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INTRODUCTION

Revenue recognition is probably the single most difficult issue in accounting. A company’s reported results will vary considerably depending on when it chooses to recognize revenue. Policies for recognizing revenue are critical, and contentious. The timing of revenue recognition is especially complex because the business activities that generate revenue are also complex. Some examples demonstrate the issues.

In a recent year, a mining company produced 12,000 ounces of gold at a production cost of $1.2 million. Administrative costs for the year were $0.5 million. Even though the gold could have been sold immediately at a market price of $400 per ounce, management elected not to sell, expecting the price of gold to increase in the future. What will the company show as revenue for the period? What will it report as net income? Is the company better or worse off at the end of the year, compared with the beginning of the year?1

University textbooks are typically ordered and shipped 8 to 12 weeks before the beginning of a new term, with orders based on anticipated enrolment. Upon receipt of an order, the publisher ships books in time for stocking before the term begins. The accompanying invoice calls for payment in 30 or 60 days, and the bookstore pays the invoice amount in full. Several weeks into the term, a number of copies of the text remain unsold. Most publishers provide retailers with the right to return unsold, damage-free books for about six months after the original shipping date. At what point during this sequence of events should the publisher record revenue and related expenses on its sales?

Corel Corp., a major developer of computer software (e.g., Corel Draw™ and WordPerfect™) recognized revenue when the company shipped the software to dealers, also recognizing that the company accepted unsold software back from dealers — ordinarily a perfectly acceptable way to recognize revenue. But when the company’s fortunes turned down and returns escalated, the company was forced to delay revenue recognition until the inventory was sold by the retailers, even though the retailers are at arm’s length from Corel.2

Thousand Trails, Inc., develops campgrounds and sells usage rights to campers for a total membership fee of several thousand dollars. Members are allowed to use existing campgrounds and campgrounds planned for future development. One of the attractions of membership is the promise of the inter

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1 This example is, in fact, a simplification of the situation faced by the Alaska Gold Company, a placer gold-dredging company. Alaska Gold mined gold for three straight years without selling any of its production. In its annual report to shareholders, Alaska Gold reported zero revenues from gold operations for these periods and thus reported sizeable losses each year because of period expenses. This is one of many interesting cases in G. Pfeiffer and R. Bowen, Financial Accounting: A Casebook (Englewood Cliffs, N.J.: Prentice-Hall, 1985), pp. 24–29.


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testing campgrounds that the company claims will be developed in the future, although it has limited, if any, legal obligation in this regard. Membership fees can be paid in full when the contractual arrangement is signed, but the most typical arrangement is for the member to pay a small percentage down and the balance in periodic installments over a period of up to seven years. Again, the question is when revenue and related expenses should be recognized.3

These examples demonstrate how even minor departures from ordinary sales transactions can complicate revenue and expense recognition. A relatively small proportion of Canadian business activity fits into straightforward sales activity. Much economic activity in Canada involves long-term earnings processes, including the broad resource and service sectors. The points at which revenue should be recognized are often not obvious.

This chapter covers the conceptual guidelines for determining when revenue should be recognized and then covers several specific accounting applications that have been developed for use in resolving various types of revenue recognition problems. Revenue recognition also affects expense recognition; expense recognition is the subject of Chapter 7.

DEFINITIONS

What is revenue? It's not defined on its own as, for example “the value of goods and services delivered during the period.” Rather, it occurs when the net assets (assets minus liabilities) of an entity increase because of normal operating activities. The thought process is sequential, and is balance sheet based. For example, assume that an entity sells goods on credit. An account receivable is created. This increases assets, and the entity has revenue based on that increase in assets, barring other complications.

The financial statement concepts in Section 1000 of the CICA Handbook formally define revenues as increases in economic resources, either through increases to assets or reductions to liabilities. These increases in resources must be the result of delivering or producing goods, rendering services, or performing other activities that constitute the entity’s normal business. Expenses are decreases in economic resources, either through outflows or the using-up of assets or incurrence of liabilities from delivering or producing goods, rendering services, or carrying out other activities that constitute the entity’s normal business. The definitions are derivative definitions in that they are based on the terms assets and liabilities. Therefore, clear understanding of assets and liabilities is needed in order to understand revenues and expenses.

As we pointed out in Chapter 2, assets are economic resources controlled by an entity as a result of past transactions or events and from which future economic benefits can be obtained. Liabilities are present obligations of an entity arising from past transactions or events, the settlement of which may result in the transfer or use of assets, provision of services or other yielding of economic benefits in the future.4 Although our attention in this chapter is focused on recognition and measurement of revenue, this discussion cannot be separated from the issues of asset and liability recognition and measurement.

THE EARNINGS PROCESS

At a conceptual level, a firm earns revenue as it engages in activities that increase the value (or utility, in economic terms) of an item or service. For example, an automobile parts manufacturer increases the value of sheet metal when it undertakes activi-

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3 Thousand Trails, Inc., is another case found in Pfeiffer and Bowen, Financial Accounting: A Casebook.
4 These definitions are from Section 1000 of the CICA Handbook, “Financial Statement Concepts.”
ties to cut, shape, and weld the sheet metal into automobile fenders. Transporting completed fenders to a regional wholesale warehouse also adds value because it makes the fenders readily available for purchase and use by automobile repair shops. The earnings process is fully completed when the fenders are sold and delivered to a customer in return for cash or a promise to pay cash; finally, assets actually increase. All of these activities, and many more, are part of the earnings process.

Exhibit 6-1 graphically illustrates the concept of the earnings process in a highly simplified setting. It focuses on the process of earning revenue; costs are not included. A firm undertakes many different activities, over the five periods shown, for the purpose of earning a profit. The top graph depicts the cumulative amount of revenue the firm has earned over time and thus a constant rate of revenue earned as the different activities are performed. The graph also assumes that we know what the total amount of revenue will be when the earnings process is complete. Usually there is considerable uncertainty at the earlier stages of the earnings process (for example, during the design of a new product) as to whether the product will sell, and for what amount. This uncertainty is only removed when a price is agreed to, and the product is delivered to a customer.

The bottom graph in Exhibit 6-1 shows the amount of revenue that could conceptually be recognized in each accounting period as activities in the earnings process are completed. Because we assume that a constant rate of revenue is earned at each stage in the earnings process, the amount of revenue is the same for each period. The shaded area in the bottom graph equals the total amount of revenue earned over the completed earnings process, which is represented in the top graph by the height of the cumulative revenue earned at the end of the fifth period.

Do not confuse the conceptual notion that economic value is added (i.e., revenue is created) at each stage along the way in the production and sale process, with the accounting revenue recognition issue. The issue in accounting is when during that earnings process should revenue be recognized by recording the increase in value on the books?

The earnings process for most companies involves incurring costs to increase the value of an in-process product. Sometimes the process is very long. The design and development process for a new commercial airplane can take 5 to 10 years from initial design efforts to the delivery of the first airplane to a customer. Economically, revenue is being earned as each of the many activities is completed, assuming that the activity brings the company closer to having a saleable product. Companies are required to provide periodic reports on earnings even when the earnings process extends over several accounting periods. In these situations, the question of how much revenue (and expense) to recognize and report in each period must be carefully assessed.

**FINANCIAL REPORTING OBJECTIVES**

Companies do not necessarily pick their accounting policies with “good accounting” as their first objective. As we saw in Chapters 1 and 2, companies bring a variety of motives to the decision, and may wish to maximize or minimize reported net income and net assets, or affect other key financial statement data in support of their specific financial reporting objectives.

Revenue recognition is an area where firms that are anxious to show increasing sales and profits have followed a number of questionable and sometimes even improper accounting procedures. A relatively innocent-looking example occurs when a firm records as a sale goods that have been ordered for a later delivery. Suppose a firm receives an order in December for goods that the customer desires to receive in mid-January. Should the sale be recorded in December or January? Even more problematic would be a transaction in which goods are shipped (and recorded as a revenue) to a customer who regularly purchases such goods in approximately the
CHAPTER 6
Revenue Recognition

EXHIBIT 6-1
Conceptual Representation of the Earnings Process

Cumulative amount of revenue earned to date in earnings process

Total amount of revenue earned (known)

Accounting period

1 2 3 4 5

Design product
Acquire materials for manufacturing product
Manufacture product
Transport to regional warehouse
Sale of product to customer and collection of cash
Profit-directed activities being performed continuously over time

Theoretical revenue to be recognized each period

Accounting period

1 2 3 4 5

Design product
Acquire materials for manufacturing product
Manufacture product
Transport to regional warehouse
Sale of product to customer and collection of cash
Profit-directed activities being performed continuously over time

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Accounting period

1 2 3 4 5

Design product
Acquire materials for manufacturing product
Manufacture product
Transport to regional warehouse
Sale of product to customer and collection of cash
Profit-directed activities being performed continuously over time
amounts shipped, but who has not yet ordered the goods! There have also been cases where the invoices for goods shipped after the fiscal year-end are back-dated to the current fiscal year in order to record them as sales in the earlier period. Yes, this really happens, but it’s not acceptable, either ethically or under GAAP. Such actions are deliberate attempts to mislead users, and are tantamount to fraud.

The choice of method used to record revenues is an area where ethical questions are sometimes raised. Thousand Trails, the company mentioned in the introduction to this chapter, used the point-of-sale method to recognize revenue on its membership rights transactions. Most of these transactions were instalment sales and the default rate was high. Since the default rate may be very difficult to estimate with reasonable accuracy, it has been suggested that the instalment sales method would have been a more appropriate choice for revenue recognition. The company and its auditor maintained, however, that the point-of-sale method was appropriate because they felt they could estimate the future default amounts on the instalment receivables with reasonable accuracy. By using the point-of-sale method, Thousand Trails reported rapid growth in sales and profits even though the company had received only a very small portion of the reported revenue in cash. Again, this is appropriate so long as the receivables do eventually convert into estimated amounts of cash. The fact that the company eventually got into severe financial difficulty, in part because of an unexpectedly large number of defaults on the receivables, reinforced concerns about whether the point-of-sale method was appropriate in the first place.

Choice of method and implementation of accounting procedures for revenue recognition must be done with a careful consideration of what is ethical and appropriate for the circumstances.

**Revenue Recognition Criteria**

When an item is recognized in the financial statements, it is assigned a value and recorded as an element in the appropriate financial statement(s) with an appropriate offset to another element (e.g., cash or accounts payable). Recognized items must meet the definition of a financial statement element, and have a measurement basis and amount. We know that financial statement elements are based on future economic benefits or sacrifices; these must be probable for recognition to be appropriate.

In addition to the general recognition criteria, the revenue principle provides that revenue should be recognized in the financial statements when it is

1. earned, and
2. realized or realizable.

Revenues are earned when the company has accomplished what it must do to be entitled to receive the associated benefits of the revenue. In a normal sales transaction, this occurs when the vendor has transferred all the risks and rewards of ownership to the customer and has no ongoing managerial control over the item. When the earnings process spans more than one accounting period, revenue can sometimes be recognized even though the earnings process is not completed as long as the costs required to complete the earnings process can be reliably estimated.

Revenue is realized when cash is received. Revenue is realizable when claims to cash (for example, financial instruments such as accounts or notes receivable) are received; such financial instruments can be readily converted into cash. This criterion is also met if the product is a commodity, such as gold or wheat, for which there is a public market in which essentially unlimited amounts of the product can be bought or sold at a known or ascertainable market price.
REVENUE MEASUREMENT

The amount of revenue to recognize is usually less of an issue than when to recognize it, or how to allocate it. This is because the sales price is typically part of the implicit or explicit contract between the buyer and the seller. Measurement is one of the recognition criteria, though, and is sometimes a substantive issue. For example, when a sale agreement sets a price, but establishes extended interest-free payment terms, it is clear that part of the purchase price relates to interest. Discounting techniques can be used to separate the principal and interest. For practical reasons, firms do not do this as long as the interest-free period is short, because the amount of interest would be immaterial. Discounting would more clearly be appropriate if the term was longer than a year.

Measurement issues also predominate if the sale transaction is a barter transaction; that is, if the exchange involves only non-monetary goods. For example, an accountant may prepare a tax return for an innkeeper in exchange for a three-day weekend vacation at the innkeeper’s facility. At what amount should this transaction be valued? The accountant could keep track of her time, multiply by her charge-out rate, and determine the amount she would have billed the client. Alternatively, she could ascertain the value of the weekend vacation to which she is entitled.

The recommendations in the CICA Handbook, found in Section 3830, “Non-monetary transactions,” indicate that the transaction should be valued at the fair value of the asset or service given up. However, if the value of the asset or service received is more reliable, it should be used to value the transaction.

For our accountant, this means that she’ll look at the value of her time, then look at the value of the weekend trip, and ask which value she’s more confident about. Likely she’ll use the value of her time, but a comparison of the two values is always informative. If they’re close, there’s a high degree of comfort with the decision. It’s not as easy as it seems: she may have been using otherwise-idle time to do this job, which implies that her time may not have been “worth” the full charge-out rate. She may be able to use the vacation weekend only in shoulder periods, when the room would otherwise have been vacant at the inn — implying that it may not be “worth” the advertised price. Judgement is pivotal to the measurement process.

The non-monetary transaction rules have one more twist. If the barter transaction is not considered to be the culmination (or completion) of the earnings process, then the barter transaction is valued at book value of the resource given up. For example, assume a vendor “sells” a product to a customer, and in return takes a second product, which the vendor plans to sell to yet another company for cash. The first sale is just a step along the “earnings process” path; the vendor has not yet reached the destination. Therefore, the second product should be recorded at the book value of the first product. With no change in net asset value, there is no increase in resources to drive revenue recognition. Only when the second product is sold for cash is revenue recognition appropriate. It also is not appropriate to record a gain on sale if two similar capital assets are exchanged. For example, if two real estate development firms swap apartment buildings, the asset acquired is recorded at the book value of the asset given up.

Measurement of consideration may also be a problem if the consideration is contingent on another transaction. For example, a customer may agree to pay a vendor on a sliding scale, based on the amount that the customer, in turn, can sell the product to another firm. If the customer does not have to pay the vendor at all unless the item is resold, the sale is called a consignment sale, and is not recorded by the vendor until re-sale by the customer. However, there are other versions of a sale contract where a base price is agreed to, with further price adjustments based on the terms of eventual re-sale. If these arrangements create uncertainty that is material and unquantifiable, revenue recognition must wait until it is possible to establish the appropriate amount of consideration.
1. What is the difference between the concepts of revenue creation and revenue recognition?
2. In general, what two criteria must be satisfied before revenue can be recognized in the financial statements?
3. How should revenue be measured in a barter transaction?

APPROACHES TO REVENUE RECOGNITION

Essentially, there are two approaches to revenue recognition. Revenue can be recognized at one critical event in the chain of activities, for example, production, delivery, or cash collection. Alternatively, revenue can be recognized on a basis consistent with effort expended, a plan that would result in some revenue being recognized with every activity in the chain.

REVENUE RECOGNITION ON A CRITICAL EVENT

What happens if a critical event is chosen to trigger revenue recognition? All costs incurred before the critical event that can be specifically identified as relating to each individual earnings event are deferred (usually as inventory costs). These expenditures qualify as assets because they will generate resources/sales revenue at the critical event. When revenue is recognized, deferred expenses are expensed, and identifiable costs that have not yet been incurred must be accrued as estimated liabilities.

Revenues and expenses are all recognized at the critical event, regardless of when they are incurred. This is the magic of an accrual-based accounting system.

What events could be chosen as the critical event? Potentially, any activity in the earnings process could be so designated, but the key is that, following the critical event, the remaining aspects of the earnings process should unfold predictably in the normal course of business with no major uncertainties or immeasurables. Once the critical event has occurred, it’s all downhill from there! The most commonly-used critical events can be grouped by reference to completion of the earnings cycle:

1. Completion
2. Prior to completion
3. Subsequent to completion

Exhibit 6-2 illustrates revenue recognition associated with specific critical events in the context of production and sale of a manufactured product. Although this figure uses manufactured goods as the reference point, a similar chart could be drawn for other earnings cycles, such as for resource extraction, life insurance, or auditing. Not all possible methods are shown in Exhibit 6-2, even for manufacturing.

For most companies and for most goods and services, revenue is recognized at the time of delivery of the goods or services to the customer. Revenue is considered both earned and realized or realizable when the product or service is delivered.

An earlier critical event — production — may be appropriate if the selling and shipping functions are trivial, such as when the product is a commodity for which there is an organized market (e.g., wheat, copper, gold). A critical event after delivery is appropriate when there are measurement problems surrounding the amount of revenue actually generated, collection uncertainties, and/or when it is not possible to accurately estimate all the costs associated with the earnings process, which must be fully accrued at the critical event. In the face of any of these problems, revenue recognition should wait until major uncertainties are resolved.
Chapter 6

REVENUE RECOGNIZED AT DELIVERY

The two conditions for revenue recognition, (1) revenue is realized or realizable and (2) revenue must be earned, are usually met at the time goods or services are delivered. Thus, revenue from the sale of products is usually recognized at the date of sale, meaning the date the product is delivered to the customer. Revenue from services rendered is likewise recognized when the services have been performed and accepted by the client.

Some transactions do not result in a one-time delivery of a product or service, but rather in continual “delivery” or fulfilment of a contractual arrangement. For example, revenue from contractual arrangements allowing others to use company assets (such as revenues from rent, interest, lease payments, and royalties) is recognized as time passes or as the asset is used. Revenue is earned with the passage of time and is recognized accordingly.5

Separately identifiable costs incurred prior to the critical event are deferred in inventory or other deferred asset accounts. These costs are recognized as expenses at delivery, and thus are recognized at the same time as revenue. All other costs associated with the sale must be recognized in the same period as the revenue; this may include a reasonable estimate of bad debts, and a provision for guarantee or warranty costs. Refer to the sequence of events in Exhibit 6-3, where a company buys inventory, customizes it, and then holds it until sale. It is sold, on account, subject to a four-month warranty. Subsequently, the customer pays, some warranty costs are incurred,

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5 If, however, the contract is a lease and is essentially a noncancellable transfer of all the risks and rights of ownership of the asset, the transaction qualifies as a sale. Such transactions, called capital leases, are considered in Chapter 18.
**EXHIBIT 6-3**

**Critical Events and Impact on Net Assets**

Data:

- January 15: Inventory purchased, $14,500
- January 17: Inventory repackaged and customized, labour and materials cost, $2,250. Now ready for sale.
- March 6: Inventory delivered to customer on account. Agreed-upon price, $27,500. Collection is assured; there is a four-month warranty.
- April 30: Customer paid.
- June 14: Warranty work done, at a cost of $3,900.
- July 6: Warranty expired.

<table>
<thead>
<tr>
<th>Date</th>
<th>Delivery</th>
<th>Pre-delivery: Production</th>
<th>Post-delivery: Warranty Expiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect on net assets</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jan. 17</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect on net assets</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect on net assets</td>
<td>None</td>
<td>Increase $6,850</td>
<td>None</td>
</tr>
<tr>
<td>April 30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect on net assets</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>June 14</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Effect on net assets</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>July 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect on net assets</td>
<td>None</td>
<td></td>
<td>Increase $6,850</td>
</tr>
</tbody>
</table>

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and, finally, the warranty expires. The first column of Exhibit 6-3 traces the entries appropriate if delivery is considered to be the critical event. Product costs are deferred in the inventory account until delivery. When the item is delivered, the sales price is accrued, inventory is expensed to cost of goods sold, and warranty costs are estimated — with amazing accuracy! Collection is assumed to be certain, and no bad debt accrual is appropriate. Subsequent cash transactions — cash collection and payment of warranty costs — change receivables and payables established at the critical event. Net assets are increased only at the critical event. Other transactions change the composition but not the total of net assets. The remaining columns of Exhibit 6-3 will be analyzed in later sections.

For companies that sell services rather than products, revenue recognition policies are analogous to the policies of companies selling tangible goods. Service revenue is usually recognized when performance is complete. Of course, the revenue is really earned by performing a series of acts, but recognition may be considered appropriate only after the final act occurs. This final act is often analogous to delivery of a tangible good, and signifies that the customer accepts the service. For example, a consultant recognizes revenue only when an assignment has been completed. A trucking firm recognizes service revenue only after delivery of freight, even though packing, loading, and transporting preceded delivery. A laundry recognizes revenue when items are picked up by the customer.

Accounting for franchise fee revenue provides an example of the sorts of problems that can be encountered when trying to identify when “delivery” has occurred in a service transaction. Franchisees usually agree to pay a substantial fee to the franchisor. For revenue recognition purposes, it is often difficult to determine when the earnings process is complete and the franchisor’s service has been delivered — the point at which the franchisor has “substantially performed” the service required to earn the franchise fee revenue.

One common problem with franchise fee revenue recognition is that of evaluating the collectibility of the initial fee. If the franchisee pays the fee up front, this is less of a concern; if the franchisee plans to pay it over time with profits from the franchise operation, then collection is contingent on profitable operations, and careful assessment of business risk is necessary. A franchisor with no track history, or with franchisees that are financially unsound, may have to delay revenue recognition due to collection concerns.

Another problem is that the franchisor may have significant ongoing obligations to the franchisee. If this is the case, and if the franchisee does not have to pay extra for these services (that is, they are part of the services encompassed by the initial franchise fee) recognition of all or part of the initial franchise fee might be delayed.

To help franchisors (and their auditors) deal with the problems of franchise fee revenue recognition, the CICA issued an Accounting Guideline many years ago. The guideline suggests that “substantial performance” has occurred only when:

a. The franchisor has performed substantially all of the initial services required by the franchise agreement or volunteered by the franchisor as a result of normal business practice.

b. The franchisor has no remaining obligation or intent to refund amounts received or forgive unpaid amounts owing.

c. There are no other material unfulfilled conditions affecting completion of the sale.

Thus, “delivery” has occurred only when the franchisor has done what is expected and gets to keep the money.

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REVENUE RECOGNITION BEFORE DELIVERY

Completion of Production
In certain situations, revenue can be recognized at the completion of production but prior to delivery. The key criterion for using this method is that the sale will take place without any doubt. The normal criteria for recognizing revenue before sale are:

- the sale and collection of proceeds must be assured;
- the product must be marketable immediately at quoted prices that cannot be influenced by the producer;
- units of the product must be interchangeable; and
- there must be no significant costs involved in product sale or distribution.

Essentially, these criteria define a commodity. Examples include agricultural products, precious metals, and other goods that are traded on commodities markets such as orange juice concentrate, crude oil, and pork bellies. Commodities can be sold at any time simply by lifting the telephone and calling a broker; no significant effort is required. When this approach to revenue recognition is used, the increase in net asset value is recorded immediately upon the completion of production, and involves valuing inventory at market value.

While commodities that are traded on a public market are the most obvious candidates for pre-delivery revenue recognition, some companies may use this method if their product is in such strong demand that sale is virtually assured. It is a bit dangerous, however, because if demand suddenly falls off, the company is left with a lot of inventory carried at market value but no ready buyers. Substantial effort is then required to sell the product, which means that the earnings process is not complete and the criteria for revenue recognition have not been met.

Refer to the second column of Exhibit 6-3, which demonstrates the sequence of entries that would be appropriate for revenue recognition on the completion of production. When inventory is customized and ready for sale, revenue is recognized in full by increasing the inventory value from its cost of $16,750 (that is, $14,500 plus $2,250) to market value ($27,500), a difference of $10,750. On the income statement, the gross margin will be disaggregated and will be presented as sales of $27,500 and cost of sales of $16,750.7

At the same time the inventory is revalued, warranty costs are accrued, to include all costs of the sale in the same accounting period. Note that the overall change in net assets is $6,850, the same that was recorded under the “delivery” alternative. All that has changed is the point at which the increase in net assets is recognized. After the critical event (i.e., production), all transactions change the allocation of the net asset balances but do not increase or decrease total net assets.

Completion of production for a service company is the completion of the service, also called specific performance. Is this any different than “delivery”? For many service activities, services are completed and delivered simultaneously (consider haircuts, tooth extractions, music lessons, and so on).

But what if the service is performed and only later accepted by the customer? For example, a consulting report could be written but not presented to the client for a month. Would it make sense to recognize revenue when the work is completed, prior to delivery? As in tangible products, this would be aggressive, as the risks and rewards have not yet passed to the client; there is no assurance that the consultant has fulfilled her or his mandate.

7 Bear in mind that Canadian GAAP requires the amount of revenue recognized to be disclosed on the income statement [CICA 1520.03(a)].
As a result, revenue recognition at production for service sales is not normally appropriate. In many cases, the lag between production and delivery is likely to be non-existent or very short, and so this isn't much of an issue for most short-term service sales. But long-term service contracts may result in partial recognition of revenue, period by period, as work is performed. This process will be discussed in a later section.

**Initiation of Contract**

To achieve matching, it is necessary to recognize revenue and the related expenses in the same period. However, GAAP does not approve of the deferral of many types of cost that cannot be specifically identified with a unit of product or service. Promotional expenses, for example, can be deferred to a later period if they relate specifically to that later period, such as the cost of preparing television advertisements which will be aired in the next period, or the cost of publishing a printed catalogue for next year's product line. General advertising and promotional costs cannot be deferred, however, because it is impossible to have reasonable assurance that revenues will arise in the future as the result of this year's promotion.

On rare occasions, a large part of an enterprise's cost is in its promotional activities or in other non-deferrable costs. An example is a company that sells self-improvement home study courses by correspondence. The costs for developing the courses are incurred early, followed by a major TV and print media blitz to sign up customers. The course development costs can be deferred, of course, but the cost of the promotional campaign cannot.

Therefore, such a company may choose to recognize revenue when it signs up the customer and receives the cash. The costs of actually delivering the course may be relatively trivial (e.g., printing and mailing costs, and perhaps grading costs that are tightly budgeted and controlled) and are quite predictable; the future costs of delivering the course can be accrued at the time of revenue recognition. Therefore, the critical event is perceived to be the sale.

Recognizing revenue at the inception of a contract is usually regarded as aggressive accounting policy. Companies that use an aggressive policy and later get into financial difficulty usually find themselves the brunt of aggressive analysts and lawyers. Loewen Group Inc., a very large funeral services company, used early recognition of revenue on the sale of cemetery plots. The sales contracts were usually instalment sales, and the customer paid little or nothing at inception. The revenue for the entire contract was booked in the period that the sale was made, which is industry practice. Getting the sale is the critical event. This practice was used by Loewen for years without raising the concerns of analysts, but once the company got into difficulty (for largely unrelated reasons), it was accused of aggressive accounting.8

Another example is that of Livent Inc. Livent sold the rights to the name of its theatres in Vancouver and Toronto to Ford and to AT&T Canada. The sale was for the right to attach the corporate sponsor's name to the theatre for a limited period, usually 10 years. Clearly, the critical event was making the sale. There could be little doubt that Ford and AT&T would come up with the cash, and Livent didn't have to do anything to earn the revenue — just put the name on the theatre and leave it there! Therefore, Livent recognized the full amount of the sales contract at the time of signing, regardless of whether or not the cash was received. Later, analysts (and lawyers) attacked this practice, claiming that the revenue should have been deferred and amortized (the Canadian solution to many accounting problems!).9

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In certain circumstances, revenue recognition must be delayed until after delivery. Typically, this is appropriate when there are uncertainties over the costs associated with the remaining activities in the earnings process, collection, or measurement.

Revenue from the sale of goods should only be recognized when the risks and rewards of ownership pass from the vendor to the customer; substantially all of the elements of the earnings process must be complete before this condition is considered to be met. What if there is a major warranty associated with the sale? This may preclude revenue recognition until the task — the risk — is over. Refer to the third column of entries in Exhibit 6-3. This alternative is appropriate if the cost of the warranty is not estimable at the point of sale, or any point up to its expiration, and is expected to be material.

Notice here that product costs are capitalized in inventory, and even delivery does not cause a change in net assets. Accounts receivable are recognized, inventory is reduced, but the gross margin is deferred; the deferred gross margin account is a contra account to accounts receivable on the balance sheet. Warranty costs actually incurred are deferred. None of the transactions prior to the critical event — the expiration of the warranty period — triggers a change in net asset value.

As previously discussed, if the amount of consideration — the sales amount — cannot be ascertained, revenue is recognized when those uncertainties are resolved. In a contract that involves a sliding scale of payment to the vendor based on the price the customer receives on the resale of the item, the critical event would be the resale of the goods for an ascertainable price.

In several industries, such as book publishing and equipment manufacturing, the sales terms allow customers the right to return goods under certain circumstances and over long periods of time. Thus, on delivery, the amount that will ultimately become realizable is not known.

The revenue section of the CICA Handbook states the following:

Revenue would not be recognized when an enterprise is subject to significant and unpredictable amounts of goods being returned, for example, when the market for a returnable good is untested. If an enterprise is exposed to significant and predictable amounts of goods being returned, it may be sufficient to provide therefore.

This latter point deserves special emphasis; if the risk can be quantified, then the sale can be recorded on delivery and the contingency accrued.

No revenue should be recognized if the buyer's obligation to pay the seller is contingent on the resale of the product. If payment is contingent, this is a consignment: a marketing arrangement in which the owner of the product (the consignor) ships the product to another party (the consignee) who acts as a sales agent. The consignee does not purchase the goods, but assumes responsibility only for their care and resale. Upon sale, the consignee remits the proceeds (less specified expenses and commission) to the consignor. Goods on consignment are part of the inventory of the consignor until sold by the consignee. They are not a sale of the consignor when shipped to the consignee, but only when they are sold by the consignee.

Product-financing arrangements include agreements in which a sponsoring company sells a product to another company and in a related transaction agrees to repurchase the product at some future point in time if the customer has been unable to resell the product. This is consignment selling in a different legal form, and it is clear that the risks and rewards of ownership have not passed to the customer.

In these kinds of product-financing agreements, the sponsoring company must record a liability at the time the proceeds are received. It can neither record a sale nor...
remove the product from its inventory account. Only when the product is sold to an outside party without a related repurchase agreement can the sponsoring company record a sale.

**Cash Collection**

It is not appropriate to recognize revenue if it is not realized or realizable; accounts receivable must be collectible in order to support an entry that recognizes revenue. If there is no way to quantify collection risk, the critical event becomes cash collection and increases in net asset values are deferred until that time.

However, there is usually some degree of collection risk in every credit sale and delayed revenue recognition is not the norm. Instead, the risk is quantified by estimating an allowance for doubtful accounts, and associated bad debt expense. As long as there is some objective basis for the allowance, such as past history, credit reports, etc., revenue recognition prior to cash collection can be justified.

When the eventual collection of cash is uncertain, companies usually delay revenue recognition until the cash is actually collected. This is common in certain types of retail stores, where credit terms are extended to customers that have very shaky credit records. The company compensates for its high default rate on bad credit by charging high interest to those who do pay and by having a well-organized repossession service.

Recognizing revenue on cash collection does not mean that it is appropriate to recognize revenue prior to delivery, if cash is received prior to delivery and there are major costs to be incurred to fulfill the contract with the customer. For example, when a publisher sells a magazine subscription or an airline sells a ticket for future air travel, cash is received before delivery of the product or service. The realizability criterion is met, but significant effort and cost must be incurred before the earnings process is substantially complete; the earnings process is not completed until the product is delivered.

In this case, cash inflow does not result in revenue but in an obligation to produce and deliver the product: a liability. This liability is called deferred revenue or unearned revenue. The revenue is not recognized until the product or service is delivered. The topic under consideration in this section is delayed revenue recognition: when cash is collected after delivery.

If revenue is recognized on cash collection, the sequence of entries would be similar to those in the third column of Exhibit 6-3. Cost would be deferred and delivery would only result in recognition of a deferred margin. On cash collection, warranty costs would be accrued, and the cash collection would trigger recognition of the gross margin. Net assets would increase accordingly.

The example in Exhibit 6-3 is relatively straightforward, since the customer has paid in one complete lump sum. However, when cash collection is uncertain, the sale agreement often involves a series of payments for the customer. Then, the company must determine which of two revenue recognition approaches fits its risk profile: the instalment sales method or the cost recovery method.

**Instalment Sales Method**

Many consumer products are sold on an instalment or deferred payment plan, in which a purchaser makes payments in accordance with a periodic payment plan. If the company has a reasonable basis for estimating an allowance for uncollectible accounts, the company can choose to recognize revenue immediately, at the time of the sale.

However, a company that sells its products on an instalment plan may choose to use the instalment sales method of accounting. Revenue under the instalment sales method is recognized when cash is collected rather than at the time of sale. Under this method, revenue (and the related cost of goods sold) are recognized only when realized. For instance, the instalment method may be used to account for sales of real...
estate when the down payment is relatively small and ultimate collection of the sales price is not reasonably assured.

For example, assume that Truro Company makes $80,000 of instalment sales in 20X2. The cost of goods sold is $60,000, and thus the gross margin is $20,000, or 25% of sales. The sale is recorded with a deferred gross margin.

<table>
<thead>
<tr>
<th>Instalment accounts receivable</th>
<th>80,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory</td>
<td>60,000</td>
</tr>
<tr>
<td>Deferred gross margin</td>
<td>20,000</td>
</tr>
</tbody>
</table>

The deferred gross margin will appear as a liability on the balance sheet, as deferred revenue. Notice that the entry to record the sale does not result in an increase in the company's net assets, because the increase of $20,000 in assets (that is, the increase from $60,000 inventory to $80,000 accounts receivable) is completely offset by the $20,000 increase in the liability.

If $10,000 is subsequently collected, the entries to record the collection and to recognize a proportionate part of the deferred revenue are as follows:

<table>
<thead>
<tr>
<th>Cash</th>
<th>10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instalment accounts receivable</td>
<td>10,000</td>
</tr>
<tr>
<td>Deferred gross margin ($10,000 × 25%)</td>
<td>2,500</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>7,500</td>
</tr>
<tr>
<td>Sales revenue</td>
<td>10,000</td>
</tr>
</tbody>
</table>

It is the last entry that records the increase to net assets that is the sign of revenue recognition. The increase in net assets is accomplished by reducing the amount of the liability for deferred gross margin. Note that the revenue recognition is recorded by disaggregating the realized gross margin of $2,500 into its two components of Sales and Cost of goods sold. This is in accordance with the CICA Handbook recommendation that the gross amount of revenue be disclosed on the income statement.

The Cost Recovery Method

The cost recovery method is sometimes called the sunk cost method. A company must recover all the related costs incurred (the sunk costs) before it recognizes any profit. The cost recovery method is used for highly speculative transactions when the ultimate realization of revenue or profit is unpredictable.

The method makes an even match of revenue and expense until all of the deferred cost has been recovered. Only then is any profit recognized. It is common only under extreme uncertainty about collection of the receivables or ultimate recovery of capitalized production start-up costs.

An example is Lockheed Corporation's use of the cost recovery method in the early 1970s when it faced great uncertainty regarding the ultimate profitability of its TriStar Jet Transport program. Lockheed had invested more than $500 million in the initial planning, tooling, and production start-up costs of its widebody aircraft, the L-1011 TriStar. These costs were to be amortized over the production and sale of the first 300 planes, but considerable uncertainty developed concerning how many airplanes might ultimately be sold: the TriStar program might not generate enough sales to recover the development costs. Note 2 to Lockheed's 1973 annual report reported the company's decision to use the cost recovery method for revenue recognition for its TriStar program (italics added):

All of the development costs and the normal production costs on the TriStar Jet Transport have been included in the inventory except for General and Administrative expenses which are charged to income in the year incurred. G & A expenses amounted to $70 million in 1973 and
$81 million in 1972. Since the cumulative development costs to date have been substantial, it is estimated that 300 aircraft will have to be delivered to make the total program profitable. Since 56 aircraft have been delivered to date (all during 1972 and 1973), the Company does not expect a final determination of recoverability of Inventoried Cost can be made until a later date. Zero gross profit was recorded on the $730 million of sales in 1973 and $302 million in sales in 1972 (for deliveries in those years) and no gross profit will be recorded on deliveries until uncertainties are reduced.\textsuperscript{10}

The cost recovery method is also justified when there is significant uncertainty regarding the ultimate collectibility of a string of customer payments. Cost recovery accounting is not uncommon in the real estate industry.

For example, assume that the Peninsula Land Sales Company sold undeveloped land during 20X4, with an original cost of $80,000 and a contract sales price of $140,000, to be paid, with interest, over the next five years. Collection is deemed to be highly uncertain. The first $80,000 that is collected is, in essence, credited to the land account; the last $60,000 collected is all profit. If collections cease after $60,000, the adjusted cost basis for the land is $20,000, and it is recorded as an asset at the lower of cost or market.

This revenue recognition method is highly skewed toward later revenue recognition and does a poor job of reflecting performance and cash flows. Its use is justified only in the face of significant uncertainties.

\textbf{CONCEPT REVIEW}

1. What is meant by the critical event in revenue recognition?
2. What is the net balance sheet effect of revenue recognition?
3. What criteria must ordinarily be satisfied in order for revenue to be recognized on production, prior to sale or delivery?
4. When would revenue recognition be delayed to a point later than production, sale, and delivery?

\textbf{REVENUE RECOGNITION BY EFFORT EXPENDED}

So far, our discussion has examined the critical event approach to revenue recognition: identify one event in the earnings process, and recognize revenue and related costs at that event (which could involve multiple events for a single revenue-generating transaction, if the critical event is cash receipt).

An alternative to the critical event approach is to recognize revenue as effort is expended along each step in the earnings process. Think about the increase in value resulting from natural causes such as the growth of timberland or the aging of wines and liquors. As the product's value increases, revenue is being earned in an economic sense, and some accountants believe that it should be recognized. Recognition may be important when the natural process is very long, and knowing the change in value is relevant information for decision-making. Could you measure the change in value?

This approach to revenue recognition is not practical in the vast majority of situations: imagine trying to figure out how much a forest grew in a year, or trying to allocate the gross profit associated with a sale of manufactured goods to each activity in the process. Which of the tasks (getting the order, procuring raw materials, managing production, etc.) are necessary to create the revenue?

\textsuperscript{10} In 1975, Lockheed reclassified TriStar’s initial planning, tooling, and unrecovered production start-up costs as deferred charges and began amortizing them in the amount of approximately $50 million per year. This was done because of ‘increased uncertainties’ regarding the number and timing of future TriStar deliveries. This write-off procedure was a means of spreading the loss over future years. A preferred alternative would have been to write off the entire amount immediately.
ufacturing, shipping, providing after-sales support, etc.) is the most valuable? The allocation problem would be a nightmare!

But accountants can and have solved allocation problems before. The more serious problem is that the revenue principle is not satisfied at any time prior to delivery. Risks and rewards of ownership have not passed to the customer, and the increase in net asset value is not, therefore, reasonably assured. Remember, revenue recognition prior to delivery is aggressive, and rare except in special industries. Notwithstanding this fact, there are a few cases where it is not only acceptable, but even desirable, to take the required leap of faith and recognize revenue as effort is expended.

LONG-TERM CONTRACTS

In some instances the earnings process extends over several accounting periods. Delivery of the final product may occur years after the initiation of the project. Examples are construction of large ships, office buildings, development of space-exploration equipment, and development of large-scale custom software. Contracts for these projects often provide for progress billings at various points in the earnings process.

If the seller waits until the project or contract is completed to recognize revenue, the information on revenue and expense included in the financial statements will be reliable, but it may not be relevant for decision-making because the information is not timely.

For example, the financial reporting objective of performance evaluation is reasonably well served only if the financial statements report on the results of the enterprise's economic activity during the period. Delaying revenue recognition on long-term projects until the project is complete tells the financial statement reader nothing about economic activity (i.e., performance) during the period.

The cash flow reporting objective also is not well served by delaying revenue recognition, because the cash is flowing out (and usually in, as well) as the project is performed, not at the end. Therefore, it often is worthwhile to trade off reliability in order to provide more timely, relevant earnings information. There are two general methods of accounting for revenue on long-term contracts:

1. Completed-contract method. Revenues, expenses, and resulting gross profit are recognized only when the contract is completed. As costs are incurred, they are accumulated in an inventory account (projects in progress). Progress billings are not recorded as revenues, but are accumulated in a billings on projects in progress account that is deducted from the inventory account (i.e., a contra account to inventory). At the completion of the contract, all the accounts are closed, and the entire gross profit from the project is recognized.

2. Percentage-of-completion method. The percentage-of-completion method recognizes revenue on a long-term project as work progresses so that timely information is provided. Revenues, expenses, and gross profit are recognized each accounting period based on an estimate of the percentage of completion of the project. Project costs and gross profit to date are accumulated in the inventory account (projects in progress). Progress billings are accumulated in a contra inventory account (billings on projects in progress).

The CICA Handbook recommends that revenue from long-term contracts should be recognized by whichever method "relates the revenue to the work accomplished":

Such performance should be regarded as having been achieved when reasonable assurance exists regarding the measurement of the consideration
that will be derived from rendering the service or performing the long-term contract.

The percentage-of-completion and completed-contract methods are not intended to be free choice alternatives for the same circumstances. Is there a contract that establishes the contract price with a high degree of reliability? Is collection reasonably assured? These conditions would be met by the standard provisions of a long-term contract that involves a creditworthy customer expected to make regular progress payments.

The critical criteria are whether the seller can estimate with reasonable assurance (1) the progress toward completion of the contractual obligation and (2) the costs to complete the project. If these criteria are met, percentage of completion is the method that very clearly relates the revenue to the work performed. If the criteria are not met, the completed-contract method should be used. Of course, judgement plays a role in determining whether the criteria are met, and particular reporting objectives usually influence the selection of method.

**Measuring Progress toward Completion**

Measuring progress toward completion of a long-term project can be accomplished by using either input measures or output measures:

1. **Input measures.** The effort devoted to a project to date is compared with the total effort expected to be required in order to complete the project. Examples are (1) costs incurred to date compared with total estimated costs for the project and (2) labour hours worked compared with total estimated labour hours required to complete the project.

2. **Output measures.** Results to date are compared with total results when the project is completed. Examples are the number of kilometres of highway completed compared with total kilometres to be completed, or progress milestones established in a software development contract.

An expert, such as an engineer or architect, is often hired to assess percentage of completion or achievement of milestones, which is an art, not a science.

The goal is to have a realistic measure of progress made toward completion of the project. Neither input nor output measures are always ideal. Input measures are often used when it is difficult to measure progress using output measures. However, input measures can be misleading when no relatively constant relationship between the input measure and productivity exists. Cost overruns on projects would cause erroneous levels of completion to be estimated. Costs incurred also may be misleading as a measure of progress if costs include one-time, up-front expenditures for quantities of materials and supplies to be used during the construction period.

Despite their shortcomings, input measures are most frequently used because they are the most readily available. Among input measures, the cost-to-cost method is the most common. The cost-to-cost method measures the percentage completed by the ratio of costs incurred to date to the current estimate of the total costs required to complete the project:

\[
\text{Percent complete} = \frac{\text{Total costs incurred to date}}{\text{Most recent estimate of total costs of project (past and future)}}
\]

The most recent estimate of total project costs is the sum of the total costs incurred to date plus the estimated costs yet to be incurred to complete the project. Once the percentage completed has been computed, the amount of revenue to recognize in the current period is determined as:
Current period’s revenue = (Percent complete × Total contract revenue) – Revenue previously recognized

**Example**

There can be dramatic differences between the revenue and income effects of the completed-contract and percentage-of-completion methods. The completed-contract method is the simplest and most straightforward and it is discussed first.

To demonstrate the two methods, assume that the Ace Construction Company has contracted to erect a building for $1.5 million, starting construction on 1 February 20X1, with a planned completion date of 1 August 20X3. Total costs to complete the contract are estimated at $1.35 million, so the estimated gross profit is expected to be $150,000. Progress billings payable within 10 days after billing will be made on a predetermined schedule. Assume that the data shown in the upper portion of Exhibit 6-4 pertain to the three-year construction period. The facts for each of the three years will be ascertained as each year goes by. That is, in 20X1 the contractor does not know the information that is shown in the columns for 20X2 and 20X3.

The total construction costs were originally estimated at $1,350,000, of which $350,000 were incurred in 20X1. In 20X2, another $550,000 in costs were incurred, but the estimated total costs rose by $10,000 in 20X2, to $1,360,000. In 20X3, the total costs rose by another $5,000, and the total cost to complete the project turns out to be $1,365,000. Contract profit therefore drops from the original estimate of $150,000 to an actual amount of $135,000.

As costs are incurred, they are debited to an inventory account called construction in progress. This inventory account is a current asset even for a multi-year project because the operating cycle of the contractor is the length of the longest project (rather than one year).

Construction companies do not wait until the end of the project to collect their money. Instead, progress billings are made throughout the duration of the project. The amount of progress billings is based on the amount of work accomplished to the date of the billing, as verified by an independent facilitator.

Progress billings are debited to accounts receivable and credited to billings on contracts, which is subtracted from the construction-in-progress inventory on the balance sheet. If the net of the construction-in-progress inventory (inventory less billings on contract) results in a debit balance, it is reported as a current asset. This account balance represents the contractor's net ownership interest in the construction project; it is sometimes referred to as the contractor's draw.

If the net amount in the construction-in-progress inventory is a credit balance, it represents the developer's (buyer's) interest in the project and is referred to as the developer's draw. A credit balance is reported as a current liability in the contractor's financial statements.

**Completed-Contract Method**

Under the completed-contract method, there is no recognition of the project in the income statement until the project is completed and has been legally accepted by the customer.

The journal entries to record the construction-in-progress inventory, progress billings, and collections of progress billings for each year for Ace Construction are shown in the lower portion of Exhibit 6-4.

At the completion of the contract, income is recognized as the difference between the accumulated credit balance in the billings on contracts account and the debit balance in the construction-in-progress inventory account, assuming that the total price of the contract has been billed. The accumulated amount of billings on contracts is recognized as sales revenue, and the accumulated amount of construction-in-progress inventory on completion of the contract is recognized as cost of goods sold. It is this series of entries that increases net assets.
### Exhibit 6-4

#### Example of Completed Contract Accounting

**ACE Construction Company**  
Construction Project Fact Sheet  
Three-Year Summary Schedule

<table>
<thead>
<tr>
<th>Contract Price: $1,500,000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>20X1</strong></td>
</tr>
<tr>
<td>1. Estimated total costs for project</td>
</tr>
<tr>
<td>2. Costs incurred during current year</td>
</tr>
<tr>
<td>3. Cumulative costs incurred to date</td>
</tr>
<tr>
<td>4. Estimated costs to complete at year-end</td>
</tr>
<tr>
<td>5. Progress billings during year</td>
</tr>
<tr>
<td>6. Cumulative billings to date</td>
</tr>
<tr>
<td>7. Collections on billings during year</td>
</tr>
<tr>
<td>8. Cumulative collections to date</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Construction-in-progress inventory</th>
<th><strong>20X1</strong></th>
<th><strong>20X2</strong></th>
<th><strong>20X3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash, payables, etc.</td>
<td>350,000</td>
<td>350,000</td>
<td>465,000</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>300,000</td>
<td>575,000</td>
<td>625,000</td>
</tr>
<tr>
<td>Billings on contracts</td>
<td>300,000</td>
<td>300,000</td>
<td>625,000</td>
</tr>
<tr>
<td>Cash</td>
<td>270,000</td>
<td>270,000</td>
<td>675,000</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>270,000</td>
<td>555,000</td>
<td>675,000</td>
</tr>
</tbody>
</table>

Billings on contracts  
Revenue from long-term contracts  
Costs of construction  
Construction-in-progress inventory

On balance sheets during the construction period, the construction-in-progress inventory is reported as total accumulated costs to date less the total progress billings to date. The completed contract method has the advantage of delaying profit measurement until substantially all of the costs and revenues are known. There may be some remaining costs that are roughly analogous to warranty costs; these can be estimated and accrued. Although the costs and revenues are known with a high degree of assurance, the timing of their recognition in the income statement is a matter for some manipulation. Contractors have been known to informally suggest to customers that they may want to delay formal acceptance of the project until after the contractor’s year-end, usually in order to delay taxation. Taxation officials are aware of this practice, however, and often reach into the next year and claim tax on the profits generated on projects “closed” during the first two months of the contractor’s next fiscal year.

The completed-contract method ranks high on the qualitative characteristic of objectivity because there is so little estimation involved. On the other hand, the...
method is perceived as lacking in the qualitative attributes of relevance and timeliness because the benefit of the contractor’s economic activity during the year is not reflected on the income statement as long as the project is under way. Therefore, the completed-contract method is not very helpful if the dominant reporting objective is performance evaluation. The method is very useful for income tax minimization, however, since there is no taxation until the project is complete (even if there may be dispute about which period it was completed in).

**Percentage-of-Completion Method**

The objective of the percentage-of-completion method is to provide an estimate of the earnings of the company that will arise as the result of its economic activity (i.e., working on construction projects) during the year. Since the contractor spent a lot of time, effort, and money working on projects in progress, performance evaluation is better served if periodic profit (or loss) is measured on the basis of effort expended rather than contracts completed.

Under the percentage-of-completion method, a portion of revenue and expense (and thus income) is recognized as it is earned in each accounting period. The amount of income that is recognized is added to the construction-in-progress inventory. By adding the income earned to date to the inventory, the inventory is, in effect, being increased to its net realizable value. Total actual income on the contract will not be known until the project is completed; what is recognized each period is an estimate of income that is based on many other estimates, as we discuss shortly.

Using the data shown in the upper portion of Exhibit 6-4, the relative proportion of the total costs that have been incurred to date can be used to determine percentage completed.

<table>
<thead>
<tr>
<th></th>
<th>20X1</th>
<th>20X2</th>
<th>20X3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs incurred to date</td>
<td>$350,000</td>
<td>$900,000</td>
<td>$1,365,000</td>
</tr>
<tr>
<td>Estimated total costs</td>
<td>1,350,000</td>
<td>1,360,000</td>
<td>1,365,000</td>
</tr>
<tr>
<td>Percent completed</td>
<td>26%</td>
<td>66%</td>
<td>100%</td>
</tr>
</tbody>
</table>

The percentage completed is computed by dividing the estimate of costs incurred to date by the estimated total costs. For example, estimated total costs at the end of 20X1 ($1,350,000) equals costs incurred to date ($350,000) plus estimated costs to complete at the end of 20X1 ($1,000,000). The percentages shown above have been rounded to the nearest full percentage point. The “exact” percentage for 20X2, to be precise, is 66.17647…%. But there is no point in calculating the percentage of completion to more than two digits (or, at the most, three). We are working with estimates here, and it is silly to be “precise” in calculating percentages that are based on approximations.

The next step is to compute the total amount of revenue recognizable through each year-end by multiplying the total contract revenue by the percentage completed for each year:

<table>
<thead>
<tr>
<th></th>
<th>20X1</th>
<th>20X2</th>
<th>20X3</th>
</tr>
</thead>
<tbody>
<tr>
<td>20X1: $1.5 million × 26%</td>
<td>$390,000</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>20X2: $1.5 million × 66%</td>
<td>—</td>
<td>$990,000</td>
<td>—</td>
</tr>
<tr>
<td>20X3: $1.5 million × 100%</td>
<td>—</td>
<td>—</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>Less: revenue previously recognized</td>
<td>—</td>
<td>(390,000)</td>
<td>(990,000)</td>
</tr>
<tr>
<td>Recognized revenue for the year</td>
<td>$390,000</td>
<td>$600,000</td>
<td>$510,000</td>
</tr>
</tbody>
</table>
The gross profit to be recognized is the difference between revenue and costs incurred in the period:

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue for the current period</th>
<th>Costs incurred in the current period</th>
<th>Gross profit for the period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$390,000</td>
<td>$350,000</td>
<td>$40,000</td>
</tr>
<tr>
<td></td>
<td>$600,000</td>
<td>$550,000</td>
<td>$50,000</td>
</tr>
<tr>
<td></td>
<td>$510,000</td>
<td>$465,000</td>
<td>$45,000</td>
</tr>
<tr>
<td>Total</td>
<td>$1,500,000</td>
<td>$1,365,000</td>
<td>$135,000</td>
</tr>
</tbody>
</table>

The journal entries to record the costs incurred on the construction, the progress billings, and the collections of progress billings are the same as those for the completed-contract method. An additional entry is needed to record the recognition of revenue and expense each period. The gross profit is debited to the construction-in-progress inventory:

<table>
<thead>
<tr>
<th>Year</th>
<th>Construction-in-progress inventory (B/S)</th>
<th>Costs of construction (I/S)</th>
<th>Revenue from long-term contracts (I/S)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$40,000</td>
<td>$390,000</td>
<td>$390,000</td>
</tr>
<tr>
<td></td>
<td>$50,000</td>
<td>$550,000</td>
<td>$600,000</td>
</tr>
<tr>
<td></td>
<td>$45,000</td>
<td>$465,000</td>
<td>$510,000</td>
</tr>
</tbody>
</table>

The construction-in-progress inventory account is greater under the percentage-of-completion method than under the completed-contract method by the amount of gross margin recognized to date. This is the increase in net assets that always accompanies revenue recognition.

Notice that the balance of the construction-in-progress inventory account is not reduced each year as the revenue and related costs are recognized in the income statement. On the income statement, the recognized gross profit is disaggregated into revenue less costs of construction. The offset to the inventory account is the billings on contracts account, just as for the completed-contract method.

When the project is completed, the billings on contracts will completely offset the construction-in-progress inventory. A journal entry is needed to remove both accounts from the books of Ace Construction:

Billings on contracts 1,500,000  
Construction-in-progress inventory 1,500,000

Comparison of Results
Exhibit 6-5 compares the financial statement presentations for the completed-contract method and the percentage-of-completion method. Under the completed-contract method, inventory is carried at cost. Under the percentage-of-completion method, inventory is carried at cost plus recognized gross profit.

The difference between year-end inventory amounts under the two methods is the accumulated gross margin recognized under the percentage-of-completion method. Exhibit 6-5 also shows the dramatic difference in gross profit between the two methods on a year-to-year basis. However, total gross profit over the three years is the same for each method. This is another of the allocation games of which accountants are so fond.

Accounting for Losses on Long-Term Contracts
When the costs necessary to complete a contract result in losses, two situations are possible:

1. The loss results in an unprofitable contract. In this situation, the loss is recognized in full in the year it becomes estimable. For example, assume that, at the end of 20X2, Ace’s costs incurred are as shown ($350,000 in 20X1 and $550,000 in
### EXHIBIT 6-5
Financial Statement Presentation of Accounting for Long-Term Construction Contracts

#### COMPLETED-CONTRACT METHOD

<table>
<thead>
<tr>
<th></th>
<th>20X1</th>
<th>20X2</th>
<th>20X3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Balance Sheet:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Assets:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>$30,000</td>
<td>$50,000</td>
<td></td>
</tr>
<tr>
<td><strong>Inventory:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction in progress</td>
<td>350,000</td>
<td>900,000</td>
<td></td>
</tr>
<tr>
<td>Less: Billings on contracts</td>
<td>300,000</td>
<td>875,000</td>
<td></td>
</tr>
<tr>
<td>Construction in progress in excess of billings</td>
<td>50,000</td>
<td>25,000</td>
<td></td>
</tr>
<tr>
<td><strong>Income Statement:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue from long-term contracts</td>
<td>$0</td>
<td>$0</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>Costs of construction</td>
<td>0</td>
<td>0</td>
<td>1,365,000</td>
</tr>
<tr>
<td>Gross profit</td>
<td>0</td>
<td>0</td>
<td>135,000</td>
</tr>
</tbody>
</table>

Note 1: Summary of significant accounting policies.
Long-term construction contracts. Revenues and income from long-term construction contracts are recognized under the completed-contract method. Such contracts are generally for a duration in excess of one year. Construction costs and progress billings are accumulated during the periods of construction. Only when the project is completed are revenue, expense, and income recognized on the project.

#### PERCENTAGE-OF-COMPLETION METHOD

<table>
<thead>
<tr>
<th></th>
<th>20X1</th>
<th>20X2</th>
<th>20X3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Balance Sheet:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Assets:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>$30,000</td>
<td>$50,000</td>
<td></td>
</tr>
<tr>
<td><strong>Inventory:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction in progress</td>
<td>390,000</td>
<td>990,000</td>
<td></td>
</tr>
<tr>
<td>Less: Billings on contracts</td>
<td>300,000</td>
<td>875,000</td>
<td></td>
</tr>
<tr>
<td>Construction in progress in excess of billings</td>
<td>90,000</td>
<td>115,000</td>
<td></td>
</tr>
<tr>
<td><strong>Income Statement:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenue from long-term contracts</td>
<td>$390,000</td>
<td>$600,000</td>
<td>$510,000</td>
</tr>
<tr>
<td>Costs of construction</td>
<td>350,000</td>
<td>550,000</td>
<td>465,000</td>
</tr>
<tr>
<td>Gross Profit</td>
<td>40,000</td>
<td>50,000</td>
<td>45,000</td>
</tr>
</tbody>
</table>

Note 1: Summary of significant accounting policies.
Long-term construction contracts. Revenues and income from long-term construction contracts are recognized under the percentage-of-completion method. Such contracts are generally for a duration in excess of one year. Construction costs and progress billings are accumulated during the periods of construction. The amount of revenue recognized each year is based on the ratio of the costs incurred to the estimated total costs of completion of the construction contract.
20X2), but the estimate of the costs to complete the contract in 20X3 increases to $625,000 from $465,000, an increase of $160,000.

Since costs incurred through 20X2 total $900,000, the total estimated cost of the contract becomes $1,525,000 (instead of $1,365,000), and there is now an expected loss on the contract of $25,000.

The $25,000 loss would be recognized in 20X2 under both methods of accounting for long-term construction contracts. A simple accrual entry is made for the completed-contract method, and the percentage-of-completion would record a gross loss of $65,000 ($25,000 + $40,000), which records the loss and reverses the profit recorded in prior years.

2. The contract remains profitable, but there is a current-year loss. Suppose Ace's costs incurred to the end of 20X2 are as shown, but the estimate to complete the contract has increased to $550,000. Total costs of $900,000 have already been incurred; thus, the total estimated cost of completing the contract has risen to $1,450,000. The contract will still generate a gross margin of $50,000.

Under the completed-contract method, all items are deferred until 20X3, and no entry is needed in 20X2. For the percentage-of-completion method, the 20X2 completion percentage is reworked (now 62%; $900,000 ÷ $1,450,000). This decreases the amount of revenue that will be reported, and results in a reported gross loss in 20X2.

Estimating Costs and Revenues

It is important to understand the extent of the estimates and approximations that underlie the percentage-of-completion method. Obviously, the cost to complete is an estimate. It may be wildly off the mark, because large scale projects are often begun before the final design is even completed.

A six-week television series produced by PBS titled “Skyscraper” showed the progress on construction of a Manhattan office building from design to final acceptance. One point made early in the show was that the developer couldn't wait until the building's design was fully developed before beginning construction; there was just too much potential revenue to be lost by waiting another year or so to completely finish all of the details. The old cliché is that “time is money,” and nowhere is this adage truer than in real property development. Therefore, estimates of “cost to complete” are informed judgements, but they can change radically over the course of the contract.

As well, the “costs incurred to date” is an estimate! How much of the contractor’s overhead is to be included in the costs assigned to the project, and how much is charged as a period cost? What proportion of purchased and/or contracted materials should be included in cost to date? If the contractor has ordered and had delivered 5,000 tons of bricks for exterior sheathing, should the cost of those bricks be included in the cost to date when the bricks are purchased or should the cost be excluded until the bricks are actually used in construction of the building?

Finally, a commonly overlooked estimate is that of the revenue. True, any long-term construction contract starts out with a contract price, but the initial price hardly ever ends up being the real revenue figure. Indeed, contractors often bid on jobs at zero profit or even at a loss in order to get the job. The reason is that every construction job involves change orders, which is a change in the original design of the building (or of whatever is being constructed). Change orders require additional revenue, and the contractor often bids low on the original contract because he knows that he will make his money on the change orders (which can hardly be submitted to a competitive bidding process!). So, in the course of a construction project

- the estimated cost to complete will change each period;
- the cost incurred in the current period (to be used in the percentage calculation) is an estimate; and
- the estimated total revenue will change from period to period.
It is safe to say that the percentage-of-completion method is an approximation! It represents a trade-off between conflicting qualitative criteria; objectivity is sacrificed for timeliness and relevance.

**PROPORTIONAL PERFORMANCE METHOD FOR SERVICE COMPANIES**

The proportional performance method is used to recognize service revenue that is earned by more than a single act, when the service extends beyond one accounting period. In fact, recording interest revenue or rental revenue as time passes are really applications of proportional performance methods. Revenue is recognized based on the proportional performance of each act.

The proportional performance method of accounting for service revenue is similar to the percentage-of-completion method and has to meet the same criteria as a long-term construction contract:

- a fixed price contract with reasonable assurance of collection,
- a way to measure extent of performance, and
- an ability to estimate the remaining costs to completion.

Many service contracts are subject to at least as many uncertainties as are construction contracts. In particular, it is not unusual for the revenue to change as the client changes the scope of the assignment or the specifications of the task. Software contracts, for example, can double or triple in price if the client keeps changing his mind about what he wants the software to do.

Proportional measurement takes different forms depending on the type of service transaction:

1. **Similar performance acts.** An equal amount of service revenue is recognized for each such act (for example, processing of monthly mortgage payments by a mortgage banker).

2. **Dissimilar performance acts.** Service revenue is recognized in proportion to the seller’s direct costs to perform each act (for example, providing examinations, and grading by a correspondence school). If the direct cost of each act cannot be measured reliably, the total service sales revenue should be prorated to the various acts by the relative sales value method. If sales value cannot be identified with each act, the straight-line method to measure proportional performance can be used.

3. **Similar acts with a fixed period for performance.** Service revenue is allocated and recognized by the straight-line method over the fixed period, unless another allocation method is more appropriate (for example, providing maintenance services on equipment for a fixed periodic fee).

**CHOOSING A REVENUE RECOGNITION POLICY**

This chapter has illustrated many different ways in which revenue can be recognized. Revenue recognition is the most pervasive and most difficult single accounting policy choice that many companies must face. With such a plentiful supply of alternatives, how can a company choose an appropriate policy?

Although there are many theoretical alternatives, the choice of policy is not a free game. The revenue recognition policy is, first and foremost, a function of the revenue-generating activity of the enterprise. When there is more than one revenue-generating activity, then there may be a different policy for each. For example, a retail company that engages in straightforward sales activity for cash or credit will probably recognize sales revenue at the point of delivery, while for interest revenue on its outstanding credit card balances the company will likely recognize interest revenue as time elapses.
A chosen revenue recognition policy must satisfy the general recognition criteria of measurability and probability. Revenue must be measurable with reasonable assurance, and its eventual realization (in cash) must be highly probable. It is important to bear in mind that the act of revenue recognition increases the net assets of the company. The increase may be through an increase in cash, accounts receivable, or inventories, but ultimately the amount must be realizable in cash.

Measurability and probability are essential requirements for revenue recognition, but those are relative terms. There is a trade-off between those two qualitative characteristics and those of relevance and timeliness. The earlier revenue is recognized, the more difficult it is to measure and the less certain it is of eventual realization. But the later revenue is recognized, the less useful it is for predicting cash flows and for evaluating management’s performance.

Often, there are several different points in a single revenue-generating activity at which revenue can be recognized. This is especially true if the activity involves a sustained effort to earn the revenue or to collect it. The choice of revenue recognition policies depends very heavily on the financial reporting objectives of the company and on the motivations of its managers. An objective of income tax minimization will lead to a much different revenue recognition policy than will an objective of maximizing net income. Revenue recognition policy is, very often, the supreme test of an accountant’s professional judgement.

1. What qualitative characteristics are better served by completed-contract reporting than by percentage-of-completion reporting?
2. Which financial reporting objectives are satisfied more by the percentage-of-completion method than by the completed-contract method?
3. What estimates are required in order to use the percentage-of-completion method?
4. How does the construction-in-progress inventory balance differ between the percentage-of-completion method and the completed-contract method?

**RECOGNITION OF GAINS AND LOSSES**

Gains and losses are distinguished from revenues and expenses in that they usually result from peripheral or incidental transactions, events, or circumstances. Whether an item is a gain or loss or an ordinary revenue or expense depends in part on the reporting company’s primary activities or businesses.

For example, when a company that is primarily involved in manufacturing and marketing products sells some of its land, the transaction is accounted for as a net gain or loss because this is not the primary business of the company. When a real estate sales company sells land, however, the transaction gives rise to revenues and expenses.

A gain or loss may result from purely internal transactions, such as a write-down related to a plant closing. Such gains and losses are also recognized in the period when the transaction occurs and are shown net.

Most gains and losses are recognized when the transaction is completed. Thus, gains and losses from disposal of operational assets, sale of investments, and early extinguishment of debt are recognized only when the final transaction is recorded. However, estimated losses are recognized before their ultimate realization if they both (1) are probable and (2) can reasonably be estimated.

Examples are losses on disposal of a segment of the business, pending litigation, and expropriation of assets. If both conditions are not met, the nature and possible amount of the possible loss must be disclosed in a note to the financial statements. In contrast, gains are almost never recognized before the completion of a transaction
that establishes the existence and amount of the gain. A gain should be recognized only when realized, except as explained in the following paragraph. This reflects an appropriate degree of skepticism.

There are circumstances in which gains and losses are recognized when there has been a change in value rather than a transaction. This happens when inventory items are reported at market value instead of cost. Examples of such inventory items include:

- Commodities that are carried at market value. If a company produces commodities that are readily saleable on an open public market or to a marketing board, as described above for recognition prior to delivery, the act of revenue recognition means that the inventories are revalued from the cost of production to their market price. If the company holds the inventory from one period to another, changes in market value are recognized as gains or losses for the period. Examples include farm products (e.g., hogs, cattle, wheat, eggs) and many natural resources (e.g., gold, silver, copper, oil).

- Marketable securities held by a financial institution. Securities dealers must report their inventory of securities held for sale at market. Investment companies (such as mutual funds) must carry their investment portfolio at market value so that investors can be informed of the net asset value of the company's holdings. Banks must carry the securities held in their trading account at market value. Life insurance companies report their investments on a five-year moving average of market prices. Companies such as these will recognize gains or losses on their investment portfolios. In some industries the realized gains and losses are segregated from the unrealized, but both realized and unrealized are recognized.

It should be noted that changes in the market value of these types of items are referred to as gains and losses even though they are a part of the normal business activities of the enterprise. There is nothing peripheral about gains and losses on securities held by a bank!

Losses may also be recognized when the recoverable value of an asset falls below its historical cost. Common examples are inventory (discussed in Chapter 9), capital assets (discussed in Chapter 11), and long-term investments (discussed in Chapter 12).

**Revenue on the Cash Flow Statement**

This chapter discussed the concept that economic revenue grows or is earned over time — sometimes in a brief time span, but often over quite a long period of time. Accounting, on the other hand, tends to recognize revenue at a particular point in a more continuous earning cycle. On occasion, revenue recognition also coincides with the cash inflow, but that circumstance is quite rare. Usually, a company recognizes revenue prior to receiving the cash. Cash flow seldom coincides with revenue recognition.

In order to report cash flow from operations, the accruals relating to revenue recognition must be removed. The primary adjustments are:

- Any increase in accounts receivable or notes receivable from customers must be deducted from net income (or from revenue); a decrease in receivables would be added.
- Expenses that are recorded in order to achieve matching must similarly be added back to net income (or deducted from total operating expenses, if the direct method is used); examples include warranty provisions and bad debt expense.
- Unearned revenue must be added to revenue; the cash has been received but revenue has not yet been recognized.
Revenue can be recognized only if the cash flow is highly probable. The reporting problem is that revenue recognition and cash flow often do not occur in the same accounting period.

DISCLOSURE

The choice of revenue recognition method can have enormous impact on a company’s reported earnings. As we have seen, most methods require some accounting estimates, and some methods require a great deal of estimation.

The CICA Handbook contains no explicit requirement for disclosure of revenue recognition policies, except for the general requirement that a company disclose its policies when there is a choice of policy. In practice, less than half of public companies seem to disclose their revenue recognition policies. As we have seen, most methods require some accounting estimates, and some methods require a great deal of estimation.

A good example of detailed disclosure is that of Western Star Truck Holdings Inc.:

Revenue from the sale of trucks is recognized when ownership is transferred. Revenue from the sale of manufactured buses is recognized on a percentage of completion method, applied on the basis of defined milestones. Provisions are made for anticipated losses, if any, as soon as they become evident. Unbilled revenue represents revenue that has been recorded under the percentage of completion method but has not yet been invoiced to the customer. Revenue from sales of after-market parts is recognized upon shipment to customers.

Other disclosures are less informative. Cara Operations reports its revenue recognition policies as follows:

Income on the sale of franchises is recognized when it is considered earned. Revenues from services are recognized as services are rendered.

This note leaves an important question hanging: when does the company consider franchise revenue (e.g., Swiss Chalet; Harveys) as having been earned?

An example of a company that is silent on its revenue recognition policies is The Molson Companies. Molson’s has significant business interests in brewing (Molson; Coors; Foster’s), sports (Montreal Canadiens; the Molson Centre, Montreal), and retailing (Home Depot; Beaver Lumber). A reader of the financial statements might think that there are significant revenue recognition issues surrounding some of these businesses, but the company presents no information regarding revenue recognition.

CONCEPT REVIEW

1. What basic recognition criteria must be satisfied before a particular revenue recognition policy can be used?
2. What is the relationship between revenue recognition and a company’s net asset value?
3. When there is more than one feasible revenue recognition policy that a company could use for a revenue-generating activity, how is a single policy chosen from the feasible set of policies?
4. When might a company recognize a gain due to an event rather than a transaction?
5. What adjustments must be made to revenue when the cash flow statement is prepared?

SUMMARY OF KEY POINTS

1. For most companies, the earnings process is continuous. That is, the profit-directed activities of the company continually generate inflows or enhancements of the assets of the company.

2. Revenue recognition policies must be chosen carefully because of their profound effect on key financial results.

3. Before the results of the earnings process are recognized in the accounting records, revenue must meet the recognition criteria of probability and measurability. Revenue must also be earned, and realized or realizable.

4. A sale transaction is usually measured at the sales invoice price. When there are long-term, interest-free payment terms, discounting may be appropriate.

5. Barter transactions are typically recognized at the value of the asset or service given in the exchange.

6. Revenue can be recognized at a critical event or on the basis of effort expended. Critical events can be delivery, prior to delivery (e.g., on production, if there are no uncertainties regarding the sale transaction), or after delivery (if there are significant uncertainties about measurement, collection, or remaining costs). Delivery is the normal critical event that triggers revenue recognition.

7. The recognition of revenue results in an increase in net assets, which is recognized at the critical event. Costs incurred prior to the critical event are deferred. When revenue is recognized, deferred costs are expensed, and future costs are accrued.

8. The instalment sales method of revenue recognition delays recognition of gross profit until cash is collected.

9. The cost recovery method is a conservative method in which no profit is recognized until all costs associated with the sale item have been recovered in cash. All subsequent cash collections are profit.

10. Long-term contracts can be accounted for using the percentage-of-completion method, or the completed-contract method. If a long-term, fixed-price contract with a creditworthy customer is accompanied by reasonably reliable estimates of (a) cost to complete and (b) percentage of completion, based either on output or input, percentage-of-completion is appropriate.

11. Under the completed-contract method, revenues and expenses are recognized when the contract obligations are completed. Costs incurred in completing the contract are accrued in an inventory account, and any progress billings are accrued in a contra-inventory account.

12. Long-term contracts are often accounted for on the basis of effort expended. Under the percentage-of-completion method, revenues and expenses are recognized in each accounting period based on an estimate of the percentage of completion. Costs incurred in completing the contract and recognized gross profit are accrued in an inventory account.

13. Revenue recognition policies are chosen in accordance with the financial reporting objectives of the enterprise, constrained by the general recognition criteria of probability and measurability. The choice of a revenue recognition policy involves a trade-off between qualitative criteria, such as between verifiability and timeliness.

14. Cash flow from operations must be computed by adjusting revenue (or net income) for changes in accounts and notes receivable, for changes in unearned revenue, and for accrued expenses that do not represent cash expenditures during the period.
Precision Punctual Construction Company has agreed to build a 10-storey office building for Mountain Bank Limited. The contract calls for a contract price of $15,000,000 for the building, with progress payments being made by Mountain as the construction proceeds. The period of construction is estimated to be 30 months. The contract is signed on 1 February 20X5, and construction begins immediately. The building is completed and turned over to Mountain Bank on 1 December 20X7.

Data on cost incurred, estimated costs to complete, progress billings, and progress payments over the period of construction are as follows:

<table>
<thead>
<tr>
<th></th>
<th>20X5</th>
<th>20X6</th>
<th>20X7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs incurred this period</td>
<td>$1,500</td>
<td>$7,875</td>
<td>$3,825</td>
</tr>
<tr>
<td>Costs incurred to date</td>
<td>1,500</td>
<td>9,375</td>
<td>13,200</td>
</tr>
<tr>
<td>Estimated costs to complete at year-end</td>
<td>10,500</td>
<td>3,125</td>
<td>0</td>
</tr>
<tr>
<td>Estimated total costs of project</td>
<td>12,000</td>
<td>12,500</td>
<td>13,200</td>
</tr>
<tr>
<td>Progress billings this period</td>
<td>1,200</td>
<td>6,000</td>
<td>7,800</td>
</tr>
<tr>
<td>Progress payments received this period</td>
<td>825</td>
<td>6,300</td>
<td>7,875</td>
</tr>
</tbody>
</table>

Required:

1. Show the entries to account for this project over the period of construction, assuming that PPC uses
   a. the completed-contract method of recognizing revenue.
   b. the percentage-of-completion method of recognizing revenue

2. Show the relevant balance sheet and income statement items for 20X5, 20X6, and 20X7 for PPC, assuming that the company uses
   a. the completed contract method.
   b. the percentage-of-completion method.

**Review Problem — Solution**

1 and 2: The entries to record the construction of the building for both the completed-contract method and the percentage-of-completion method are as follows (in $ thousands):

**Entries for 20X5:**

<table>
<thead>
<tr>
<th></th>
<th>Completed-contract method</th>
<th>Percentage-of-completion method</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. To record incurrence of construction costs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction-in-progress inventory</td>
<td>1,500</td>
<td>1,500</td>
</tr>
<tr>
<td>Cash, payables, etc.</td>
<td>1,500</td>
<td>1,500</td>
</tr>
<tr>
<td>b. To record progress billings:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>1,200</td>
<td>1,200</td>
</tr>
<tr>
<td>Billings on contract</td>
<td>1,200</td>
<td>1,200</td>
</tr>
<tr>
<td>c. To record billing collections:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>825</td>
<td>825</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>825</td>
<td>825</td>
</tr>
<tr>
<td>d. To recognize revenue for percentage of completion:*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction-in-progress inventory</td>
<td>375</td>
<td>375</td>
</tr>
<tr>
<td>Cost of construction</td>
<td>1,500</td>
<td>1,500</td>
</tr>
<tr>
<td>Revenue from long-term contract</td>
<td>1,875</td>
<td>1,875</td>
</tr>
</tbody>
</table>
* The percentage of completion is the cost incurred to date divided by total estimated project costs, or $1,500 \div 12,000 = 12.5\%$. The total amount of revenue recognizable to this point is $15,000 \times 12.5\% = \$1,875$.

Entries for 20X6:

<table>
<thead>
<tr>
<th>Completed-contract method</th>
<th>Percentage-of-completion method</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. To record incurrence of construction costs:</td>
<td></td>
</tr>
<tr>
<td>Construction-in-progress inventory</td>
<td>7,875</td>
</tr>
<tr>
<td>Cash, payables, etc.</td>
<td>7,875</td>
</tr>
<tr>
<td>b. To record progress billings:</td>
<td></td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>6,000</td>
</tr>
<tr>
<td>Billings on contract</td>
<td>6,000</td>
</tr>
<tr>
<td>c. To record billing collections:</td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>6,300</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>6,300</td>
</tr>
<tr>
<td>d. To recognize revenue for percentage of completion:*</td>
<td></td>
</tr>
<tr>
<td>Construction-in-progress inventory</td>
<td>1,500</td>
</tr>
<tr>
<td>Cost of construction</td>
<td>7,875</td>
</tr>
<tr>
<td>Revenue from long-term contract</td>
<td>9,375</td>
</tr>
</tbody>
</table>

* The percentage of completion is the cost incurred to date divided by total estimated project costs, or $9,375 \div 12,500 = 75\%$. The total amount of revenue recognizable to this point is $15,000 \times 75\% = \$11,250$. Since $\$1,875$ was recognized in 20X5, the amount recognizable in 20X6 is $\$11,250 - \$1,875 = \$9,375$.

Entries for 20X7:

<table>
<thead>
<tr>
<th>Completed-contract method</th>
<th>Percentage-of-completion method</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. To record incurrence of construction costs:</td>
<td></td>
</tr>
<tr>
<td>Construction-in-progress inventory</td>
<td>3,825</td>
</tr>
<tr>
<td>Cash, payables, etc.</td>
<td>3,825</td>
</tr>
<tr>
<td>b. To record progress billings:</td>
<td></td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>7,800</td>
</tr>
<tr>
<td>Billings on contract</td>
<td>7,800</td>
</tr>
<tr>
<td>c. To record billing collections:</td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>7,875</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>7,875</td>
</tr>
<tr>
<td>d. To recognize revenue for percentage of completion:*</td>
<td></td>
</tr>
<tr>
<td>Cost of construction</td>
<td>3,825</td>
</tr>
<tr>
<td>Revenue from long-term contract</td>
<td>3,750</td>
</tr>
<tr>
<td>Construction-in-progress inventory</td>
<td>75</td>
</tr>
</tbody>
</table>
*The project is completed; any remaining portion of the contract price not previously recognized as revenue should be recognized this period. In prior years, $1,875 + $9,375 = $11,250 was recognized, thus $3,750 (i.e., $15,000 - $11,250) is recognized in 20X7.

e. To record elimination of contract costs from inventory:
   Billings on contract 15,000
   Construction-in-progress
   inventory 15,000

f. To recognize revenue for completed contract:
   Billings on contract 15,000
   Cost of earned construction revenue 13,200
   Revenue from long-term contracts 15,000
   Construction-in-progress inventory 13,200

<table>
<thead>
<tr>
<th></th>
<th>31 Dec. 20X5</th>
<th>Percentage of completion</th>
<th>31 Dec. 20X6</th>
<th>Percentage of completion</th>
<th>31 Dec. 20X7</th>
<th>Percentage of completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed contract</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>$ 375</td>
<td>$ 375</td>
<td>$ 75</td>
<td>$ 75</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Construction in progress</td>
<td>$1,500</td>
<td>$1,875</td>
<td>$9,375</td>
<td>$11,250</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Less: Billings on contract</td>
<td>(1,200)</td>
<td>(1,200)</td>
<td>(7,200)</td>
<td>(7,200)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Construction in progress in excess of billings</td>
<td>$ 300</td>
<td>$ 675</td>
<td>$2,175</td>
<td>$4,050</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Balance sheet:

Income statement:
Revenue from long-term contracts
Cost of construction
Gross profit

*This is an example of a current year loss on a contract that is profitable overall.*
QUESTIONS

6-1 Explain the relation between the definition of revenue and the definitions of assets and liabilities.

6-2 When is revenue earned in economic terms? How does this relate to typical accounting revenue recognition?

6-3 What impact do individual corporate reporting objectives have on revenue recognition policies?

6-4 What are the fundamental criteria for recognition of any element in the financial statements? Explain the additional criteria that revenue must meet before being recognized.

6-5 What do the terms “realization” and “earned” mean in the context of revenue recognition?

6-6 Give two typical examples of revenues for which recognition occurs on the basis of the passage of time.

6-7 How is revenue measured in a barter transaction?

6-8 What is meant by revenue recognition at a critical event? Give examples of several critical events.

6-9 Why is revenue typically recognized on delivery?

6-10 Under what circumstances is revenue recognized at a critical event before delivery? After delivery?

6-11 Explain how a net asset increase is triggered by appropriate entries at the point of revenue recognition.

6-12 Why might a franchisor have to delay revenue recognition past the point in time at which the franchisee takes control of their franchise operation?

6-13 What is a consignment? How is revenue recognized on a consignment transaction?

6-14 What conditions must be met in order for revenue to be recognized when a customer has the right to return purchased products? What accounting procedures are used until all conditions are met?

6-15 Describe the instalment sales method of recognizing revenue and when it is appropriately used.

6-16 Describe the cost recovery method of recognizing revenue. When is it appropriate?

6-17 Identify and explain two different approaches for determining the extent of progress toward completion of a construction project.

6-18 Why is the ending inventory of construction in progress different in amount when the percentage-of-completion method is used compared with the completed-contract method? Explain the amount of the difference.

6-19 When a loss is projected on an unprofitable long-term construction contract, in what period(s) is the loss recognized under (a) percentage-of-completion and (b) completed contract methods?

6-20 Under what circumstances do gains and losses reflect changes in value, rather than realized transactions?
CASE 6-1
John and Mike

John and Mike set up a partnership early this year in order to speculate in real estate. They specialize in the acquisition of small, run-down apartment buildings, which they then renovate, rent out to improve occupancy rates, and resell. Mike works at this enterprise full-time, overseeing the renovation and rental process. John continues to work at a full-time salaried job in an unrelated business.

Annual profits are allocated as follows:
1. “Salary” of $50,000 to Mike
2. Interest to both partners of 10% per annum, based on monthly average capital balances
3. Remainder equally.

The partners have agreed on a schedule of monthly drawings, to be charged against each partner's capital accounts. Drawings may not exceed profit allocations.

In their first year, the partners successfully “flipped” three apartment buildings, and owned four more at year-end, awaiting resale. It is now the end of their first year, and accounting policies have yet to be finalized. The following are areas of contention:

1. Revenue recognition, rental income
Mike has proposed that revenue be recognized as rent is collected from tenants. John has proposed that rent revenue be recognized on the first day of the month, when it is due, whether collected or not. Typically, most rent is collected within a week, but there are always some problem tenants, especially in newly-bought buildings, which need extensive renovations and often have undesirable tenants.

2. Depreciation policy, rental buildings
John reasons that rental buildings are all for resale, and are thus “inventory.” As such, he claims that no depreciation should be charged as long as net book value is less than market value. Mike is not convinced that this reasoning is valid, as he thinks depreciation is always incurred and must be recorded.

3. Revenue recognition, building sale
Often, there is a time lag between the sale of a building (that is, the date upon which the sale agreement is signed), the date on which title passes, and the date that the partnership receives all the sale proceeds. For example, in a recent sale, the agreement was signed on 1 November, and title passed on 15 December, at which time half of the proceeds were paid. The other half is due on 15 December in three years' time, with accrued interest, since the partnership took back a long-term note as part of the sale financing. John favours revenue recognition when the sale agreement is signed; Mike prefers to wait until the cash is collected.

Both partners have agreed that statements will primarily be used for profit allocation and need not necessarily follow GAAP. They are more concerned about cash flow, and in particular, making sure there is enough cash flow for partner’s withdrawals.

Required:
Analyze the issues and present your recommendations to the partnership.

[CGA-Canada, adapted]
Tempus Fugit is a large conglomerate of 30 subsidiary companies with plants and branches throughout the world. The company has been in the business of manufacturing and distributing clocks, watches, and other timepieces for over 50 years. Recently, the company experienced a change in management when the original founder retired and sold his controlling interest.

On 1 May 20X5, Smith & Smith, a publicly-traded international consulting firm, was awarded the contract to design and install a computerized management information system in each of Tempus Fugit's subsidiaries. The project was projected to take four years to complete. Michael Smith, the founder and managing partner of Smith & Smith, and his staff, worked exclusively on this project from May to October. Currently, one-half of the company's workforce is working on the job. Smith & Smith obtained this project after submitting a bid on 1 March 20X5, which took most of February to prepare; the bid price was $45,000,000.

It is January 20X6, and annual financial statements for Smith & Smith are being prepared. Michael Smith has come to you, the controller of the company, to discuss how the contract will be reported. He is anxious to present the contract as favourably as possible under the limitations of GAAP. His comments to you are:

“I know this is the first long-term contract that we have entered into, and I have heard that we can recognize revenue based on the percentage of the project that is complete. That percentage should be based on management’s best estimates, as are so many things under GAAP. In my opinion, even though we are behind in the installation, we should recognize revenue according to the percentage that we estimated would be done in our contract bid. If we don’t, Tempus Fugit’s management will be on our backs, wondering what is going on and slowing us down even more. I sure don’t need that with all of the problems we are experiencing on this project!”

You ask Smith about the problems that are being experienced on the project. He responds that they are of a highly technical nature. He urges you to complete the financial statements as soon as possible, since Smith & Smith is experiencing a cash flow shortage and Tempus Fugit will not release the first payment on the contract until the year-end statements have been received.

You are aware of the following facts about Smith & Smith and Tempus Fugit:

- Smith & Smith has been in business for five years. This is the first time the company has landed a contract of this magnitude. Previous contracts have all been completed within a one-year time frame.
- The contract provides for Tempus Fugit to pay in four equal annual instalments on receipt of audited statements from Smith & Smith. One-quarter of the project should be completed each year.
- Much of the contract involves design and testing of computer programs, and it is difficult to determine the degree of completion of the project at any time. Few external experts in the area exist, since Smith & Smith is in a new industry and a specialized field. The company has never been too concerned about estimating completion before because all of its contracts have been short-term.
- The auditor has no way of determining the percentage of completion of the project, since the work is so subjective. Because the same audit firm has been engaged by Smith & Smith for the past five years and has found the partners to be reputable, the auditor is generally able to rely on management’s best estimates.

After your conversation with Michael Smith, you find yourself in the coffee room with Rachel Harris, the chief programmer on the Tempus Fugit project. You have
always had a good relationship with Rachel since you share a common interest in show dogs. Out of curiosity, you ask her how much of the project she believes is done and about the problems the company is experiencing. Her response is:

“You know, the partners bid on this one to get us into the big leagues, and let me tell you, the big leagues are tough! We have never handled a project this large, and it is taking us a lot longer to get some of the basic systems developed than we ever imagined. Although it’s hard to tell, I would say we are only about 10% done at this time. We are in the process of hiring more staff and establishing supplier relationships, and all of this takes time. I am still confident that we will complete the project in four years, but I don’t think we will catch up to our original estimates until the third year. By then, the staff will be trained and we will be much more effective.”

After coffee, you run into Michael Smith again. He asks that you meet him in his office Monday morning, ready to discuss the accounting options available for the project and your recommended accounting treatment. He is rushing out the door to a meeting with the banker, who called with some concerns about the company’s cash flow problems.

**Required:**
Identify and analyze the alternative treatments available to account for the timing of the revenues and expenses that will be recognized in the contract with Tempus Fugit. What are the ethical issues you must consider before making your recommendation to Michael Smith? What should you say during the Monday morning meeting with Smith?

---

**CASE 6-3**

**Kryton Corporation**

Kryton Corporation is a property development company, with expertise in larger, multiple-unit apartment buildings. Kryton must comply with GAAP to satisfy bank lenders who provide project and working capital financing. Typically, the company finds a site, arranges for interim and mortgage financing, and then constructs the building through subcontractors. As the building is being built, Kryton looks for an investor to take over ownership of the building; often life insurance companies are interested, as are individuals through limited partnerships. Kryton has a property management division that runs such large apartment buildings.

It is now the end of 20X3, and their latest project, a 255-unit apartment building, has been harder to sell. A deal is finally in place. An agreement has been signed with a group of individual investors, who have formed a limited partnership. When the project is completed, in July 20X5, the building will be sold to the partners, who will pay Kryton as follows:

- Cash, provided by first mortgage from Confidential Insurance: $11,000,000
- Cash, payments by the partners to Kryton: $1,000,000
- 4% notes receivable to Kryton from the investors, payable in four equal instalments on the anniversary of the turnover date: $2,000,000
- Five-year, 18% second mortgage provided by Kryton: $1,500,000

Total: $15,500,000

The estimated costs of the project are $12,300,000, of which $6,500,000 have been incurred to the end of 20X3. Kryton intends to record the profit ($3,200,000) in July...
20X5, when the building is completed. The assets received in consideration (listed above) would be recorded at that time. Further details on the purchase agreement are below.

Required:
Explain how Kryton should recognize revenue for the project.

KRYTON CORPORATION LTD.
Information on Purchase Agreement

The project differs from previous projects in both the manner of financing and in the number of indemnities and covenants that Kryton must provide. The turnover date, referred to below, is the date that the partnership assumes ownership of the project. It occurs when the project is 90% leased to occupants. Extracts from the offering memorandum:

Kryton second mortgage
The Kryton second mortgage will be in the principal amount of $1.5 million and will bear interest at the rate of 18% after the turnover date. The mortgage will include the following terms:

1. The mortgage will be without recourse to the partners’ personal assets.
2. Payments of principal and accrued interest at the maturity date are required only to the extent that proceeds are available from the refinancing of the first mortgage; the second mortgage is to be renewed for any unpaid balance for a further term, without interest.
3. The partnership will have the right to set off any amount owing by it under the second mortgage agreement against amounts by which Kryton is in default under the cash flow guarantee (see below).

Initial leasing period indemnity
The agreement provides that Kryton will operate the project on behalf of the partnership and will indemnify the partnership for all losses incurred in operating the project during the initial leasing period which ends on the turnover date.

Cash flow guarantee
Kryton has agreed to provide interest-free loans to the partnership for the following purposes:

1. To fund, as required, for a period of 10 years from the turnover date, the amount, if any, by which the total operating expenses of the project (including payments on account of principal and interest due on the first mortgage, but excluding non-cash items such as depreciation and reserves for replacement of equipment and chattels) exceed the aggregate gross income receipts from the project.
2. To fund, during the period commencing on the turnover date and ending on 31 December 20X5, the amount (the “Guaranteed Amount”), if any, by which the actual net cash flow is less than the Kryton-prepared forecast of net cash flow (this forecast is not reproduced here).

Management of the project
Kryton will be appointed manager of the project for a term of 10 years, and will be paid 5% of monthly gross cash receipts. Kryton will be responsible for the ongoing leasing of apartment units comprising the project, maintenance and repairs, collection of rents, payment of all expenses properly incurred in connection with such duties out of revenues received from the project including all amounts payable under the mortgages, the maintenance of fire and liability insurance on the project, the preparation of a cash budget for each year, and the annual remittance of cash surpluses to the partners.
Bob Bothwell had started Acme Construction Ltd. early in 20X2 after working for several years as a supervisor for a local construction company. An inheritance from his parents had provided the start-up capital. Bob's wife, Susan, did all of the bookkeeping on weekends without pay to help conserve cash.

For the 20X2 and 20X3 year-ends, the firm, where you are employed as a student-in-accounts, had performed a review of the financial statements and prepared the tax returns for the company. In late December 20X4, Bob Bothwell phoned the partner in charge of the engagement to arrange a meeting in Bob's office on 30 December 20X4.

The partner asked George Cathcart, the senior field auditor on the engagement in 20X2 and 20X3, to represent him at the meeting and asked that you accompany George.

At the meeting, Bob explained that business was booming, and that he was considering privately raising additional equity capital to undertake some very large projects. He wanted to retain control of the company but was willing to relinquish sole ownership instead of increasing his bank loan. However, the preliminary draft statements for 20X4 did not look as impressive as he had expected.

He handed George and you a copy of the income statement (Exhibit 1), along with a summary of contracts undertaken (Exhibit 2). He shook his head and said, “I didn’t bring the balance sheet because I don’t think it is correct. The materials in inventory are worth $200,000 now, not the $150,000 I paid for them. The same thing applies to the temporary investments. My broker assures me that they are worth twice what I paid. I also don’t see anything reflected in the financial statements about the lawsuit that I’m involved in. My lawyer says that, when we go to court next week, I’ll be sure to win $27,000 from the subcontractor that delayed the curling rink project.”

“My biggest problem is with the income figure,” he continued. “I don’t seem to get credit for the projects that are in progress, even though my costs are usually in line, and I know I’m making money. Is there any way to improve my net income without paying any additional income tax?”

Required:
Prepare a memo to George Cathcart. The memo is to include a revised net income figure for both 20X4 and 20X3 assuming that the company changes its revenue recognition policy from completed-contract to percentage-of-completion, but continues to calculate taxes on the completed-contract basis. You should also include your thoughts on the best way to deal with the problems Bob raised. Cathcart will be using your work as a basis for his report to the partner.

[ICAO, adapted]
**Significant Accounting Policies**

Revenue recognition: the company follows the completed contract method of recognizing revenue from construction projects.

### EXHIBIT 2

**ACME CONSTRUCTION LTD.**

**Summary of Contracts Undertaken**

**Started in 20X2**

**Mainline Apartments**

The contract price was $600,000, and costs were estimated at $450,000. The project was one-half completed at the end of 20X2, and costs were on target at $225,000. In 20X3, the project was completed but costs were $14,000 higher than estimated. The customer was billed $600,000 and all but $90,000 was received in 20X3. The balance was collected in 20X4.

**Started in 20X3**

**Harbour View Apartments**

The contract price was $940,000 and costs were originally estimated at $800,000. At the end of 20X3, the project was 80% completed, but price declines on materials resulted in costs of only $600,000. Progress billings were sent out for $470,000, of which $310,000 had been received at the year-end.

In 20X4, the project was completed with additional costs of $150,000. The customer paid the full contract price by November 20X4.

**Sunnyside Curling Rink**

The contract was awarded at $1,425,000 and costs were estimated at $1,250,000. At the end of 20X3, the project was 20% completed, and costs were on target at $250,000. Progress billings had been sent for $200,000 and one half had been received by 31 December 20X3.

The contract was completed in 20X4. Costs were higher than estimated because of a subcontractor that delayed the project. Completed contract income of $148,000 is included in income, and all of the contract price was received from the customer before 31 December 20X4.

**Started in 20X4**

**Victoria Mall**

This contract for a three-unit mall was completed in 20X4. The contract price of $450,000 has been billed, but $70,000 has not been received. Total costs of $423,000 were incurred.

**DaVinci Apartments**

The contract price was $1,825,000 and costs were estimated at $1,500,000. At the end of 20X4, the project was 15% completed and actual costs included in construction in progress were $225,000. Although progress billings were sent out for $150,000, nothing had been received by 31 December 20X4.
Discount Don’s Department Store

The contract was awarded in November 20X4, but no construction has started. The cost of preparing the bid was $9,000 and this has been included in general and administrative expenses.

E6-1 Revenue Recognition: Answer each of the following questions.

1. Define revenue.
2. What should be the dollar amount of revenue recognized in the case of (a) product sales and services for cash and (b) product sales and services rendered in exchange for non-cash considerations?
3. How might revenue be recognized when there is a highly speculative transaction involving potential revenue whose amount cannot be reliably estimated?
4. When should revenue be recognized in the case of long-term, low down-payment sales, for which collectibility is uncertain?
5. When should revenue be recognized for long-term construction contracts?

E6-2 Revenue Recognition: For each of the following independent items, indicate when revenue should be recognized.

a. Interest on loans made by a financial institution, receivable in annual payments.
b. Interest on loans made by a financial institution, receivable in three years when the customer, who has an excellent credit rating, will make payment.
c. Interest on loans made by a financial institution, where the loans are in default and payment of principal and interest is highly uncertain.
d. Recognition of revenue from the cash sale of airline tickets, where the travel purchased will occur in the next fiscal period.
e. Transportation of freight by a trucking company for a customer; the customer is expected to make payment in accordance with the terms of the invoice in 60 days.
f. Growing, harvesting, and marketing of Christmas trees; the production cycle is 10 years.
g. Building houses in a subdivision, where the project will take two years to complete and each house must be individually sold by the contractor.
h. Building houses in a subdivision, where the project will take two years to complete and the contractor is building the houses under a contract from the local government.
i. Selling undeveloped lots for future retirement homes in a western province, with very low down-payment and long-term contracts.
j. Sale of a two-year parking permit by a Montreal parking garage, with one-half the sale price received on the sale, and the remainder to be received in equal monthly payments over the period of the permit.
k. A fixed-price contract with the government to design and build a prototype of a space arm; the costs to complete the project cannot be reliably estimated.
l. A silver-mining company produces one million ounces of silver but stores the silver in a vault and waits for silver prices to increase.

E6-3 Revenue Recognition — Four Cases: The York Lumber Company has been involved in several transactions that require interpretation of the revenue principle. For each of the following 20X5 transactions, write a brief one- or two-paragraph explanation, stating:

1. the amount of revenue that you believe should be recognized during 20X5.
2. an explanation of the basis for revenue recognition.
   a. The value of goods delivered to customers was $500,000, of which two-thirds was collected by the end of 20X5; the balance will be collected in 20X6.
   b. Regular services were rendered on credit amounting to $290,000, of which three-fourths will be collected in 20X6.
   c. An item that had been repossessed from the first purchaser and carried in inventory at $4,000 was sold again for $5,000 in 20X5. A $3,000 cash down-payment was received in 20X5. The balance is to be paid on a quarterly basis during 20X6 and 20X7. Repossession again would not be a surprise.
   d. On 1 January 20X4, the company purchased a $10,000 note as a speculative investment. Because the collectibility of the note was highly speculative, the company was able to acquire it for $1,000 cash. The note specifies 8% simple interest payable each year (disregard interest prior to 20X4). The first collection on the note was $1,500 cash on 31 December 20X5. Further collections continue to be highly speculative.

E6-4 Revenue Recognition — Three Cases: Three independent cases are given below for 20X5. The accounting period ends 31 December.

Case A. On 31 December 20X5, Zulu Sales Company sold a special machine (serial no. 1713) for $100,000 and collected $40,000 cash. The remainder plus 10% interest is payable 31 December 20X6. Zulu will deliver the machine on 5 January 20X6. The buyer has an excellent credit rating.

Case B. On 15 November 20X5, Victor Cement Company sold a ton of its product for $500. The cement was delivered on that date. The buyer will pay for the product with two units of its own merchandise that are commonly sold for $250 each. The buyer promised to deliver the merchandise around 31 January 20X6.

Case C. On 2 January 20X5, Remer Publishing Company collected $900 cash for a three-year subscription to a monthly magazine, Investor's Stock and Bond Advisory. The March 20X5 issue will be the first one mailed.

Required:
Write a brief report covering the following:
1. The revenue recognition method that should be used.
2. Any entry that should be made on the transaction date.
3. An explanation of the reasoning for your responses to (1) and (2).

E6-5 Entries for Critical Events: Mylar Industries imports goods from the People's Republic of China and resells them to domestic Canadian markets. Mylar uses a perpetual inventory system. A typical transaction stream follows:

8 July Purchased goods for $356,000 (Canadian dollars)
14 August Goods repackaged and ready for sale. Cost incurred, $59,500
30 August Goods delivered to customer. Agreed-on price, $612,000
22 November Customer paid

Required:
1. Prepare journal entries assuming the following critical events:
   a. Delivery to customer
   b. Cash receipt
   c. Preparation of goods for resale
2. Explain the circumstances under which each of these methods would be appropriate.
E6-6 Entries for Critical Events: Dominum Corporation is a mining company that mines, produces and markets teledine, a common mineral substance. The mineral is mined and produced in one large batch per year, as the mine is only accessible for a brief period in the summer due to severe weather conditions at the mine site. Transactions in 20X6:

30 August 146,000 tons of ore removed from mine, at a cost of $3,400,000
30 September Ore refined to 75,000 tons of teledine, at a cost of $416,000
15 October Teledine delivered to 20 customers, total contract price, $ 8,675,000
25 October Teledine returned for full credit; ore improperly refined and teledine unusable; customer given full credit for $375,000 and unusable product scrapped. No other returns are anticipated.
30 November Customers all paid except one that went bankrupt still owing $76,000

Required:
1. Prepare journal entries assuming the following critical events:
   a. 30 September
   b. 15 October
   c. 25 October
   Assume at each of these dates that the company can make appropriate, accurate accruals for future events such as sales returns and bad debts, if needed.
2. Explain the point at which net assets change for each alternative in requirement (1).
3. Explain the circumstances under which revenue recognition at each of these dates would be appropriate.

E6-7 Critical Event; Financial Statements: In each case below, several balance sheet accounts are presented. Determine, based on this information, the likely point at which revenue has been recognized.

Case A
- Inventory, at market value $367,300
- Accrued selling costs 31,900
- Allowance for estimated sales returns 16,400

Case B
- Accounts receivable $2,567,700
- Allowance for doubtful accounts 359,100
- Inventory, at cost 1,876,400
- Warranty liability 341,100

Case C
- Inventory, at cost $ 566,300
- Accounts receivable 1,040,000
- Allowance for doubtful accounts 119,600
- Deferred gross margin 249,700

E6-8 Unconditional Right of Return: In 20X5, McLaughlin Novelty Corporation developed a new product, an electric shoe tree. To increase acceptance by retailers, McLaughlin sold the product to retailers with an unconditional right of return, which expires on 1 February 20X6. McLaughlin has no basis for estimating returns on the new product. The following information is available regarding the product:
Sales — 20X5 $180,000
Cost of goods sold — 20X5 120,000
Returns — 20X5 12,000 (cost, $8,000)
Returns — January 20X6 15,000 (cost, $10,000)

All sales are on credit. Cash collections related to the sales were $40,000 in 20X5 and $113,000 in 20X6. McLaughlin uses a perpetual inventory system.

Required:
Include the entry made on 1 February 20X6 when the right of return expires. Give journal entries for sales, returns, and collections related to the new product. How much sales revenue should McLaughlin recognize in 20X5?

E6-9 Instalment Sales Method: Barr Machinery Corporation had credit sales of $55,000 in 20X5 that required use of the instalment method. Barr’s cost of merchandise sold was $44,000. Barr collected cash related to the instalment sales of $25,000 in 20X5 and $30,000 in 20X6. A perpetual inventory system is used.

Required:
1. What circumstances would dictate use of the instalment sales method?
2. Give journal entries related to the instalment sales for 20X5 and 20X6.
3. Give the ending 20X5 balances in the following accounts: instalment accounts receivable, instalment sales revenue, cost of instalment sales, and deferred gross margin on instalment sales.

E6-10 Cost Recovery Method: The Trusett Merchandising Company has an inventory of obsolete products that it formerly stocked for sale. Efforts to dispose of this inventory by selling the products at low prices have not been successful. At the end of the prior year (20X4), the company reduced the value to a conservative estimate of net realizable value of $22,000. On 1 March 20X6, Watson Trading Company purchased this entire inventory for $10,000 cash as a speculative investment. Watson hopes to be able to dispose of it in some foreign markets for approximately $30,000. However, prior to purchase, Watson concluded that there was no reliable way to estimate the probable profitability of the venture. Therefore, Watson decided to use the cost recovery method. Subsequent cash sales have been as follows: 20X6, $4,000; 20X7, $5,000; and 20X8, $8,000. Approximately 12% of the inventory remains on hand at the start of 20X9.

Required:
Give the 20X6, 20X7, and 20X8 entries for Watson Trading Company to record revenues and cost of sales.

E6-11 Completed-Contract and Percentage-of-Completion Methods Compared:
Watson Construction Company contracted to build a plant for $500,000. Construction started in January 20X4 and was completed in November 20X5. Data relating to the contract are summarized below:

<table>
<thead>
<tr>
<th></th>
<th>20X4</th>
<th>20X5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs incurred during year</td>
<td>$290,000</td>
<td>$120,000</td>
</tr>
<tr>
<td>Estimated additional costs to complete</td>
<td>125,000</td>
<td></td>
</tr>
<tr>
<td>Billings during year</td>
<td>270,000</td>
<td>230,000</td>
</tr>
<tr>
<td>Cash collections during year</td>
<td>250,000</td>
<td>250,000</td>
</tr>
</tbody>
</table>
Required:
1. Give the journal entries for Watson in parallel columns, assuming (a) the completely contract-method and (b) the percentage-of-completion method. Use costs incurred to date divided by total estimated construction costs to measure percent completed.
2. Complete the following table:

<table>
<thead>
<tr>
<th>Completed-contract method</th>
<th>Percentage-of-completion method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income:</td>
<td></td>
</tr>
<tr>
<td>20X4 $</td>
<td>$</td>
</tr>
<tr>
<td>20X5 $</td>
<td>$</td>
</tr>
<tr>
<td>Balance sheet:</td>
<td></td>
</tr>
<tr>
<td>Receivables:</td>
<td></td>
</tr>
<tr>
<td>20X4 $</td>
<td>$</td>
</tr>
<tr>
<td>20X5 $</td>
<td>$</td>
</tr>
<tr>
<td>Inventory — construction in progress, net of billings:</td>
<td></td>
</tr>
<tr>
<td>20X4 $</td>
<td>$</td>
</tr>
<tr>
<td>20X5 $</td>
<td>$</td>
</tr>
</tbody>
</table>

E6-12 Completed-Contract and Percentage-of-Completion Methods Compared: Mullen Construction Company contracted to build a municipal warehouse for the city of Moncton for $750,000. The contract specified that the city would pay Mullen each month the progress billings, less 10%, which was to be held as a retention reserve. At the end of the construction, the final payment would include the reserve. Each billing, less the 10% reserve, must be paid 10 days after submission of a billing to the city. Transactions relating to the contract are summarized below:

20X4 Construction costs incurred during the year, $200,000; estimated costs to complete, $400,000; progress billing, $190,000; and collections per the contract.
20X5 Construction costs incurred during the year, $350,000; estimated costs to complete, $115,000; progress billings, $280,000; and collections per the contract.
20X6 Construction costs incurred during the year, $100,000. The remaining billings were submitted by 1 October and final collections completed on 30 November.

Required:
1. Complete the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Method</th>
<th>Net income recognized</th>
<th>Contract receivables, ending balance</th>
<th>Construction-in-progress inventory, ending balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>20X4</td>
<td>Completed contact</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td>Percentage of completion*</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(continued)
20X5  |  Completed contract
---|---

Percentage of completion*

20X6  |  Completed contract
---|---

Percentage of completion*

* Use costs incurred to date divided by total estimated construction costs to measure percentage of completion.

2. Explain what causes the ending balance in construction-in-progress to be different for the two methods.

3. Which method would you recommend for this contractor? Why?

**E6-13 Completed-Contract and Percentage-of-Completion Methods Compared:**

Pedlar Construction Company contracted to build an apartment building for $2,800,000. Construction began in October 20X4 and was scheduled to be completed in April 20X6. Pedlar has a 31 December year-end. Data related to the contract are summarized below:

<table>
<thead>
<tr>
<th></th>
<th>20X4 ($ thousands)</th>
<th>20X5 ($ thousands)</th>
<th>20X6 ($ thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs incurred during year</td>
<td>$400</td>
<td>$1,500</td>
<td>$700</td>
</tr>
<tr>
<td>Estimated additional costs to complete</td>
<td>2,200</td>
<td>400</td>
<td>—</td>
</tr>
<tr>
<td>Billings during year</td>
<td>350</td>
<td>1,450</td>
<td>1,000</td>
</tr>
<tr>
<td>Cash collections during year</td>
<td>325</td>
<td>1,300</td>
<td>1,175</td>
</tr>
</tbody>
</table>

**Required:**

1. Prepare the journal entries for Pedlar, assuming the completed-contract method.

2. Prepare the journal entries for Pedlar, assuming the percentage-of-completion method. Use costs incurred to date divided by total estimated construction costs to measure percent complete. Round your estimate of revenue to the nearest thousand.

**P6-1 Revenue Recognition:** Assume that in 20X5, the Public Utilities Board (PUB) issued a ruling raising the ceiling price on regulated gas, but with a “vintaging” system: gas suppliers could charge $1.42 per thousand cubic feet on “new gas” drilled after 1 January 20X5, and $1.01 on gas (now in inventory) drilled between 1 January 20X3, and 31 December 20X4. The old price had been 52 cents per thousand cubic feet and remained at this for all “old” gas (i.e., pre-20X3 gas). The PUB soon reduced the $1.01 rate to 93 cents but retained the $1.42 rate. As a result of a lawsuit by consumers against the PUB seeking a rollback to the old 52-cent rate, a court of appeal decided that gas suppliers should go ahead and collect the higher prices provided they would agree to refund the money if the final decision went against the PUB.

**Required:**

1. If you were part of the management of a gas supplier at the time of the court decision, what position would you take with respect to recognition of the extra amounts of revenue from the sale of new gas? Give reasons for whatever position you take.
2. Disregard the answer you gave to (1) above. If the revenue is deferred, explain how the deferral would affect the financial statements until a final court decision is rendered. How would the deferred revenue be recognized if the final court decision is delayed until a new accounting year and then is favourable?

P6-2 Magazine Subscription Revenue: At a meeting of the board of directors of Vanguard Publishing Company, where you are the controller, a new director expressed surprise that the company’s income statement indicates that an equal proportion of revenue is earned with the publication of each issue of the magazines the company publishes. This director believes that the most important event in the sale of magazines is the collection of cash on the subscriptions and expresses the view that the company’s practice smoothes its income. He has suggested that subscription revenue should be recognized as subscriptions are collected.

**Required:**
Discuss the propriety of timing the recognition of revenue on the basis of
1. Cash collections on subscriptions.
2. Publication of issues, concurrent with delivery to customers.
3. Both events, by recognizing part of the revenue with cash collections of subscriptions and part with delivery of the magazines to subscribers.

[AICPA adapted]

P6-3 Revenue Recognition: Scientific Development Company (SDC) conducts research and development on specific projects under contract for clients; SDC also conducts basic research and attempts to market any new products or technologies it develops.

In January 20X4, scientists at SDC began research to develop a new industrial cleaner. During 20X4, $1,560,000 of costs were incurred in this effort. Late in July 20X5, potentially promising results emerged in the form of a substance the company called Blast. Costs incurred through the end of July 20X5 were $840,000. At this point, SDC attempted to sell the formula of and rights to Blast to Pride and Glory Industries Ltd. (P&G), for $10,000,000. P&G, however, was reluctant to sign before further testing was done. It did wish, though, to have the first option to acquire the rights and formulas to Blast if future testing showed the product to be profitable. SDC was very confident that Blast would pass further testing with flying colours. Accordingly, the two companies signed an option agreement that allowed P&G to acquire the formulas and rights to Blast anytime before 31 December 20X6. Testing costs on the product incurred by SDC for the remainder of 20X5 amounted to $1,080,000.

In early 20X6, P&G exercised its option and agreed to purchase the formulas and rights to Blast for $10,000,000. P&G paid $500,000 immediately with the balance payable in five equal annual instalments on 31 December 20X6 to 20X10. The formula was to be completed and delivered within 18 months.

In April 20X7, SDC delivered the formulas and samples of Blast to P&G Industries. Additional costs incurred by SDC during 20X6 amounted to $360,000; in 20X7, $120,000.

**Required:**
1. When should revenue be recognized by SDC from its work on Blast? Why?
2. Assume that the total costs of $3,960,000 actually incurred by SDC over the years 20X4 to 20X6 were accurately estimated in 20X4. Determine the amount of revenue and expense that should be recognized each year from 20X4 to 20X10, assuming revenue is to be recognized
Note that the $1,560,000 of research costs must be expensed in all alternatives to comply with accounting standards for research costs. Other costs may be deferred if appropriate. Do not attempt to do journal entries; your solution should focus on income statement presentation.

P6-4 Unconditional Right of Return: McLaughlin Novelty Corporation developed an unusual product, electric clip-on eyeglass wipers. McLaughlin felt the product would appeal to hikers, joggers, and cyclists who engaged in their sports in rainy climates. Because retail establishments were skeptical about the market appeal of the product, McLaughlin sold the product with a declining unconditional right of return for up to 10 months, with 10% of the right-of-return amount of the purchase expiring each month for 10 months. Thus, after the retailer had the product for one month, only 90% could be returned. After two months, only 80% could be returned, and after 10 months, the right of return was fully expired.

McLaughlin had no basis for estimating the amount of returns. Consistent with the terms McLaughlin offered its customers, all retailers paid cash when purchasing the clip-on eyeglass wipers but received cash refunds if goods were returned. McLaughlin had its first sales of the product in September 20X5. Sales for the remainder of the year, and returns prior to 31 December 20X5, were as follows:

<table>
<thead>
<tr>
<th>Month of Sale</th>
<th>Units Sold</th>
<th>Sales Price</th>
<th>Monthly Sales</th>
<th>Units Returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>10,000</td>
<td>$10</td>
<td>$100,000</td>
<td>2,500</td>
</tr>
<tr>
<td>October</td>
<td>12,000</td>
<td>10</td>
<td>120,000</td>
<td>1,000</td>
</tr>
<tr>
<td>November</td>
<td>15,000</td>
<td>12</td>
<td>180,000</td>
<td>1,000</td>
</tr>
<tr>
<td>December</td>
<td>11,000</td>
<td>12</td>
<td>132,000</td>
<td>0</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>48,000</strong></td>
<td><strong>$532,000</strong></td>
<td><strong>4,500</strong></td>
<td><strong>4,500</strong></td>
</tr>
</tbody>
</table>

Each unit of product costs McLaughlin $6 to produce.

Required:

1. Show the journal entries to record the four months of sales transactions, including the deferral of gross margin. Prepare one summary entry.
2. Show a summary entry to record the returns in 20X5.
3. Compute the amount that McLaughlin can record as (realized) sales for 20X5. How much is gross margin? Record the revenue recognition entry.
4. For the above transactions, total returns in all of 20X6 were as follows:

<table>
<thead>
<tr>
<th>Month of Sale</th>
<th>Units Returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>1,000</td>
</tr>
<tr>
<td>October</td>
<td>2,000</td>
</tr>
<tr>
<td>November</td>
<td>2,500</td>
</tr>
<tr>
<td>December</td>
<td>4,000</td>
</tr>
</tbody>
</table>

Show the entries to record the returns in 20X6 and to record sales revenue and cost of sales from the 20X5 shipments of this product.

P6-5 Revenue Recognition: Fly and Mattox, a professional corporation, contracted to provide, as required, all legal services for Brown Company until the end of 20X5. The contract specified a lump-sum payment of $60,000 on 15 November
20X4. Assume that Fly and Mattox can reliably estimate future direct costs associated with the contract. The following services were performed based on the estimate by Fly and Mattox:

<table>
<thead>
<tr>
<th>Services</th>
<th>Direct Costs</th>
<th>Date Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research potential lawsuit</td>
<td>$ 5,000</td>
<td>15 December 20X4</td>
</tr>
<tr>
<td>Prepare and file documents</td>
<td>15,000</td>
<td>1 March 20X5</td>
</tr>
<tr>
<td>Serve as Brown's counsel during legal proceedings</td>
<td>15,000</td>
<td>15 October 20X5</td>
</tr>
</tbody>
</table>

**Required:**
1. When should Fly and Mattox recognize revenue in this situation? Explain.
2. Give entries to recognize revenues related to this contract for Fly and Mattox.

**P6-6 Critical Event:** BC Corporation sells large pieces of construction equipment. The company had the following three sales in 20X5:

<table>
<thead>
<tr>
<th>Sales</th>
<th>Cost of Goods Sold</th>
<th>Other Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Byron Foods</td>
<td>$345,700</td>
<td>$210,000</td>
</tr>
<tr>
<td>Addison Roads</td>
<td>$ ?</td>
<td>$166,800</td>
</tr>
<tr>
<td>Carson Construction</td>
<td>$567,000</td>
<td>$399,000</td>
</tr>
</tbody>
</table>

**Required:**
1. At what point should BC recognize revenue for each of the above sales transactions?
2. Show how the transactions would be reflected in the 20X5 balance sheet and income statement.
P6-7 Critical Event: Manzer Manufacturing had transactions in 20X6 as follows:

30 June Purchased inventory, $378,000.
17 July Sale to customer, $271,000, on account. Cost of goods sold, $164,500.
15 September Customer returns $29,000 of goods for full credit; goods were spoiled and worthless.
30 November Warranty work of $20,000 was performed.
15 December Customer paid all outstanding amounts.

All goods were sold with unlimited right of return for 60 days and a one-year warranty.

Required:
1. Prepare 20X6 entries to record the above transactions assuming that the critical event is deemed to be
   a. the date of delivery
   b. the date that the warranty expires
   c. the date that the return privilege expires
   If necessary, assume that total warranty cost can be estimated to be $41,000, and returns, $29,000.
2. Show how the income statement and balance sheet would reflect each of the alternatives in (1).
3. Comment on the relative timing of the increase in net assets.

P6-8 Installment Sales: Baxter Land Corporation made a number of sales in 20X4 and 20X5 that required use of the installment method. The following information regarding the sales is available:

<table>
<thead>
<tr>
<th></th>
<th>20X4</th>
<th>20X5</th>
<th>20X6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instalment sales</td>
<td>$200,000</td>
<td>$150,000</td>
<td>$</td>
</tr>
<tr>
<td>Cost of instalment sales</td>
<td>160,000</td>
<td>112,500</td>
<td>0</td>
</tr>
<tr>
<td>Collections on 20X4 sales</td>
<td>40,000</td>
<td>50,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Collections on 20X5 sales</td>
<td>30,000</td>
<td>75,000</td>
<td></td>
</tr>
</tbody>
</table>

Baxter uses a perpetual inventory system.

Required:
1. Give journal entries relating to installment sales for the years 20X4 to 20X6.
2. What is the year-end balance in installment accounts receivable (net of any deferred gross margin) for 20X4, 20X5, and 20X6?
3. If the sales qualified for revenue recognition on the date of sale (i.e., delivery), what amounts of gross margin would Baxter report in 20X4, 20X5, and 20X6?

P6-9 Installment Sales Method: Ontario Retail Company sells goods for cash, and on normal credit terms of 30 days. However, on 1 July 20X4, the company sold a used computer for $2,200; the inventory carrying value was $440. The company collected $200 cash and agreed to let the customer make payments on the $2,000 whenever possible during the next 12 months. The company management stated that it had no reliable basis for estimating the probability of default. The following additional data are available: (a) collections on the installment receivable during 20X4 were $300 and during 20X5 were $200, and (b) on 1 December 20X5, Ontario Retail repossessed the computer (estimated net realizable value, $700).
Required:
1. Give the required entries for 20X4 and 20X5; assume that the instalment method is used.
2. Give the balances in the following accounts that would be reported on the 20X4 and 20X5 income statements and balance sheets: instalment sales revenue and cost of sales, instalment accounts receivable, and inventory of used computers.
3. How much profit would be recognized in 20X4 and 20X5 if the cost recovery method is used?

P6-10 Cost Recovery Method: Slatt Department Store has accumulated a stock of obsolete merchandise. Routine efforts have been made to dispose of it at a low price. This merchandise originally cost $60,000 and was marked to sell for $132,000. Management decided to set up a special location in the basement to display and (it was hoped) sell this stock starting in January 20X5. All items will be marked to sell at a cash price that is 30% of the original marked selling price. On 31 December 20X4, the company accountant transferred the purchase cost to a perpetual inventory account called “inventory, obsolete merchandise,” at 30% of its purchase cost, which approximates estimated net realizable value. Management knows that a reliable estimate of the probable sales cannot be made. Therefore, the cost recovery method will be used. Subsequent sales were $9,000 in 20X5 and $7,000 in 20X6, and in 20X7 the remaining merchandise was sold for $8,000.

Required:
Give the entries that Slatt should make for 20X4 through 20X7.

P6-11 Long-Term Construction — Percentage-of-Completion Method: Thrasher Construction Company contracted to construct a building for $975,000. The contract provided for progress payments. Thrasher’s accounting year ends 31 December. Work began under the contract on 1 July 20X5, and was completed on 30 September 20X7. Construction activities are summarized below by year:

<table>
<thead>
<tr>
<th>Year</th>
<th>Construction costs incurred during the year,</th>
<th>Estimated costs to complete,</th>
<th>Progress billings during the year,</th>
<th>Collections,</th>
</tr>
</thead>
<tbody>
<tr>
<td>20X5</td>
<td>$180,000</td>
<td>$630,000</td>
<td>$153,000</td>
<td>$140,000</td>
</tr>
<tr>
<td>20X6</td>
<td>$450,000</td>
<td>$190,000</td>
<td>$382,500</td>
<td>$380,000</td>
</tr>
<tr>
<td>20X7</td>
<td>$195,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Because the contract was completed, the remaining balance was billed and later collected in full per the contract.

Required:
1. Give Thrasher’s entries assuming that the percentage-of-completion method is used. Assume that percentage of completion is measured by the ratio of costs incurred to date divided by total estimated construction costs.
2. Prepare income statement and balance sheet presentation for this contract by year; assume that the percentage-of-completion method is used.
3. Prepare income statement and balance sheet presentation by year; assume that the completed-contract method is used. For each amount that is different from the corresponding amount in (2), explain why it is different.
4. Which method would you recommend to this contractor? Why?
P6-12 Long-Term Construction: Methods Compared: Wallen Corporation contracted to construct an office building for Ragee Company for $1,000,000. Construction began on 15 January 20X4, and was completed on 1 December 20X5. Wallen’s accounting year ends 31 December. Transactions by Wallen relating to the contract are summarized below:

<table>
<thead>
<tr>
<th></th>
<th>20X4</th>
<th>20X5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs incurred to date</td>
<td>$400,000</td>
<td>$850,000</td>
</tr>
<tr>
<td>Estimated costs to complete</td>
<td>420,000</td>
<td>-</td>
</tr>
<tr>
<td>Progress billings to date</td>
<td>410,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Progress collections to date</td>
<td>375,000</td>
<td>1,000,000</td>
</tr>
</tbody>
</table>

Required:
1. In parallel columns, give the entries on the contractor’s books; assume
   a. the completed contract method, and
   b. the percentage-of-completion method.
   Assume that percentage of completion is measured by the ratio of costs incurred to date divided by total estimated construction costs.
2. For each method, prepare the income statement and balance sheet presentation for this contract by year.
3. What is the nature of the item “costs in excess of billings” that would appear on the balance sheet?
4. Which method would you recommend that the contractor use? Why?

P6-13 Percentage-of-Completion and Completed-Contract Methods: Banks Construction Company contracted to build an office block for $3,200,000. Construction began in September 20X4 and was scheduled to be completed in May 20X6. Banks has a 31 December year-end. Data related to the contract are summarized below:

<table>
<thead>
<tr>
<th></th>
<th>20X4 ($ thousands)</th>
<th>20X5 ($ thousands)</th>
<th>20X6 ($ thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs incurred during year</td>
<td>$500</td>
<td>$1,800</td>
<td>$850</td>
</tr>
<tr>
<td>Estimated additional costs to complete</td>
<td>2,500</td>
<td>800</td>
<td>0</td>
</tr>
<tr>
<td>Billings during year</td>
<td>450</td>
<td>1,300</td>
<td>1,450</td>
</tr>
<tr>
<td>Cash collections during year</td>
<td>400</td>
<td>1,100</td>
<td>1,700</td>
</tr>
</tbody>
</table>

Required:
1. Prepare the journal entries for Banks, assuming the completed-contract method.
2. Prepare the balance sheet and income presentation for this contract by year, assuming the completed-contract method is used.
3. Prepare the journal entries for Banks, assuming the percentage-of-completion method. Use costs incurred to date divided by total estimated construction costs to measure percent complete.
4. Prepare the balance sheet and income presentation for this contract by year, assuming the percentage-of-completion method is used.