

FA Module 3: The income statement (statement of profit and loss) – practice problems

(The attached PDF file has better formatting.)

Names of financial statements

Final exam problems may use GAAP or IFRS names for the financial statements:

- ! The income statement (GAAP) is the statement of profit and loss (IFRS).
- " Total comprehensive income is net income + other comprehensive income.
- ! The balance sheet (GAAP) is the statement of financial position (IFRS).

If the topic relates to both GAAP and IFRS, we generally use the GAAP terms income statement and balance sheet (as the textbook uses). If the topic is IFRS specific (such as IFRS 17), we use the IFRS terms.

The term *net revenue* means that the revenue is after adjustments (e.g., for cash or volume discounts, or for estimated returns); see page 135 of the textbook. It does *not* mean revenue after taxes.

Exercise 3.1: Net revenue

A firm sells 200 Smart Phones with a list price of 10 apiece.

- ! On 100 phones, it gives a cash discount of 30% of the list price.
- ! On the other 100 phones, it gives a volume discount of 20% of the list price.
- ! It expects 10% of cell phones to be returned and the cash paid to be refunded.

The firm pays corporate income taxes equal to 25% of its pre-tax income.

- A. What is revenue at the list price?
- B. What are the discounts to the list price?
- C. What are the expected returns?
- D. What is the firm's net revenue on its income statement?

Part A: Revenue at the list price is $200 \times 10 = 2,000$.

Part B: The sales discounts are

- ! cash discount: $100 \times 10 \times 30\% = 300$
- ! volume discount: $100 \times 10 \times 20\% = 200$

Part C: The expected returns are

$$(70\% \times 100 \times 10 + 80\% \times 100 \times 10) \times 10\% = 150.$$

Part D: The net revenue is

$$(70\% \times 100 \times 10 + 80\% \times 100 \times 10) \times 90\% = 1,350$$

Question: Net income is income after taxes. Why don't we deduct taxes to derive net revenue?

Answer: "Net" means after deductions.

- ! Net income is after deductions for taxes.
- ! Net revenue is after deductions for discounts and returns.

Exercise 3.2: Income statement

- ! On December 31, 20X1, a firm sells 100 footballs with list prices of 8 per ball and payment due in 60 days.
- ! 20 of the balls are sold at discounts of 10% per ball.
- ! The firm expects that 5% of the accounts receivable will not be collected.
- ! The cost of the footballs is 4 per ball.
- ! Selling and administrative expenses (in total) are 120.
- ! The corporate income tax rate is 25%.

- A. What is the net revenue?
- B. What is the gross profit?
- C. What are the earnings before tax?
- D. What is the net income?

Part A: Net revenue is after discounts and uncollectible items:

- ! Gross revenue = $100 \times 8 = 800$.
- " Discounts = $10\% \times 20 \times 8 = 16$.
- ! The footballs are sold on credit, so the gross accounts receivable = $800 - 16 = 784$.
- " The expected accounts receivable that will not be collected = $5\% \times 784 = 39.20$
- ! Net revenue = $784 - 39.20 = 744.80$

Part B: The gross profit = net revenue – cost of goods sold:

- ! Cost of goods sold = $4 \times 100 = 400$
- ! Gross profit = $744.80 - 400 = 344.80$

Part C: Earnings before tax = gross profit – other expenses:

- ! Other operating expenses = 120
- ! Earnings before tax = $344.80 - 120 = 224.80$

Part D: Net income is after-tax income:

- ! Tax expense = $25\% \times 224.80 = 56.20$.
- ! Net income = $224.80 - 56.20 = 168.60$.

Exercise 3.3: Long-term contracts

On January 1, 20X1, a firm signs a contract to build a warehouse for a total price of 100, which will be paid

- ! December 31, 20X1: payment of 50
- ! December 31, 20X2: payment of 20
- ! December 31, 20X3: payment of 30

To build the warehouse, the firm spends 30 in 20X1, 30 in 20X2, and 20 in 20X3. For these costs, 75% are production costs and 25% are labor expenses. The costs and construction can be measured reliably. The corporate tax rate is zero.

- A. What are the firm's income statement entries for the three years 20X1 – 20X3?
- B. What are the firm's balance sheet entries for the three years 20X1 – 20X3?

Exercise 3.4: The costs and construction can be measured reliably, so we use the percentage-of-completion method. We check first that the price exceeds estimated costs:

$$50 + 20 + 30 = 100 \geq 30 + 30 + 20 = 80.$$

Since the price exceeds estimated costs, we can use the percentage-of-completion method. If the estimated costs exceed the price, we expect a loss, which must be recognized immediately (in 20X1 here).

Part A: The income statement is on an accrual basis, so the timing of the payments received do not affect the entries.

- ! Costs are paid $30/80 = 37.5\%$ in 20X1, $30/80 = 37.5\%$ in 20X2, and $20/80 = 25\%$ in 20X3.
- ! Revenue is allocated $37.5\% \times 100 = 37.5$ to 20X1, $37.5\% \times 100 = 37.5$ to 20X2, $25\% \times 100 = 25$ to 20X3.
- ! Equivalently, the ratio of revenue to costs is $100 / 80 = 1.25$, so revenue is allocated

$$1.25 \times 30 = 37.5 \text{ to } 20X1, 1.25 \times 30 = 37.5 \text{ to } 20X2, \text{ and } 1.25 \times 20 = 25 \text{ to } 20X3.$$

Costs are 75% production and 25% administrative, so the income statement entries are

<i>Income statement</i>	<i>20X1</i>	<i>20X2</i>	<i>20X3</i>
net revenue	37.5	37.5	25
cost of goods sold	22.5	22.5	15
labor expenses	7.5	7.5	5
pre-tax income	7.5	7.5	5

The corporate tax rate is zero, so net income equals pre-tax income.

Part B: We show the balance sheet entries for each year.

20X1: The firm collects 50 but net revenue is 37.5, so it has a deferred revenue of $50 - 37.5 = 12.5$. Its balance sheet entries are

- ! debit cash 50 (increase an asset)
- ! credit deferred revenue 12.5 (increase a liability)

The offsetting entry for double-entry book-keeping is credit net revenue 37.5 (on the income statement)

The expenses are cost of goods sold of 22.5, comprising inventory and supplies, and labor of 7.5; the balance sheet entries are

- ! credit inventory or supplies 22.5 (decrease an asset)
- ! credit cash 7.5 (decrease an asset)

The offsetting entries (on the income statement) for double-entry book-keeping are

- ! debit cost of goods sold 22.5
- ! debit labor expense 7.5

Question: Isn't construction mostly labor, not inventory?

Answer: Much construction is labor. A contractor that uses pre-fabricated building units has inventory costs.

Question: The firm must buy the inventory (pre-fabricated building units); shouldn't this be a credit to cash?

Answer: Buying inventory is a credit to cash and a debit to inventory.

The sum of the entries on the balance sheet are

- ! debit (increase) cash $50 - 7.5 = 42.5$
- ! credit (decrease) inventory or supplies 22.5
- ! credit (increase) deferred revenue 12.5

Assets increase $42.5 - 22.5 = 20$ and liabilities increase 12.5, so the balance sheet is not in balance. But net income is 7.5, which increases retained earnings 7.5 (if no shareholder dividends are paid). So the balance sheet shows an increase in retained earnings (part of shareholders' equity) of 7.5.

20X2: The firm collects 20 but its costs are 30 (cost of goods sold = 22.5 and labor costs = 7.5). The balance sheet entries are

- ! debit (increase) cash $20 - 7.5 = 12.5$
- ! credit (decrease) inventory or supplies 22.5

The difference is a net loss of 10, so the firm reduces the deferred revenue set up in 20X1:

- ! debit (decrease) deferred revenue 10

The net income in 20X2 is 7.5, so retained earnings increases 7.5 and the balance sheet is not in balance.

In 20X2, the firm's expenses plus profit exceed its revenue.

It reduces the deferred revenue to zero and it increases an asset for prepaid expenses by 5.

The 20X2 balance sheet entries are

- ! debit (increase) cash $20 - 7.5 = 12.5$
- ! credit (decrease) inventory or supplies 22.5
- ! debit (decrease) deferred revenue 12.5
- ! debit (increase) prepaid expenses 5

Assets increase $12.5 - 22.5 + 5 = -5$, and liabilities increase -12.5 , for a net change of $+7.5$. Net income is 7.5, so retained earnings increase 7.5, which balances the two sides of the balance sheet.

20X3: The firm collects 30 and its costs are 20 (cost of goods sold = 15 and labor costs = 5). The balance sheet entries are

- ! debit (increase) cash $30 - 5 = 25$
- ! credit (decrease) inventory or supplies 15

The difference is a net gain of 10. The firm reduces the prepaid expenses set up in 20X2:

- ! credit (decrease) prepaid expenses 5

The net income in 20X2 is 5, so retained earnings increase 5 and the balance sheet is in balance.