the fourth fundamental question). Such a record details the cash coming in and out of the enterprise and is summarised, like the income statement and balance sheet, in a report at the end of each accounting period. Cash is just one asset of a business but is often described as the most important asset as it is the only one that can be used to pay debts at very short notice. Other assets, such as goods for sale or property, have to be sold first before any cash proceeds can be used to pay any debts owing.

The next activity should give you an insight into the common situation in business where the profit made in a period is not the same as the cash generated in the same period. In order to compare your responses to the answers, you will need to enter text into the boxes below. You will then be able to click on 'Save and reveal answer'.

Activity 2 Understanding the difference between profit or loss and positive or negative cash flow

Andrew and Barry have recently started exactly the same business – buying and selling music CDs. They each started their trade on 1 January 20X1 with £1,000 entirely borrowed from the bank. Both Andrew and Barry bought their CDs for cash but Andrew decided to allow his customers to buy CDs on credit as he believed this would generate more sales.

In the first week of trading Andrew bought CDs for £800 – all cash – and sold them all for £1,600 – all on credit. Barry, on the other hand, bought CDs for £400 – all cash – and sold them all for £800 – all cash.

- Assuming that Andrew and Barry had no other income and expenses in the week, calculate each of their profit for the week.

Provide your answer...

Answer

Andrew's profit for the week = £1,600 (credit sales) – £800 (cash purchases) = £800.

Barry's profit for the week = £800 (cash sales) – £400 (cash purchases) = £400.

- Assuming that Andrew and Barry had no other transactions in the week, calculate each of their cash generated for the week.

Provide your answer...

Answer

Andrew's cash generated for the week = (£1,000 – £800) – £1,000 = –£800 (i.e. the business has a negative cash flow of £800 in the week).

Barry's cash generated for the week = (£1,000 + £800 – £400) – £1,000 = £400 (i.e. the business has a positive cash flow of £400 in the week).

- What do your answers to (a) and (b) tell you about the effect of credit sales on profit earned and cash generated in a business?

Provide your answer...

Discussion

The answers tell us that credit sales may generate more profit in a period (Andrew's profit compared to Barry's) at the expense of losing cash (Andrew's negative generation of cash compared to Barry's). From the activity above we have seen that it is possible for a business to make a profit in a period but lose cash in the same period.

It is widely known that profit is the difference between total income and total expenses in a business. What is less well-known is that the overall accounting value of a business is the difference between total assets and total liabilities as recorded in the balance sheet. This overall value is known as the net assets, net worth or capital of the business.

1.4 Capital in accounting

Every enterprise starts with no money. It needs the owner to put in money to get the business going. Other assets, such as inventory (goods) to be sold to customers, are then bought for future financial benefit.

Businesses need to separate out the money put into the business by the owner from the liabilities it incurs, which need to be repaid. The money 'owing' to the owners is known as capital.

Box 3 Accounting records and the business entity concept

Some businesses, such as sole traders, have no separate legal existence from the owner or owners. All the debts of the business are their personal debts and, unlike a limited company, they have unlimited liability for honouring these debts. In spite of this they must always keep the accounting records of the business separate from their own personal affairs. This is known as the business entity concept and is as relevant to a small sole trader as it is to a multinational company.

Activity 3 Understanding the effect of profit or loss on capital in a business

Two years ago Julia started a business at home. She put £500 into the business with her own money to get it going. The income statement at the end of Julia's first accounting period – a year – showed a loss of £300. Julia's business performed better in the second year and earned a profit of £700.

- 1 What is the capital of Julia's business at the end of its first accounting period?

Provide your answer...

Answer

£200 (Opening capital of £500 for the first accounting period less a loss of £300.)

- 2 What is the capital of Julia's business at the end of its second accounting period?

Provide your answer...

Answer

£900 (Opening capital of £200 for the second accounting period plus a profit of £700.)

Later on in this course you will learn about the double-entry accounting system that allows all the information contained about an enterprise's capital, assets (including cash), liabilities and profit or loss to be traced back, quickly and accurately, to original transactions and financial events.

A principal purpose of double-entry accounting is to prepare reports that contain useful information for a range of decision makers and stakeholders inside and outside the business. In the next section you will learn about the difference between financial accounting, which is for external users of accounting information, and management accounting, which is for internal users of accounting information.

1.5 Financial and management accounting

Financial accounting is principally concerned with preparing financial reports for external users such as banks providing loans or tax authorities who want to know what tax is due from the business.

These statements will also be of interest to managers of an organisation, but they will not be sufficient for managers' information needs in the day-to-day running of an organisation. For this, much more detailed and more frequent accounting information is required.

Providing such information and analysis is the function of management accounting. This area of accounting covers all areas of management decision making such as setting the price of a good for sale, deciding on the cost of a manufactured good or deciding what type of a budget best suits a business.

By contrast, outside users of financial information, such as loan providers and taxation officials, want summarised financial information that should be thoroughly checked before the business makes it available. For a sole trader, the smallest type of business, this checking process is done by the owner or, if the business is large enough, an internal employee or external accountant. Preparing financial statements for external users takes much time, experience and knowledge and, for larger private companies and all public companies, involves a detailed checking process by specially trained independent accountants known as auditors. The area of accounting that is targeted primarily at those outside of the business is called financial accounting.

Box 4 Using the same accounting records for all accounting purposes

It is important to note that the different routines of 'management' and 'financial' accounting do not mean that different accounting records must be kept. The same underlying accounting data is organised, summarised and communicated in different ways in order to meet different information needs.

1.5.1 The key differences between financial and management accounting

In the next activity you will have an opportunity to develop a better understanding of the difference between financial and management accounting.

Activity 4 Understanding the differences between financial and management accounting

In the list below, there are six aspects of accounting that are different for financial compared to management accounting. Using the information already given to you about the two types of accounting, try to fill in the boxes below. The first has been done for you. (Use a quick internet search if you find it helpful.)

Table 2 Filling in information on financial and management accounting

Interactive content is not available in this format.

Answer

Table 2 Filling in information on financial and management accounting

	Financial Accounting	Management Accounting
Chief purpose	The production of summarised financial statements by managers as a formal report of their management responsibility.	The production of detailed and up to date informal reports by managers to decide and plan activities and to control the business.
Viewpoint	Gives information about past performance. Only available several months after period end.	Gives comparative, up-to-date and forward-looking information about performance.
Timing of information	Normally annually, but depending on type of business may be every three or six months as well.	Normally prepared on a monthly basis, but can sometimes be required at very short notice.
Regulatory authority	Financial statements need to be presented according to the requirements of government and the appropriate accounting regulators.	Financial reports can be in any form needed.
Accuracy level	Need to be thoroughly checked in order to be as accurate as possible.	Accuracy, while always important, may need to be compromised in order that information is up to date and relevant.
Auditing requirement	Required for certain enterprises such as public companies and larger registered charities.	Not required.

In Week 2 you will learn about the numerical skills required of all accountants irrespective of the financial information they need to provide.

Summary of Week 1

Bookkeeping is the process of recording financial transactions and financial events in a systematic way. Accounting is broader than bookkeeping and refers to the process of classifying, summarising, presenting and interpreting bookkeeping records. Users of financial information want answers to the following four fundamental financial questions:

Question 1: What does an enterprise own i.e. what are its assets?

Question 2: What does an enterprise owe i.e. what are its liabilities?

Question 3: How did the enterprise perform i.e. what is its profit or loss?

Question 4: How did the enterprise obtain and use cash i.e. what is its cash flow?

The principal financial statement that summarises the information contained in the accounting records is the balance sheet or statement of financial position. Every business also needs to keep track of its profit or loss and its cash inflows and outflows. Because of credit sales and purchases, a business can make a profit in an accounting period, normally a year, even though it loses cash in the same period.

A good system of financial record keeping allows all the information contained about an enterprise's capital, assets (including cash), liabilities and profit or loss to be traced back, quickly and accurately, to original transactions and financial events.

The same system can be used for the purposes of financial and management accounting.

You can now go to Week 2: Essential numerical skills for accounting.

Week 2: Essential numerical skills for accounting

Introduction

Expertise in mathematics is not required for you to succeed as an accountant. The core skill needed is the confidence and ability to be able to add, subtract, multiply, divide as well as use decimals, fractions and percentages. The learning material this week thus covers the basic numeracy skills from multiplication and division, through to decimals, percentages, fractions and negative numbers. It is expected that you will use a calculator for most of the activities but you are also encouraged to use mental calculations.

An important skill in accounting is also the ability to manipulate simple equations. This week you will also be introduced to the accounting equation which is the foundation of the double-entry system of accounting. Being able to understand and express the accounting equation in different forms is crucial to understanding and preparing the balance sheet (the principal financial statement) and the income statement.

2.1 Mastering accounting numeracy

Competent accountants should be able to use mental calculations as well as a calculator to perform a range of numerical tasks.

In the modern world, the assumption is that we use calculators to save the tedious process of working out calculations by hand or mentally. The danger, of course, is that you may use a calculator without understanding what an answer means or how it relates to the numbers operated upon. For example, if you calculate that 8% of £20 is £160 (which can easily happen if either you forget to press the percent key or it is not pressed hard enough), you should immediately notice that something is very wrong.

Using a calculator requires certain skills in understanding what functions the buttons perform and in which order to carry out the calculations. Your need to study this material is dependent on your mathematical background. If you feel weak or rusty in basic arithmetic or maths, you should find this material helpful. The directions and symbols used will be those found on most standard calculators. If you find any of the instructions contained in this material do not produce the expected answer, please look at the instructions for your calculator and amend the instructions in this week so that they match those for your own calculator.

There are four basic operations between numbers, each of which has its own notation:

- Addition $7 + 34 = 41$

- Subtraction $34 - 7 = 27$
- Multiplication $21 \times 3 = 63$, or $21 * 3 = 63$
- Division $21 \div 3 = 7$, or $21/3 = 7$.

The next section will examine the application of these operations and the correct presentation of the results arising from them.

2.2 Use of BODMAS and brackets

When several operations are combined, the order in which they are performed is important. For example, $12 + 21 \times 3$ might be interpreted in two different ways:

- (a) add 12 to 21 and then multiply the result by 3
- (b) multiply 21 by 3 and then add the result to 12.

The first way gives a result of 99 and the second a result of 75. We need some way of ensuring that only one possible interpretation can be placed upon the formula presented. For this we use BODMAS, which give us the correct sequence of operations to follow so that we always get the right answer:

- (B)rackets
- (O)rder
- (D)ivision
- (M)ultiplication
- (A)ddition
- (S)ubtraction.

According to BODMAS, multiplication should always be done before addition, therefore 75 is actually the correct answer using BODMAS.

('Order' may be an unfamiliar term to you in this context but it is merely an alternative for the more common term, 'power', which means a number is multiplied by itself one or more times. The 'power' of one means that a number is multiplied by itself once, i.e., 2×1 , 3×1 , etc., the 'power' of two means that a number is multiplied by itself twice, i.e., 2×2 , 3×3 , etc. In mathematics, however, instead of writing 3×3 , we write 3^2 and express this as three to the 'power' or 'order' of 2.)

Brackets are the first term used in BODMAS and should always be used to avoid any possibility of ambiguity or misunderstanding. A better way of writing $12 + 21 \times 3$ is thus $12 + (21 \times 3)$. This makes it clear which operation should be done first.

$12 + (21 \times 3)$ is thus done on the calculator by keying in 21×3 first in the sequence:

Calculator

21 3 12

Figure 1 Using BODMAS in a calculator

The next activity will test your ability to use brackets properly.

Activity 1 Use of BODMAS

Complete the following calculations.

1 $(13 \times 3) + 17$

Provide your answer...

Answer

56

2 $(15 / 5) - 2$

Provide your answer...

Answer

1

3 $(12 \times 3) / 2$

Provide your answer...

Answer

18

4 $17 - (3 \times (2 + 3))$

Provide your answer...

Answer

2 (Did you enter the expression in the inner brackets i.e. $(2 + 3)$ first?)

5 $(13 + 2) / 3 - 4$

Provide your answer...

Answer

1

6 $13 \times (3 + 17)$

Provide your answer...

Answer

260

2.3 Use of calculator memory

A portable calculator is an extremely useful tool for a bookkeeper or an accountant. Although computers normally provide computer applications, there is no substitute for the convenience of a small, portable calculator or its equivalent in a mobile phone or tablet. When using the calculator, it is safer to use the calculator memory (M+ on most calculators) whenever possible, especially if you need to do more than one calculation in brackets. The memory calculation will save the results of any bracket calculation and then allow that value to be recalled at the appropriate time. It is always good practice to clear the memory before starting any new calculations involving its use. (Consult your own calculator manual for its method of storing any calculation in memory as well as its instructions for clearing memory.)

Box 1 The memory function in a scientific calculator

The scientific calculator memory is particularly useful for more complex calculations in accounting. Such a calculator has a number of different memories of which the 'M' memory is the most commonly used in accounting calculations. Like most calculators, the 'M' memory is accessed using the M+ key. Only the most basic calculator is needed for this course but a scientific calculator should be strongly considered for any future study in accounting.

Activity 2 Use of calculator memory

Use the memory on your calculator to evaluate each of the following:

1 $6 + (7 - 3)$

Provide your answer...

Answer

10

2 $14.7 / (0.3 + 4.6)$

Provide your answer...

Answer

3

3 $7 + (2 \times 6)$

Provide your answer...

Answer

19

4 $0.12 + (0.001 \times 14.6)$

Provide your answer...

Answer

0.1346

2.4 Rounding

For most business and commercial purposes the degree of precision necessary when calculating is quite limited. While engineering can require accuracy to thousandths of a centimetre, for most other purposes tenths will do. When dealing with cash, the minimum legal tender in the UK is one penny, or £00.01, so unless there is a very special reason for doing otherwise, it is sufficient to calculate pounds to the second decimal place only.

However, if we use the calculator to divide £10 by 3, we obtain £3.3333333. Because it is usually only the first two decimal places we are worried about, we forget the rest of them and write the result to the nearest penny of £3.33.

This is a typical example of rounding, where we only look at the parts of the calculation significant for the purposes in hand.

Consider the following examples of rounding to two decimal places:

1.344 rounds to 1.34

2.546 rounds to 2.55

3.208 rounds to 3.21

4.722 rounds to 4.72

5.5555 rounds to 5.56

6.9966 rounds to 7.00

7.7754 rounds to 7.78

Rule of rounding

If the digit to round is below a 5, round down. If the digit is 5 or above, round up.

Activity 3 Use of rounding

Part A

Round the following numbers to two decimal places:

1 0.5678

Provide your answer...

Answer

0.57

2 3.9953

Provide your answer...

Answer

4.00

3 107.356427

Provide your answer...

Answer

107.36

Part B

Round the same numbers as above to three decimal places:

1 0.5678

Provide your answer...

Answer

0.568

2 3.9953

Provide your answer...

Answer

3.995

3 107.356427

Provide your answer...

Answer

107.356

2.5 Fractions

So far we have thought of numbers in terms of their decimal form, e.g., 4.567, but this is not the only way of thinking of, or representing, numbers. A fraction represents a part of something. If you decide to share out something equally between two people, then each receives a half of the total and this is represented by the symbol $\frac{1}{2}$.

A fraction is just the ratio of two numbers: $\frac{1}{2}$, $\frac{3}{5}$, $\frac{12}{8}$, etc. We get the corresponding decimal form 0.5, 0.6, 1.5 respectively by performing division. The top half of a fraction is called the numerator and the bottom half the denominator, i.e., in $\frac{4}{16}$, 4 is the numerator and 16 is the denominator. We divide the numerator (the top figure) by the denominator (the bottom figure) to get the decimal form. If, for instance, you use your calculator to divide 4 by 16 you will get 0.25.

A fraction can have many different representations. For example, $\frac{4}{16}$, $\frac{2}{8}$, and $\frac{1}{4}$ all represent the same fraction: one quarter or 0.25. It is customary to write a fraction in the lowest possible terms. That is, to reduce the numerator and denominator as far as possible so that, for example, one quarter is shown as $\frac{1}{4}$ rather than $\frac{2}{8}$ or $\frac{4}{16}$.

If we have a fraction such as $\frac{26}{39}$ we need to recognise that the fraction can be reduced by dividing both the denominator and the numerator by the largest number that goes into both exactly. In $\frac{26}{39}$ this number is 13 so $(\frac{26}{13})/(\frac{39}{13})$ equates to $\frac{2}{3}$.

We can perform the basic numerical operations on fractions directly. For example, if we wish to multiply $\frac{3}{4}$ by $\frac{2}{9}$ then what we are trying to do is to take $\frac{3}{4}$ of $\frac{2}{9}$, so we form the new fraction:

$$\frac{3}{4} \times \frac{2}{9} = (3 \times 2) / (4 \times 9) = \frac{6}{36} \text{ or } \frac{1}{6} \text{ in its simplest form.}$$

In general, we multiply two fractions by forming a new fraction where the new numerator is the result of multiplying together the two numerators, and the new denominator is the result of multiplying together the two denominators.

Addition of fractions is more complicated than multiplication. This can be seen if we try to calculate the sum of $\frac{3}{5}$ and $\frac{2}{7}$. The first step is to represent each fraction as the ratio of a pair of numbers with the same denominator. For this example, we multiply the top and bottom of $\frac{3}{5}$ by 7, and the top and bottom of $\frac{2}{7}$ by 5. The fractions now look like $\frac{21}{35}$ and $\frac{10}{35}$ and both have the same denominator, which is 35. In this new form we just add the two numerators.

$$\begin{aligned} \frac{3}{5} + \frac{2}{7} &= \frac{(21/35)}{(10/35)} \\ &= (21 + 10)/35 \\ &= 31/35 \end{aligned}$$

Activity 4 Use of fractions

Part A

Convert the following fractions to decimal form (rounding to three decimal places) by dividing the numerator by the denominator on your calculator:

1 $\frac{125}{1000}$

Provide your answer...

Answer

0.125

2 8/24

Provide your answer...

Answer

0.333

3 32/36

Provide your answer...

Answer

0.889

Part B

Perform the following operations between the fractions below, giving your answers in fraction form:

1 $\frac{1}{2} \times \frac{2}{3}$

Provide your answer...

Answer

$\frac{1}{3}$

2 $\frac{11}{34} \times \frac{17}{19}$

Provide your answer...

Answer

$\frac{187}{646} = \frac{11}{38}$ (if top and bottom both divided by 17)

3 $\frac{2}{5} \times \frac{7}{11}$

Provide your answer...

Answer

$\frac{14}{55}$

4 $\frac{1}{2} + \frac{2}{3}$

Provide your answer...

Answer

7/6 or 1 1/6 (intermediate step is 3/6 + 4/6)

5 $\frac{3}{4} \times \frac{4}{5}$

Provide your answer...

Answer

12/20 simplified to 3/5 ($12 \div 4 / 20 \div 4 = 3/5$)

2.6 Ratios

Ratios give exactly the same information as fractions but expressed in a different form. Accountants make extensive use of ratios in assessing the financial performance of an organisation.

A supervisor's time is spent in the ratio of 3:1 (spoken as 'three to one') between Departments A and B. (This may also be described as being 'in the proportion of 3 to 1.') Her time is therefore divided: 3 parts in Department A and 1 part in Department B.

There are 4 parts altogether and:

3/4 time is in Department A

1/4 time is in Department B

If her annual salary is £24,000 then this could be divided between the two departments as follows:

Department A $\frac{3}{4} \times £24,000 = £18,000$

Department B $\frac{1}{4} \times £24,000 = £6,000$

Activity 5 Use of ratios

A company has three departments that make use of the canteen. Running the canteen costs £135,000 per year and these costs need to be shared out among the three departments on the basis of the number of employees in each department.

Table 1 Information for Activity 5 Use of ratios

Dept	Number of employees
Production	125
Assembly	50
Distribution	25

How much should each department be charged for using the canteen?

Provide your answer...

Answer

Table 2 Calculation needed for Activity 5 Use of ratios

Production	$(125 / (125 + 50 + 25)) \times £135,000 = £84,375$
Assembly	$(50 / (125 + 50 + 25)) \times £135,000 = £33,750$
Distribution	$(25 / (125 + 50 + 25)) \times £135,000 = £16,875$

2.7 Percentages

Percentages also indicate proportions. They can be expressed either as fractions or as decimals:

$$45\% = 45/100 = 0.45$$

$$7\% = 7/100 = 0.07$$

Their unique feature is that they always relate to a denominator of 100. Percentage means simply 'out of 100', so 45% is '45 out of 100', 7% is '7 out of 100', etc.

A business is offered a loan to a maximum of 80% of the value of its premises. If the premises are valued at £120,000 then the company can borrow the following:

$$£120,000 \times 80\% = £120,000 \times 0.80 = £96,000.$$

Fractions and decimals can also be converted to percentages.

Box 2 Changing decimals or fractions to percentages

To change a decimal to a percentage you need to multiply by 100:

$$0.8 = 80\%$$

$$0.75 = 75\%$$

To change a percentage to a decimal you need to divide by 100:

$$60\% = 0.6$$

$$3\% = 0.03$$

To convert a fraction to a percentage it is necessary to first change the fraction to a decimal:

$$4/5 = 0.8 = 80\%$$

$$3/4 = 0.75 = 75\%$$

If a machine is sold for £120 plus VAT (Value Added Tax – an indirect tax in the UK) at 20% then the actual cost to the customer is:

$$£120 \times (20\% \text{ of } 120) = £120 + (0.20 \times 120) = £144$$

Alternatively, the amount can be calculated as

$$\text{£120} \times (100\% + 20\%) = \text{£120} \times (1.00 + 0.20) = \text{£120} \times 1.20 = \text{£144}$$

If the machine were quoted at the price including VAT (the gross price) and we wanted to calculate the price before VAT (the net price), then we would need to divide the amount by $(100\% + 20\%) = 120\%$ or 1.2. The gross price of £144 divided by 1.2 would thus give the net price of £120. This principle can be applied to any amount that has a percentage added to it.

For example, a restaurant bill is a total of £50.40 including a 12% service charge. The bill before the service charge was added would be:

$$\text{£50.40} / 1.12 = \text{£45.00}$$

Activity 6 Use of percentages

1 Convert the following to percentages:

(a) 0.9

Provide your answer...

Answer

90%

(b) 1.2

Provide your answer...

Answer

120%

(c) 1/3

Provide your answer...

Answer

33.33%

(d) 0.03

Provide your answer...

Answer

3%

(e) 1/10

Provide your answer...

Answer

10%

(f) 1 1/4

Provide your answer...

Answer

125% (i.e. 100×1.25)

- 2 A company sells its product for £65 per unit. How much will it sell for if the customer negotiates a 20% discount?

Provide your answer...

Answer

$\text{£}65 \times (1 - 0.2) = \text{£}52$

- 3 If a second product is sold for £36.18 including 20% value added tax, what is the net price before tax?

Provide your answer...

Answer

$\text{£}36.18 / 1.2 = \text{£}30.15$

2.8 Negative numbers and the use of brackets

Numbers smaller than zero (shown to the left of zero on the number line below in Figure 2) are called negative numbers. We indicate they are negative by enclosing them in brackets as shown in Figure 2.

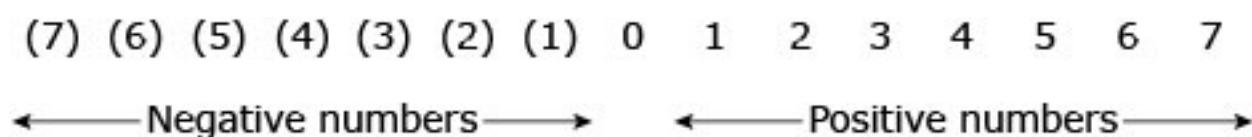


Figure 2 The number line

You may be used to seeing negative numbers indicated by the use of a minus sign ‘-’. However, because accountants conventionally use brackets so as to make it more obvious that a value is negative; this is the convention we adopt in this OpenLearn course. Negative numbers can be manipulated just like positive numbers and the calculator can deal with them with no difficulty as long as they are entered with a ‘-’ sign in front of them.

Box 3 Rules of negative numbers

The rules for using negative numbers can be summarised as follows:

Addition and subtraction

Adding a negative number is the same as subtracting a positive

$$50 + (-30) = 50 - 30 = 20$$

Subtracting a negative number is the same as adding a positive

$$50 - (-30) = 50 + 30 = 80$$

Multiplication and division

A positive number multiplied by a negative gives a negative

$$20 \times -4 = -80$$

A positive number divided by a negative gives a negative

$$20 / -4 = -5$$

A negative number multiplied by a negative gives a positive

$$-20 \times -4 = 80$$

A negative number divided by a negative gives a positive

$$-20 / -4 = 5$$

Try to confirm the above rules for yourself by carrying out the following activity either manually or by means of a calculator.

Activity 7 Use of negative numbers in maths operations

Calculate each of the following. (In this activity we will assume the convention that if a number is in brackets it means it is negative.)

1 $(2) \times (3)$

Provide your answer...

Answer

6

2 $6 - (8)$

Provide your answer...

Answer

14

3 $6 + (8)$

Provide your answer...

Answer

(2)

4 $2 \times (3)$

Provide your answer...

Answer

(6)

5 $(8) / 4$

Provide your answer...

Answer

(2)

6 $(8) / (4)$

Provide your answer...

Answer

2

Box 4 An important note about the use of brackets

Always remember that while a single number in brackets means that it is negative, the rule of BODMAS means that brackets around an 'operation' between two numbers, positive or negative, means that this is the first operation that should be done. The answer for a series of operations in an example such as $12 + (-8 - 2)$ would thus be 2 according to the rules of BODMAS and negative numbers. It should be also noted that if $12 + (-8 - 2)$ was given as $12 + ((8) - 2)$ the answer would still be 2 as (8) is just another way of showing -8 .

2.9 The test of reasonableness

Applying a test of reasonableness to an answer means making sure the answer makes sense. This is especially important when using a calculator as it is surprisingly easy to press the wrong key.

An example of a test of reasonableness is if you use a calculator to add 36 to 44 and arrive at 110 as an answer. You should know immediately that there is a mistake somewhere as two numbers under 50 can never total more than 100.

When using a calculator it is always a good idea to perform a quick estimate of the answer you expect. One way of doing this is to round off numbers. For instance if you are adding 1,873 to 3,982 you could round these numbers to 2,000 and 4,000 so the answer you should expect from your calculator should be in the region of 6,000.

Test your ability to perform the test of reasonableness by completing the following short single-choice quiz. Do not calculate the answer, either mentally or by using an electronic calculator, but try to develop a rough estimate for what the answer should be. Then determine from the choices presented to you which makes the most sense, i.e., the choices that are most reasonable.

Activity 8 Use of test of reasonableness

Choose the correct answer purely on what appears to be most reasonable.

1 $126 / 7 =$

- 18
- 180
- 0.18

2 $17 \times 26 =$

- 44.2
- 442
- 4,420

3 $6,460 / 760 =$

- 8.5
- 85
- 0.85

4 $330 \times 8.4 =$

- 277.2
- 2,772
- 27,772

5 $269 + 378 =$

- 547
- 647

- 747
- 6 562 - 268 =**
- 194
- 294
- 394

2.10 Table of equivalencies

The next activity in developing your numerical skills required for accounting is to give you practice in converting between percentages, decimals and fractions. It is a very useful numerical skill to be able to know or to work out quickly the equivalent between a number given in percentage form and in other forms.

Activity 9 Use of equivalencies

Fill in the correct answers for the gaps in table below. The first one is done for you. Answers required in decimals should be rounded off to two decimal points. Answers required in fractions should be written in the lowest possible terms.

Table 3 Completion of missing equivalencies

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Answer

Table 3 Completion of missing equivalencies

Percentage	Decimal	Fraction
1%	0.01	1/100
2%	0.02	1/50
5%	0.05	1/20
10%	0.1	1/10
20%	0.2	1/5
25%	0.25	1/4
33 1/3 %	0.33	1/3
50%	0.5	1/2
66 2/3 %	0.67	2/3
75%	0.75	3/4
100%	1.0	1/1
200%	2.0	2/1

2.11 Manipulation of equations

An equation is a mathematical expression that shows the relationship between numbers through the use of the equal sign. An example of a simple equation might be $3 + 2 = 5$.

An equation could also be in the form of $\text{£}5,000 - \text{£}2,000 = \text{£}3,000$ to express mathematically the accounting fact that sales of £5,000 minus costs of £2,000 equals a profit of £3,000. (An important aspect of mathematics, but not of accounting, is that $\text{£}5,000 - \text{£}2,000 = \text{£}3,000$ can be simplified as $5 - 2 = 3$.) Another well-known use in accounting of an equation is the accounting equation, which you will learn in more detail next week. !

Warning! Calibri not supported The accounting equation is the basis of the balance sheet, which you will learn how to produce in Week 4.

Box 5 The relationship between numbers in the accounting equation

The accounting equation states that Assets (A) = Capital (C) + Liabilities (L). Such an equation, which can also be abbreviated as $A = C + L$, can be stated in financial terms for a particular business at a particular time:

£100,000 of Assets (A) = £80,000 of Capital (C) + £20,000 of Liabilities (L)

The accounting equation can be expressed in the different forms below, which are all correct for the example of our business with assets of £100,000:

$A = C + L$ or $\text{£}100,000 = \text{£}80,000 + \text{£}20,000$ (accounting equation)

$C + L = A$ or $\text{£}80,000 + \text{£}20,000 = \text{£}100,000$

$C = A - L$ or $\text{£}80,000 = \text{£}100,000 - \text{£}20,000$

$L = A - C$ or $\text{£}20,000 = \text{£}100,000 - \text{£}80,000$

$A - L = C$ or $\text{£}100,000 - \text{£}20,000 = \text{£}80,000$

$A - C = L$ or $\text{£}100,000 - \text{£}80,000 = \text{£}20,000$

The simple equation of $3 + 2 = 5$ is true as long as each of the three numbers does not change. If one number is hidden, as long as the other two numbers are known in our example, then the hidden third number can be worked out easily. For example, if '3' is hidden in $3 + 2 = 5$, we know that this number must be 3 in order to make the equation true.

A special type of equation is an algebraic equation where a letter, say 'x', represents a number i.e. in $x + 2 = 5$, 'x' represents 3 in order to make the equation true.

Algebraic equations are solved by manipulating the equation so that the letter stands on its own. This is achieved in the equation $x + 2 = 5$ by the following two steps.

$$x = 5 - 2$$

$$x = 3$$

The principal rule of manipulating equations is whatever is done to one side of the equal side must also be done to the other as was shown in step 1 above i.e.:

$x = 5 - 2$ is achieved by subtracting 2 from both sides of the equation $x + 2 = 5$ i.e.

$$x + 2 - 2 = 5 - 2$$

$x = 3$

Manipulating an equation to get the algebraic letter to stand on its own involves ‘undoing’ the equation by using the inverse or opposite of the original operation. In the example of $x + 2 = 5$, the operation of adding 2 must be undone by subtracting 2 from either side of the equal sign.

The following table shows a number of examples of how equations are manipulated to solve the correct number for the algebraic letter.

Table 4 The steps in manipulating an equation

Operation	Inverse	Equation	Manipulation to solve algebraic letter
add 7	subtract 7	$a + 7 = 9$	$a + 7 - 7 = 9 - 7$ $a = 2$
subtract 5	add 5	$b - 5 = 6$	$b - 5 + 5 = 6 + 5$ $b = 11$
multiply by 3	divide by 3 (or multiply by 1/3)	$c \times 3 = 18$	$c \times 3 / 3 = 18 / 3$ $c = 6$
divide by 6	multiply by 6	$d / 6 = 2$	$d / 6 \times 6 = 2 \times 6$ $d = 12$

An equation such as $a \times 3 = 12$ can also be expressed as $a3 = 12$ or $3a = 12$, i.e., if an algebraic letter is placed directly next to a number in an equation it means that the letter is to be multiplied by the number. (By convention, the number is always put before the letter i.e. $3a$ not $a3$).

The correct number for the algebraic letter ‘a’ in the equation $3a = 12$ will be obtained thus:

$$3a = 12$$

$$3a / 3 = 12 / 3$$

$$a = 4$$

2.11.1 Manipulation of formulae

Manipulating or rearranging formulae involves the same process as manipulating or rearranging equations.

In the formula $S = D / T$, S is the subject of the formula. (This simply means that S stands on its own and is determined by the other parts of the formula. By convention the subject is always placed on the left-hand side of the equal sign, although $S = D / T$ means the same as $D / T = S$)

To rearrange or manipulate an equation, the formula $S = D / T$ can also be manipulated to make D or T the subject.

$$S = D / T$$

$$D / T = S \text{ (turning the formula around)}$$

$$D = S \times T \text{ (multiplying both sides of the formula by } T\text{)}$$

$$\text{Or, from } D = S \times T$$

$$D / S = T \text{ (dividing both sides of the formula by } S\text{)}$$

$T = D / S$ (turning the formula around)

Box 6 An important note about formulae

A formula is simply an equation that states a fact or rule, such as $S = D / T$ or Speed is equal to Distance divided by Time. The accounting equation you will learn about in Week 3, although always described as an 'equation' by convention, could be more accurately described as the 'accounting formula.'

Activity 10 Use of equations and formulae

Part A

Solve the following algebraic equations:

1 $c + 9 = 11$

Provide your answer...

Answer

$c = 2$

2 $a - 15 = 21$

Provide your answer...

Answer

$a = 36$

3 $d \times 7 = 63$

Provide your answer...

Answer

$d = 9$

4 $b / 13 = 13$

Provide your answer...

Answer

$b = 169$

Part B

Rearrange the formula $h = 3dy - r$ to make:

1 r the subject

Provide your answer...

Answer

$$h = 3dy - r$$

$$h + r = 3dy$$

$$r = 3dy - h$$

2 y the subject

Provide your answer...

Answer

$$h = 3dy - r$$

$$h + r = 3dy$$

$$3dy = h + r$$

$$y = (h + r) / 3d \text{ (Did you remember to use brackets?)}$$

Summary of Week 2

A competent accountant should have the confidence and ability, both mentally and using a calculator, to be able to add, subtract, multiply, divide as well as use decimals, fractions and percentages. Completing tables of equivalencies is a good way of practising converting between percentages, decimals and fractions. All accountants should be able to manipulate simple equations and formulae. The most important equation in accounting is the accounting equation, which states that Assets (A) = Capital (C) + Liabilities (L).

You can now go to Week 3: Double-entry accounting.

Week 3: Double-entry accounting

Introduction

As you learned in Week 1, accounting is a process that involves:

- 1 the systematic recording of all relevant financial transactions and events
- 2 classifying, interpreting, summarising and reporting such bookkeeping data
- 3 the production of useful information from that data and its presentation to stakeholders of a business such as owners, lenders and the tax office.

In today's electronically enabled business world most organisations produce their financial accounts using a computer program known as an accounting package. Such accounting software produces, at the click of a button, all the reports needed from the initial recording of transactions. Understanding and using these accounting packages properly requires a deep understanding of all the accounting knowledge studied in this course. Accountants do not just accept what the computer produces; they have to understand what these packages are telling them. Therefore, as students of accounting, you have to understand the rules of double-entry accounting that will be explained this week. Before learning these rules, you need to understand the fundamental accounting concepts that support the activity of double-entry accounting. Gaining knowledge of such fundamental concepts is the first aim of your learning this week.

3.1 The essential concepts behind double-entry accounting

Three concepts of accounting form the basis of the double-entry bookkeeping system of recording transactions and preparing financial accounts:

- **The business entity concept:**

The business entity concept states that a business is separate from the owner(s) of the business. You were introduced to this concept in Week 1.

- **The accounting equation:**

The accounting equation, for any business, states: Assets = Capital + Liabilities. You were introduced to the equation in Week 2.

- **The duality concept:**

The duality concept means that every transaction has two effects. This is a core concept you will learn about this week.

3.1.1 The business entity concept

The business entity concept states that the business is separate from the owner(s) of the business. Therefore the accounting records for even the simplest business, the sole trader, must be kept separate from the personal affairs of the owner or owners.

There are basically three types of business entity:

- sole trader
- partnership
- limited company.

The principles of double-entry accounting apply to all forms of business organisation, as well as not-for-profit organisations.

As you learned in Week 1, any business starts with no money. It needs resources to be able to operate and those resources have to be financed. Right from the start it often also needs to incur debts or liabilities to buy assets such as equipment and inventory that it will use for future financial benefit. Assets, capital and liabilities are the elements of the accounting equation, which expresses the relation between these elements.

3.1.2 The accounting equation

The financial position of a business is expressed in the statement of financial position, which is more commonly called the balance sheet. The financial position of a business is represented by:

- assets (what the business owns)
- liabilities (what the business owes)
- owner's capital (the monetary value of the owner's investment in the business).

As you may remember from Week 2, the accounting equation (also called balance sheet equation), for any business, says:

Table 1 The accounting equation

$$\text{Assets} = \text{Capital} + \text{Liabilities}$$

Figure 1 below demonstrates the accounting equation.

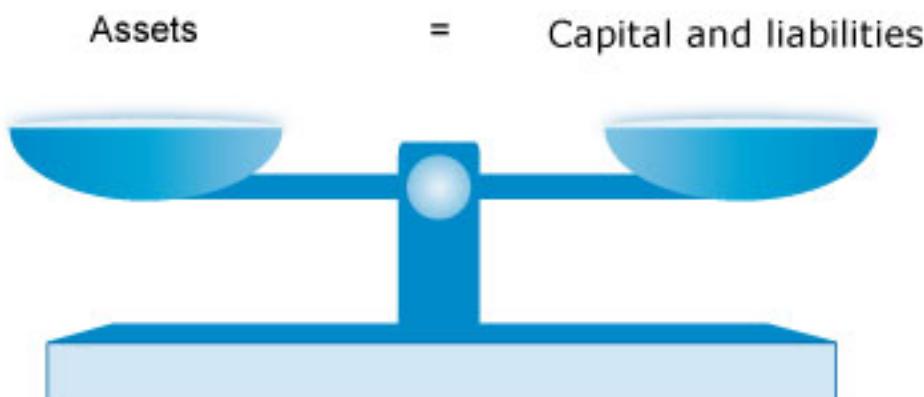


Figure 1 Assets equal capital and liabilities

The accounting equation should be kept in balance at all times i.e. the assets on the left side of the equal sign should always be the same as the sum of the capital and liabilities on the right-hand side.

Activity 1 The relationship between assets, liabilities and capital

A business at the end of its first year of trading has assets of £10,000 and liabilities of £8,000.

- 1 What is the capital position of the business at the end of its first year?

Provide your answer...

Answer

£2,000

- 2 Show the position of the business according to the accounting equation.

Provide your answer...

Answer

Assets of £10,000 = Capital of £2,000 + Liabilities of £8,000

Any change in assets, capital or liabilities in the business has to keep the accounting equation in balance. If, for example, the business buys goods for sale for £200 on credit from a supplier then the accounting equation will look as follows:

Assets of £10,000 + £200 (new asset) = Capital of £2,000 + Liabilities of £8,000 + £200 (new liability)

or £10,200 = £2,000 + £8,200

This increase in both assets and liabilities in this example is known as the dual effect of every transaction. The next activity will help you to understand this better.

Activity 2 The dual effect of any transaction

A business buys a printer for £80 from the cash it keeps available for all expenditure under £100.

- 1 What is the dual effect of this transaction?

Provide your answer...

Answer

The asset printer increases by £80 and the asset cash decreases by £80.

- 2 What is the effect on the accounting equation of this transaction?

Provide your answer...

Answer

The accounting equation of the business will stay the same as the figure for assets will stay the same i.e. $\text{£80} - \text{£80} = \text{£0}$.

In the next section, the dual effect – also known as the duality principle – of every transaction will be looked at in more detail.

3.1.3 The duality principle in practice

Whether a business does one transaction or a thousand, the same results of the accounting equation and the duality principle are achieved.

- 1 Each transaction will have two effects in order that the accounting equation is kept in balance.
- 2 Assets or liabilities can further be broken down into the type of asset or liability that is affected.
- 3 For each transaction, as well as for the overall effect of a number of transactions, the figure for capital will reflect the accounting equation: $A = C + L$.

The next activity should help you to understand how to apply the accounting equation and the duality principle over a number of different transactions.

Activity 3 The accounting equation in practice

Edgar Edwards sets up a small sole trader business as Edgar Edwards Enterprises on 1 July in the year 20X2.

Complete the table below, in which the first six transactions of the business are listed in the left-most column. The effect of the first three transactions, as well as the overall effect of all six transactions, has been completed for you to show you the accounting equation always balances.

Table 2 Completion of double-entry transactions

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Answer

Table 2 Completion of double-entry transactions

Transactions	Effect on A = C + L		
	Assets =	Capital	+ Liabilities
	£	£	£
1. The owner starts the business with £5,000 paid into a business bank account on the 1 July 20X2.	+5,000 <i>(bank)</i>	+5,000	0
2. The business buys furniture for £400 on credit from Pearl Ltd on the 2 July 20X2.	+400 <i>(furniture)</i>	0	+400 <i>(payables: Pearl Ltd)</i>
3. The business buys a computer for £600 on the 3 July 20X2.	+600 <i>(computer)</i> -600 <i>(bank)</i>	0	0
4. The business borrows £5,000 on loan from a bank on the 4 July 20X2. The money is paid into the business bank account.	+5,000 <i>(bank)</i>	0	+5,000 <i>(loan)</i>
5. The business pays Pearl Ltd £200 on the 5 July 20X2.	-200 <i>(bank)</i>	0	-200 <i>(payables: Pearl Ltd)</i>
6. The owner takes £50 from the bank for personal spending on the 6 July 20X2.	-50 <i>(bank)</i>	-50	0
Summary (overall effect)	+10,150	+4,950	+5,200

After these six transactions the accounting equation becomes:

Table 3 Summary totals in accounting equation form for Edgar Edwards Enterprises

Assets = Capital + Liabilities
£10,150 = £4,950 + £5,200

The accounting equation remains in balance as every transaction must alter both sides of the equation, $A = C + L$, by the same amount as a result of the duality principle.

This fact that every transaction has a dual effect on the accounting equation is the basis of the double-entry system of recording transactions.

3.2 The system of double-entry accounting

Rather than keep changing the accounting equation as in Activity 3, every transaction is recorded using an established double-entry system. This system uses pages ruled off in the form of a T, known as **T-account**, as illustrated below.

	Debit		Credit
Date	£	Date	£

T-accounts 1

The following T-accounts that you will encounter in Weeks 3 and 4 of this course are available to download in a Word document: T-accounts.

These T-accounts are more correctly known as 'ledger accounts' as they were originally recorded in a ledger, the old name for a book. Under this system every transaction has two separate and distinct aspects, so two separate T-accounts are involved in each transaction. Monetary values recorded in these T-accounts are recorded either on the left-hand side, known as the debit side, or on the right-hand side known as the credit side. The value of the debits should always equal the values of the credits, as shown in Figure 2 below.

Separate T-accounts are needed for each type of asset and liability and also for capital. At least two accounts are needed to record each transaction.

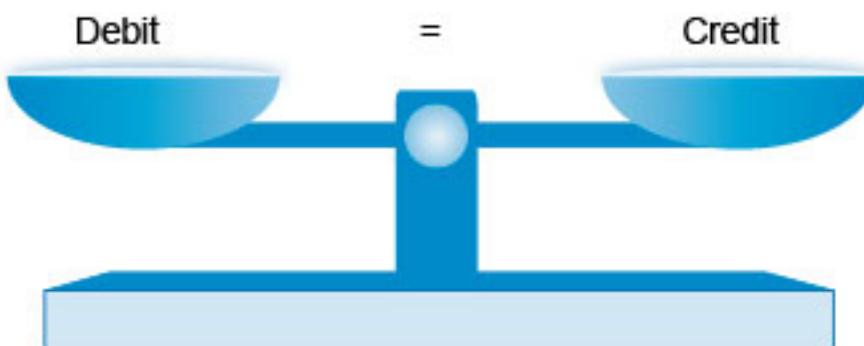


Figure 2 Debits should add up to the sum of the credits

Box 1 The difference between debit and credit and debtors and creditors

The term debit has nothing to do with debtors, the amount owing to a business by its credit customers. A debit in a T-account simply means that it is recorded on the left side of such an account. The term credit has nothing to do with creditors, the amount owing to a business by its credit suppliers. A credit in a T-account simply means that it is recorded on the right side of such an account.

3.2.1 Following the double-entry rules

The following example shows how T-accounts work to record a transaction as a double entry.

On 1 June 20X5 a business purchases a computer for £7,000 on credit from a supplier, Jones Limited.

According to the duality principle both the computer account (an asset account) and the Jones Limited account (a liability account) will be increased by £7,000 to reflect the credit purchase.

The transaction is recorded in the two separate T-accounts according to certain steps and rules that apply to every transaction.

For every transaction you need to follow three steps:

- Step 1: Identify the two accounts affected.
- Step 2: Decide the effect on each account. Perhaps one account is increasing and one is decreasing, or both accounts are increasing, or decreasing. (This ensures that that accounting equation $A = C + L$ is always kept in balance after every transaction.)
- Step 3: Record the entries.

If a transaction increases an asset account, then the value of this increase must be recorded on the debit or left side of the asset account. If, however, a transaction decreases an asset account, then the value of this decrease must be recorded on the credit or right side of the asset account. The converse of these rules applies to liability accounts and the capital account. These rules are summarised below and should be memorised.

Table 4 Rules of double entry

Account name	Effect of transaction	Debit	Credit
Asset	Increase	Debit	
	Decrease		Credit
Liability	Increase		Credit
	Decrease	Debit	
Capital	Increase		Credit
	Decrease	Debit	

Box 2 Stop and reflect

Why do you think the rules of double entry must be memorised?

These rules of double-entry accounting must be memorised as they form the basis of further work in this course as well any further study you do in accounting. The best way to remember them and to see how they work is to work through the following example and activity, so that double entry slowly becomes second nature to you.

In our example below, and according to the double-entry rules, the increase to the asset account 'Computer' must show a debit of £7,000, while the increase to the liability account 'Jones Limited' must show a credit of £7,000.

Computer (asset account)			
	Debit	Credit	
20X5	£	20X5	£
1 June Jones Ltd	7,000		

Jones Ltd (liability account)			
	Debit	Credit	
20X5	£	20X5	£
		1 July Computer	7,000

T-accounts 2

Each T-account, when recording a transaction, names the corresponding T-account to show that the transaction reflects a double entry. So, in the computer account the £7,000 debit is described as 'Jones Limited', and in the Jones Limited account the £5,000 credit is described as 'Computer'.

Box 3 The reason why your bank account says your positive bank balance is a credit

When you have money in the bank, the bank statement shows that your account has a credit balance. This is because when the bank receives money from you they credit your account in their books as your deposit is a liability to them. If you tell them to pay your money to someone else (perhaps a mortgage payment or a mobile phone bill) the bank will have effectively given the money back to you and so the bank will debit your account. According to the same rules of double entry, if you have your own bank account, your deposit will be an asset in your books and thus a debit in your bank account. Any payment from this asset account will thus be a credit entry to show that the asset has decreased in value. Always remember that the bank's records are a mirror image of your own as your deposit is a liability to them but an asset to you.

3.2.2 Recording transactions using T-accounts

The following activity, which revisits the transactions in Activity 3, illustrates these double-entry rules for asset and liability accounts as well as the capital account. In this activity you will not enter the answer in a box but will instead have an opportunity to work out the answer mentally before you click on the 'Reveal answer' button.

Activity 4 Recording transactions in double entry

As per Activity 3, Edgar Edwards Enterprises carries out the following six transactions:

- 1 The owner starts the business with £5,000 paid into a business bank account on 1 July 20X2.
- 2 The business buys furniture for £400 on credit from Pearl Ltd on 2 July 20X2.
- 3 The business buys a computer for £600 on 3 July 20X2 from the bank account.
- 4 The business borrows £5,000 on loan from a bank on 4 July 20X2. The money is paid into the business bank account.
- 5 The business pays Pearl Ltd £200 on 5 July 20X2.
- 6 The owner takes £50 from the bank for personal spending on 6 July 20X2.

For each of the transactions above you will be given the two relevant ledger or T-accounts, and you will need to decide the date, corresponding account and the relevant amount in either the debit or credit side of the account. Go back over the rules of double-entry accounting and the layout of T-accounts if you have forgotten them.

Transaction 1: The owner starts the business with £5,000 paid into a business bank account on 1 July 20X2

Bank (asset account)			
	Debit	Credit	
20X2	£	20X2	£
1 July			
Capital			
	Debit	Credit	
20X2	£	20X2	£

T-accounts 3

Answer

Bank (asset account)			
	Debit	Credit	
20X2	£	20X2	£
1 July Capital	5,000		

T-accounts 4

Receipt of money of £5,000 into the bank account is recorded on the debit side of the bank account as the asset of money into the bank has increased.

Capital			
	Debit	Credit	
20X2	£	20X2	£
		1 July Bank	5,000

T-accounts 5

The capital account is recorded on the credit side to indicate that capital has increased.

Transaction 2: The business buys furniture for £400 on credit from Pearl Ltd on 2 July 20X2.

Furniture (asset account)			
	Debit	Credit	
20X2	£	20X2	£

Pearl Ltd (liability account)			
	Debit	Credit	
20X2	£	20X2	£

T-accounts 6

Answer

Furniture (asset account)			
	Debit	Credit	
20X2	£	20X2	£
2 July Pearl Ltd	400		

Pearl Ltd (liability account)			
	Debit	Credit	
20X2	£	20X2	£
		2 July Furniture	400

T-accounts 7

According to the rules of double-entry accounting debit the asset account and credit the liability account.

Transaction 3: The business buys a computer for £600 on 3 July 20X2.

Computer (asset account)			
	Debit	Credit	
20X2	£	20X2	£

Bank (asset account)			
	Debit	Credit	
20X2	£	20X2	£
1 July Capital	5,000		

T-accounts 8

Answer

Computer (asset account)			
	Debit	Credit	
20X2	£	20X2	£
3 July Bank	600		
Bank (asset account)			
	Debit	Credit	
20X2	£	20X2	£
1 July Capital	5,000	3 July Computer	600

T-accounts 9

According to the rules of double-entry accounting debit the first asset account 'Computer' to show an increase and credit the second asset account 'Bank' to show a decrease.

Transaction 4: The business borrows £5,000 on loan from a bank on 4 July 20X2. The money is paid into the business bank account.

Bank (asset account)			
	Debit	Credit	
20X2	£	20X2	£
1 July Capital	5,000	3 July Computer	600
Bank loan (liability account)			
	Debit	Credit	
20X2	£	20X2	£

T-accounts 10

Answer

Bank (asset account)			
	Debit	Credit	
20X2	£	20X2	£
1 July Capital	5,000	3 July Computer	600
4 July Bank loan	5,000		
Bank loan (liability account)			
	Debit	Credit	
20X2	£	20X2	£
		4 July Bank	5,000

T-accounts 11

According to the rules of double-entry accounting debit the asset account 'Bank' and credit the liability account 'Bank loan'.

Transaction 5: The business pays Pearl Ltd £200 on 5 July 20X2.

Bank (asset account)			
	Debit		Credit
20X2	£	20X2	£
1 July Capital	5,000	3 July Computer	6004
July Bank loan	5,000	5 July Pearl Ltd	200

Pearl Ltd (liability account)			
	Debit		Credit
20X2	£	20X2	£
5 July Bank	200	2 July Furniture	400

T-accounts 12

Answer

Bank (asset account)			
	Debit		Credit
20X2	£	20X2	£
1 July Capital	5,000	3 July Computer	600
4 July Bank loan	5,000	5 July Pearl Ltd	200

Pearl Ltd (liability account)			
	Debit		Credit
20X2	£	20X2	£
5 July Bank	200	2 July Furniture	400

T-accounts 13

According to the rules of double-entry accounting debit the liability account and credit the asset account.

Transaction 6: The owner takes £50 from the bank for personal spending on 6 July 20X2.

Bank (asset account)			
	Debit	Credit	
20X2	£	20X2	£
1 July Capital	5,000	3 July Computer	600
4 July Bank loan	5,000	5 July Pearl Ltd	200

Capital			
	Debit	Credit	
20X2	£	20X2	£
		1 July Bank	5,000

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Answer

Bank (asset account)			
	Debit	Credit	
20X2	£	20X2	£
1 July Capital	5,000	3 July Computer	600
4 July Bank loan	5,000	5 July Pearl Ltd	200
		6 July Capital	50

Capital			
	Debit	Credit	
20X2	£	20X2	£
6 July Bank	50	1 July Bank	5,000

T-accounts 15

According to the rules of double-entry accounting debit the capital account and credit the bank account to reflect that the owner has taken money out of the business.

In the next and final week you will learn how to work out the balance for each account in order to prepare the trial balance and the balance sheet. As you can see in the bank account above, there may be a number of changes in an account for a period and it is important to know the balance in such an account at the end of a period.

Summary of Week 3

The three concepts that form the basis of double-entry accounting are the business entity concept, the accounting equation and the duality concept. The business entity concept means that a business is separate from the owner(s) of the business. The accounting

equation for any business states that Assets = Capital + Liabilities. The duality concept means that every transaction has two effects.

The basic principle of double-entry accounting is for every transaction recorded there should be a debit entry and a credit entry in the relevant T-accounts according to the following double-entry rules:

Table 3 Rules of double entry revisited

Account name	Effect of transaction	Debit	Credit
Asset	Increase	Debit	
	Decrease		Credit
Liability	Increase		Credit
	Decrease	Debit	
Capital	Increase		Credit
	Decrease	Debit	

You can now go to Week 4: Preparing the trial balance and the balance sheet.

Week 4: Preparing the trial balance and the balance sheet

Introduction

In Week 3 you learned how to record transactions in T-accounts using debits and credits. This week you will learn the crucial process of ‘balancing off’ each T-account in order to record the correct figure for each account in the trial balance. In Week 4 you will learn how to prepare the trial balance and the balance sheet. You will also learn that balance sheets can be presented in different forms of the accounting equation. An important aspect of your study in Week 4 is to learn that the accounting equation can be expanded to reflect the fact that an increase in profit means an increase in capital for any business.

4.1 From T-accounts to the trial balance

You have now learned how to record transactions in T-accounts. Capital, and each type of asset and liability, has its own T-account. These T-accounts are recorded in the general ledger (also known as the nominal ledger). Figure 1 below shows the general ledger and the three categories of T-accounts therein that we have discussed so far.



Figure 1 The general ledger

In order to prevent errors and to make sure that all transactions are properly recorded as debits and credits in the correct T-accounts, a checking procedure takes place at the end of each accounting period. This is known as preparing a trial balance. A trial balance is thus a list of all the debit and credit balances in the general ledger accounts. If all the individual double entries have been correctly carried out, the total of the debit balances

should always equal the total of the credit balances in the trial balance. A further important purpose of the trial balance is that it forms the basis for the preparation of the balance sheet.

If the total of the debit balances do not equal the total of the credit balance then there is a mistake somewhere, which needs to be investigated and corrected.



Figure 2

4.2 The T-accounts before their balance is worked out

In order to prepare a trial balance at any time, it is necessary to determine the balance on each account. This process is known as 'balancing off' the general ledger accounts. The trial balance can then be prepared by listing each closing balance from the general ledger accounts as either a debit or a credit balance.

Below are the T-accounts in Edgar Edwards' general ledger (see Activity 4 in Week 3). The general ledger accounts should be balanced off prior to compiling the trial balance.

Furniture (*asset account*)

	Debit	Credit
	£	£
20X2		
2 July Pearl Ltd	400	

Computer (*asset account*)

	Debit	Credit
	£	£
20X2		20X2
3 July Bank	600	

Bank loan (*liability account*)

	Debit	Credit
	£	£
20X2		20X2
		4 July Bank
		5,000

Pearl Ltd (*liability account*)

	Debit	Credit
	£	£
20X2		20X2
5 July Bank	200	2 July Furniture
		400

Bank (*asset account*)

	Debit	Credit
	£	£
20X2		20X2
1 July Capital	5,000	3 July Computer
4 July Bank loan	5,000	5 July Pearl Ltd
		200
		6 July Capital
		50

Capital

	Debit	Credit
	£	£
20X2		20X2
6 July Bank	50	1 July Bank
		5,000

T-accounts 16

4.2.1 The procedure for balancing off T-accounts

Accounts are straightforward to balance off if they consist of only one type of entry, i.e. only debit entries or only credit entries. In this case, all the account entries are simply added up to get the balance on the account. If, for instance, a bank account has three debit entries of £50 each, then the balance on the account is a debit balance of £150. However, when accounts consist of debit and credit entries, there is a procedure that should be used to balance off these accounts. Take the bank account:

Bank (asset account)					
	Debit		Credit		
20X2	£	20X2	£		
1 July Capital	5,000	3 July Computer	600		
4 July Bank loan	5,000	5 July Pearl Ltd	200		
		6 July Capital	50		

T-accounts 17

The procedure for balancing it is:

- 1 Add up the side with the highest total.

Bank (asset account)					
	Debit		Credit		
20X2	£	20X2	£		
1 July Capital	5,000	3 July Computer	600		
4 July Bank loan	5,000	5 July Pearl Ltd	200		
		6 July Capital	50		
				10,000	

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- 2 Enter the larger figure as the total for both the debit and credit sides.

Bank (asset account)					
	Debit		Credit		
20X2	£	20X2	£		
1 July Capital	5,000	3 July Computer	600		
4 July Bank loan	5,000	5 July Pearl Ltd	200		
		6 July Capital	50		
				10,000	
					10,000

T-accounts 19

- 3 For the side that does not add up to this total, calculate the figure that makes it add up by deducting the smaller total ($600 + 200 + 50 = 850$) from the larger total (10,000). Enter this figure ($10,000 - 850 = 9,150$) so that the total adds up, and call it the balance carried down. This is usually abbreviated as 'Balance c/d'.

Bank (asset account)

		Debit			Credit
20X2		£	20X2		£
1 July	Capital	5,000	3 July	Computer	600
4 July	Bank loan	5,000	5 July	Pearl Ltd	200
			6 July	Capital	50
			6 July	Balance c/d	9,150
		10,000			10,000

T-accounts 20

- 4 Enter the balance brought down (abbreviated as Balance b/d) on the opposite side below the total figure. (The balance brought down is usually dated one day later than the balance carried down as one period has closed and another one has started.)

Bank (asset account)

		Debit			Credit
20X2		£	20X2		£
1 July	Capital	5,000	3 July	Computer	600
4 July	Bank loan	5,000	5 July	Pearl Ltd	200
			6 July	Capital	50
			6 July	Balance c/d	9,150
		10,000			10,000
7 July	Balance b/d	9,150			

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Edgar Edwards' bank account in the general ledger has now been balanced off. The debit side was greater than the credit side, therefore leaving a debit balance of £9,150. The balance on the bank account reflects that £10,000 has come into this asset account and £850 has gone out to leave the debit balance of £9,150. This is why on the opposite side to the 'Balance c/d' figure, a 'Balance b/d' figure is needed to represent a closing debit balance.

The brought down balances at the end of the accounting period will be the opening balances of the next accounting period.

Using the rules above, all of the other accounts in Edgar Edwards' general ledger accounts can now be balanced off.

The furniture account has a single entry on one side. This amount is the total as well as the balance in the account.

Furniture (*asset account*)

	Debit		Credit
	£		£
20X2		20X2	
2 July Pearl Ltd	400	6 July Balance c/d	400
	<hr/> 400		<hr/> 400
7 July Balance b/d	<hr/> 400		<hr/>

T-accounts 22

The computer and bank loan accounts have single entries on one side, like the furniture account, so they need to be treated in the same way.

Computer (*asset account*)

	Debit		Credit
	£		£
20X2		20X2	
3 July Bank	600	6 July Balance c/d	600
	<hr/> 600		<hr/> 600
7 July Balance b/d	<hr/> 600		<hr/>

Bank loan (*liability account*)

	Debit		Credit
	£		£
20X2		20X2	
6 July Balance c/d	5,000	4 July Bank	5,000
	<hr/> 5,000		<hr/> 5,000
	<hr/>	7 July Balance b/d	<hr/> 5,000

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In the next activity you will balance off the two accounts that we have not yet dealt with, the liability account ‘Pearl Ltd’ and the capital account. In order to do this you will need to follow the four-point procedure that was used to balance off the bank account. *In this activity you will again not enter the answer in a box but will instead have an opportunity to work out the answer mentally before you click on the ‘Reveal answer’ button.*

Activity 1 Balancing off a T-account where there is both a debit and a credit

Complete the entries in the following two accounts for Edgar Edwards Enterprises in order to correctly balance off the accounts:

Pearl Ltd (*liability account*)

	Debit		Credit
	£	20X2	£
Bank	200	2 July	Furniture
Balance c/d			400
		7 July	Balance b/d

Capital

	Debit		Credit
	£	20X2	£
20X2		20X2	
6 July Bank	50	1 July Bank	5,000
6 July Balance c/d			
		7 July	Balance b/d

T-accounts 24

Answer

Pearl Ltd (*liability account*)

	Debit		Credit
	£	20X2	£
20X2		20X2	
5 July Bank	200	2 July Furniture	400
6 July Balance c/d	200		
	400		400
		7 July Balance b/d	200

T-accounts 25

The account for the liability, Pearl Ltd, has a debit and a credit entry so the method used above to balance the bank account can be used to balance the Pearl Ltd account and also the capital account below.

Capital

	Debit		Credit
	£	20X2	£
20X2		20X2	
6 July Bank	50	1 July Bank	5,000
6 July Balance c/d	4,950		
	5,000		5,000
		7 July Balance b/d	4,950

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Now all the general ledger accounts have been balanced off, a trial balance can be prepared by listing all the balances (brought down balances) on Edgar Edwards' general ledger as follows:

4.3 The trial balance

If (a) all the double entries for the six transactions for Edgar Edwards were correctly recorded in the relevant T-accounts and (b) all the relevant T-accounts were correctly balanced off, then a correct trial balance for Edgar Edwards can be prepared.

This will be shown in the next activity.

Activity 2 Preparing a correct trial balance

Complete the trial balance below. Your answer should have the correct debit or credit balance for each of the relevant six accounts as well as the total for all debit and credit balances.

Edgar Edwards Enterprises

Table 1 Completion of trial balance

Interactive content is not available in this format.

Answer

Table 1 Completion of trial balance

	Debit	Credit
	£	£
Bank	9,150	
Furniture	400	
Computer	600	
Bank loan		5,000
Pearl Ltd (a payable)		200
Capital	<hr/>	4,950
	10,150	10,150

From the trial balance it can be seen that the total of debit balances equals the total of credit balances. This demonstrates that for every transaction the basic principle of double-entry accounting has been followed – '*for every debit there is a credit*'.

In the final section of this week we will go back to our accounting equation to show that the balances from the trial balance can be used to prepare the balance sheet.

4.4 The balance sheet

Returning to our example of Edgar Edwards in Activities 1 and 2, the completed trial balance contains all the elements of the accounting equation.

Assets = Capital + Liabilities				
Assets		= Capital + Liabilities		
	£		£	
Bank	9,150	Capital	4,950	
Furniture	400		Bank loan	5,000
Computer	600		Payables	200
	<hr/>	=	<hr/>	
	10,150	4,950	+ 5,200	
	<hr/>	<hr/>	<hr/>	

Account totals in the accounting equation 1

The accounting equation is the basis of the balance sheet, which shows the total of assets, in this case £10,150 balancing with the total of capital and liabilities £10,150.

Assets		Capital and Liabilities	
	£		£
Bank	9,150	Capital	4,950
Furniture	400	Liabilities	
Computer	600	Bank loan	5,000
	<hr/>	Payables	200
	10,150		<hr/>
	<hr/>		5,200
			<hr/>
			10,150
	<hr/>	<hr/>	<hr/>

Account totals in the balance sheet 1

Although it may be acceptable to prepare a balance sheet with assets on one side and capital and liabilities on the other (known as the horizontal format) it is more conventional to show assets at the top and capital and liabilities at the bottom (known as the vertical format).

Balance sheets are commonly prepared in a vertical format of the accounting equation. This gives the owners clear information about the assets of the business, the liabilities of the business (the amount it owes) and the capital or owner's interest in the business. The balance sheet is normally produced at the end of each trading or financial year and is a snapshot of the financial position of the business on the last day of the financial year.

4.4.1 Preparing a balance sheet

In your final activity for Week 4 you will prepare a balance sheet in the vertical format for Edgar Edwards Enterprises at the end of the day on 6 July 20X2.

Activity 3 Preparing a balance sheet in a conventional format

Complete the balance sheet below. Your answer should have the correct figures for the individual asset, liability and capital balances as well as the correct figures for total assets and total capital and liabilities. (Non-current assets refer to assets that are typically held in a business for longer than a year. Current assets are assets that are typically held for less than a year. Likewise non-current liabilities refer to liabilities that are typically held in a business for longer than a year. Current liabilities are liabilities that are typically held for less than a year.)

Edgar Edwards Enterprises

Balance Sheet as at 6 July 20X2

Table 2 Completion of a balance sheet

Interactive content is not available in this format.

Answer

Edgar Edwards Enterprises

Balance Sheet as at 6 July 20X2

Table 2 Completion of a balance sheet

£

Non-current assets

Furniture	400
Computer	600
	1,000

Current assets

Bank	9,150
Total assets	10,150

£

Capital	4,950
---------	-------

Non-current liabilities

Bank loan	5,000
-----------	-------

Current liabilities

Payables (Pearl Ltd)	200
Total capital and liabilities	10,150

The capital of a business is the value of the investment in the business by the owner(s). As you learned in Activity 3 in Week 1, if a business makes a profit, the value of the investment by the owner (capital) increases. The best way to understand how this works is to look at the effect of profit on the accounting equation.

4.5 The effect of profit on the accounting equation

In both Week 2 and Week 3 we looked at the accounting equation:

Table 3 The accounting equation

$$\text{Assets} = \text{Capital} + \text{Liabilities}$$

The three elements (assets, capital and liabilities) are presented in the balance sheet. The profit earned by the business increases capital, and we have already seen that Profit = Income/Revenue – Expenses. The accounting equation can, therefore, be expanded to:

Table 4 The expanded accounting equation

$$\text{Assets} = \text{Liabilities} + \text{Capital} + (\text{Revenue} - \text{Expenses})$$

The income statement (also known as the profit and loss statement) shows in detail the elements of the equation: Revenue – Expenses = Profit or Loss. A deep understanding of the income statement is beyond the scope of this free course. An understanding of such a statement, as well as much other useful material, is included in the Open University module, B124 *Fundamentals of accounting*.

Summary of Week 4

If (a) all the double entries for every transaction and financial event are correctly recorded in the relevant T-accounts and (b) all the relevant T-accounts are correctly balanced off, then a correct trial balance can be prepared. The trial balance shows the double-entry rule that '*for every debit there is a credit*'.

The balances from the trial balance can be used to prepare the balance sheet. Balance sheets are commonly prepared in a vertical format of the accounting equation. The accounting equation can be expanded to $\text{Assets} = \text{Liabilities} + \text{Capital} + (\text{Revenue} - \text{Expenses})$ to reflect the fact that an increase in profit means an increase in capital.

End-of-course conclusion

This free course, *Fundamentals of accounting*, has introduced you to the essential concepts and skills of accounting in four interactive weeks of study. You should now be familiar with the rules of double-entry bookkeeping that are crucial for both financial and management accounting. You should also have an understanding of how transactions are recorded in ledger accounts, and how such accounts are balanced off to prepare the trial balance and the balance sheet.

If you want to build on the skills and knowledge gained from studying this course, you might be interested in taking the Open University course

[B124 Fundamentals of accounting](#).