Chapter 3

CASH FLOW ANALYSIS

Dr. Kawa Wali

Learning objectives

- Developing the Statement of Cash Flow
- Free Cash Flow to the Firm (FCFF/FCF)
- Cash Flow Analysis (from Ross)
- Exercises

STATEMENT OF CASH FLOW

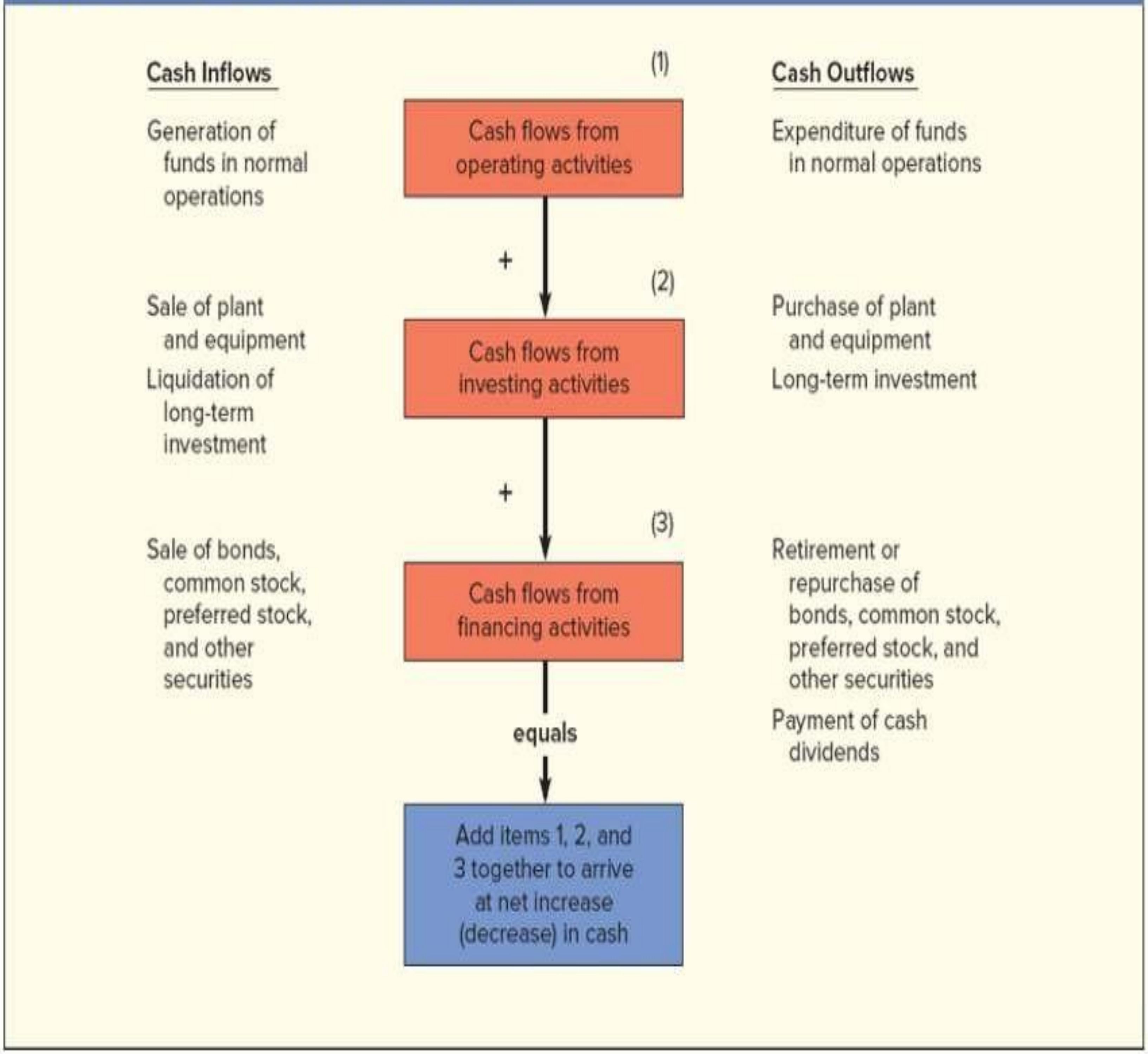
The purpose of the **statement of cash flows** is to emphasize the critical nature of cash flow to the operations of the firm. According to accountants, **cash** represents cash or cash equivalent items that can easily be converted into cash within 90 days (such as a money market fund).

The income statement and balance sheet that we have studied thus far are normally based on the accrual method of accounting, in which revenues and expenses are recognized as they occur, rather than when cash actually changes hands.

Reference: Block, S., Hirt, G., & Danielsen, B. (2019). Foundations of Financial Management (17th Edition). New York: McGraw-Hill.

DEVELOPING A STATEMENT OF CASH FLOW

Figure 2-1 Illustration of concepts behind the statement of cash flows



DETERMINING CASH FLOWS FROM OPERATING ACTIVITIES

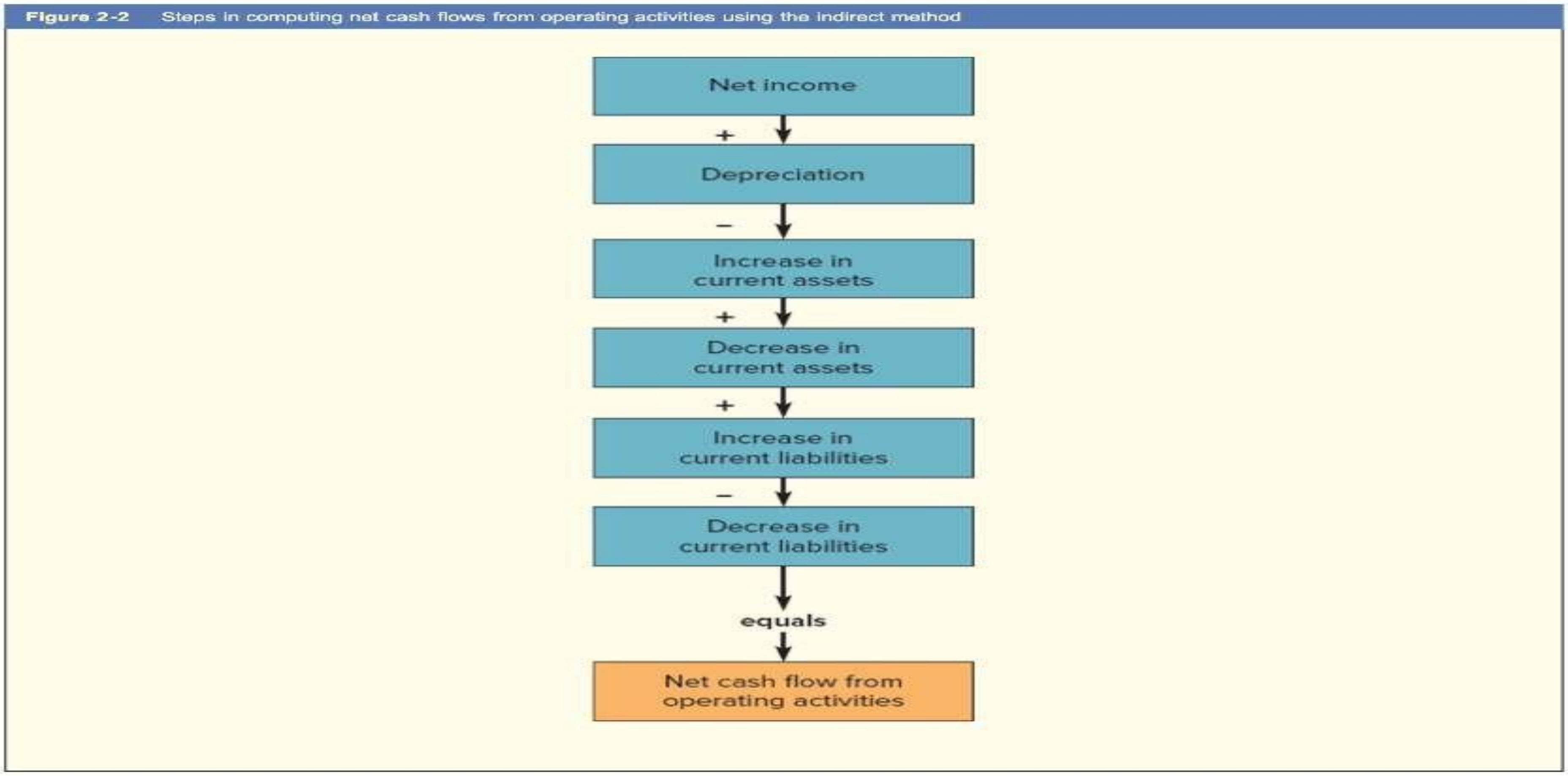
We are going to translate income from operations from an accrual to a cash basis.

According to SFAS No. 95, there are two ways to accomplish this objective:

- **Direct method**, in which every item on the income statement is adjusted from accrual accounting to cash accounting
- **Indirect method**, in which net income represents the starting point and then adjustments are made to convert net income to cash flows from operations.

Reference: Block, S., Hirt, G., & Danielsen, B. (2019). Foundations of Financial Management (17th Edition). New York: McGraw-Hill.

DETERMINING CASH FLOWS FROM OPERATING ACTIVITIES



- Start with net income.
- Recognize that depreciation is a noncash deduction in computing net income and should be added back to net income to increase the cash balance.
- Recognize that **increases in current assets are a use of funds and reduce the cash balance (indirectly)**4as an example, the firm spends more funds on inventory.
- Recognize that **decreases in current assets are a source of funds and increase the cash balance** (indirectly)4that is, the firm reduces funds tied up in inventory.
- Recognize that **increases in current liabilities are a source of funds and increase the cash balance** (indirectly)4the firm gets more funds from creditors.
- Recognize that decreases in **current liabilities are a use of funds and decrease the cash balance** (indirectly)4that is, the firm pays off creditors.

Reference: Block, S., Hirt, G., & Danielsen, B. (2019). Foundations of Financial Management (17th Edition). New York: McGraw-Hill.

DETERMINING CASH FLOWS FROM OPERATING ACTIVITIES

Net Income	**110,500**
Adjustments:	
Depreciation (+)	50,000
Increase in Accounts Receivable	(30,000)
Increase in Inventory	(20,000)
Decrease in Prepaid Expenses	10,000
Increase in Accounts Payable	35,000
Decrease in Accrued Expenses	(5,000)
Net Cash Flow from Operating Activities	**150,500**

Reference: Block, S., Hirt, G., & Danielsen, B. (2019). Foundations of Financial Management (17th Edition). New York: McGraw-Hill.

Table 2-6 Kramer Corporation comparative balance sheets

KRAMER CORPORATION
Comparative Balance Sheets

		Year-End 2017		Year-End 2018
Assets				
Current assets:				
Cash		$ 30,000		$ 40,000
Marketable securities		10,000		10,000
Accounts receivable (net)		170,000		200,000
Inventory		160,000		180,000
Prepaid expenses		30,000		20,000
Total current assets		$400,000		$ 450,000
Investments (long-term)		20,000		50,000
Plant and equipment	$1,000,000		$1,100,000	
Less: Accumulated depreciation	550,000		600,000	
Net plant and equipment		450,000		500,000
Total assets		$870,000		$1,000,000
Liabilities and Stockholders' Equity				
Current liabilities:				
Accounts payable		$ 45,000		$ 80,000
Notes payable		100,000		100,000
Accrued expenses		35,000		30,000
Total current liabilities		$180,000		$ 210,000
Long-term liabilities:				
Bonds, payable 2025		40,000		90,000
Total liabilities		$220,000		$ 300,000
Stockholders' equity:				
Preferred stock, $100 par value		$ 50,000		$ 50,000
Common stock, $1 par value		100,000		100,000
Capital paid in excess of par		250,000		250,000
Retained earnings		250,000		300,000
Total stockholders' equity		$650,000		$ 700,000
Total liabilities and stockholders' equity		$870,000		$1,000,000

DETERMINING CASH FLOWS FROM INVESTING ACTIVITIES

Cash flows from investing activities represent the second section in the statement of cash flows. The section relates to long- term investment activities in other issuers9 securities or, more importantly, in plant and equipment***. Increasing investments represent a use of funds, and decreasing investments represent a source of funds.***

Cash Flow from Investing Activities	
Increase in Investments (Long-Term Securities)	(30,000)
Increase in Plant and Equipment	(100,000)
Net Cash Flow from Investing Activities	**(130,000)**

Reference: Block, S., Hirt, G., & Danielsen, B. (2019). Foundations of Financial Management (17th Edition). New York: McGraw-Hill.

Table 2-6 Kramer Corporation comparative balance sheets

KRAMER CORPORATION
Comparative Balance Sheets

		Year-End 2017		Year-End 2018
Assets				
Current assets:				
Cash		$ 30,000		$ 40,000
Marketable securities		10,000		10,000
Accounts receivable (net)		170,000		200,000
Inventory		160,000		180,000
Prepaid expenses		30,000		20,000
Total current assets		$400,000		$ 450,000
Investments (long-term)		20,000		50,000
Plant and equipment	$1,000,000		$1,100,000	
Less: Accumulated depreciation	550,000		600,000	
Net plant and equipment		450,000		500,000
Total assets		$870,000		$1,000,000
Liabilities and Stockholders' Equity				
Current liabilities:				
Accounts payable		$ 45,000		$ 80,000
Notes payable		100,000		100,000
Accrued expenses		35,000		30,000
Total current liabilities		$180,000		$ 210,000
Long-term liabilities:				
Bonds, payable 2025		40,000		90,000
Total liabilities		$220,000		$ 300,000
Stockholders' equity:				
Preferred stock, $100 par value		$ 50,000		$ 50,000
Common stock, $1 par value		100,000		100,000
Capital paid in excess of par		250,000		250,000
Retained earnings		250,000		300,000
Total stockholders' equity		$650,000		$ 700,000
Total liabilities and stockholders' equity		$870,000		$1,000,000

DETERMINING CASH FLOWS FROM FINANCING ACTIVITIES

Cash Flow from Financing Activities	
Increase in Bonds Payable	50,000
Preferred Stock Paid (given - IS)	(10,500)
Common Stock Dividends Paid (given-SSE)	(50,000
Net Cash Flow from Financing Activities	**(10,500)**

Financing activities apply to the sale or retirement of bonds, common stock, preferred stock, and other corporate securities. Also, the payment of cash dividends is considered a financing activity. The sale of the firm securities represents a source of funds, and the retirement or repurchase of such securities represents a use of funds.

Reference: Block, S., Hirt, G., & Danielsen, B. (2019). Foundations of Financial Management (17th Edition). New York: McGraw-Hill.

Combining the Three Sections

Cash Flow from Operating Activities	
Net Income	**110,500**
Adjustments:	
Depreciation (+)	50,000
Increase in Accounts Receivable	(30,000)
Increase in Inventory	(20,000)
Decrease in Prepaid Expenses	10,000
Increase in Accounts Payable	35,000
Decrease in Accrued Exps.	(5,000)
Net Cash Flow from Operating Activities	**150,500**

Cash Flow from Investing Activities	
Increase in Investments (Long-Term Securities)	(30,000)
Increase in Plant and Equipment	(100,000)
Net Cash Flow from Investing Activities	**(130,000)**

Cash Flow from Financing Activities	
Increase in Bonds Payable	50,000
Preferred Stock Paid (given - IS)	(10,500)
Common Stock Dividends Paid (given-SSE)	(50,000)
Net Cash Flow from Financing Activities	**(10,500)**

Net Increase (decrease) in Cash Flows **10,000**

Reference: Block, S., Hirt, G., & Danielsen, B. (2019). Foundations of Financial Management (17th Edition). New York: McGraw-Hill.

FREE CASH FLOW TO THE FIRM (FCFF)

Free Cash Flow to the Firm is the cash flow available to the companys suppliers of capital after all operating expenses (including taxes) have been paid and necessary investments in Working Capital and Fixed Capital has been made.

Companys Suppliers of capital include common stockholders, bondholders, and sometimes, preferred stockholders.

$$FCF = \left[EBIT(1-T) + \begin{matrix}\text{Depr. and}\\ \text{amortization}\end{matrix}\right] - \left[\begin{matrix}\text{Capital}\\ \text{expenditures}\end{matrix} + \Delta NOWC\right]$$

Reference: CFA Level 2, Volume 4

FREE CASH FLOW TO THE FIRM (FCFF)

$$FCF = \left[EBIT(1-T) + \begin{matrix} \text{Depr. and} \\ \text{amortization} \end{matrix} \right] - \left[\begin{matrix} \text{Capital} \\ \text{expenditures} \end{matrix} + \Delta\, NOWC \right]$$

MARA CORPORATION 2021 Income Statement		
Sales		$4,507
Cost of goods sold		2,633
Depreciation		952
Earnings before interest and taxes		$ 922
Interest paid		196
Taxable income		$ 726
Taxes (21%)		152
Net income		$ 574
Dividends	$352	
Addition to retained earnings	222	

FCF= (922*(1-0.21)+952) – (CAPEX+ΔNOWC)

FCF= 1680.38-(CAPEX+ΔNOWC)

Reference: Ross, S., Westerfield, R., & Jordan, B. (2021). Fundamentals of Corporate Finance (13th Edition). New York: McGrawHill Education (Asia)

NET OPERATION WORKING CAPITAL

***Net Operation Working Capital*,** also known as net working capital (NWC), is the difference between a companys current assets and its current liabilities.

NOWC= [current assets] - [current liabilities- notes payable]

Note that cash should not be included in current assets.

Reference: Investopedia, Formula Summary

FREE CASH FLOW TO THE FIRM (FCFF)

$$FCF = \left[EBIT(1-T) + \begin{matrix}\text{Depr. and}\\ \text{amortization}\end{matrix}\right] - \boxed{\left[\begin{matrix}\text{Capital}\\ \text{expenditures}\end{matrix} + \Delta NOWC\right]}$$

MARA CORPORATION 2020 and 2021 Balance Sheets					
	2020	2021		2020	2021
Current assets	$2,205	$ 2,429	Current liabilities	$1,003	$ 1,255
Net fixed assets	7,344	7,650	Long-term debt	3,106	2,085
			Equity	5,440	6,739
Total assets	$9,549	$10,079	Total liabilities and shareholders' equity	$9,549	$10,079

CAPEX:	
Net Fixed Assets, end	7,650
- Next Fixed Assets, beg	7,344
+ Depreciation	952
Capital Expenditures	**1,258**

& NOWC:		
NOWC, end	(2,429 – 1,255)	1,174
- NOWC, beg	(2,205 – 1,003)	1,202
& NOWC:		**-28**

Reference: Ross, S., Westerfield, R., & Jordan, B. (2021). Fundamentals of Corporate Finance (13th Edition). New York: McGrawHill Education (Asia)

Exercise 1 **Homework**

Bank Newroz has purchasing a new cash machine by purchase price $7000, costs of transport $400, and installation costs $200. The bank is transfer an amount of $1000 for maintenance. The useful life of the machine is 5 years. The machine has no salvage value. The net profit before depreciation and taxes is equal to $2000. The annual return is 14%. The bank uses straight-line method to compute the depreciation, and income tax rate 30%

Required// 1) Compute the annual net cash flows.

Exercise 2 Homework

Q// The accounts of Consolidated Can contain the following amounts at December 31, 2017:

Cost of products sold	$410,000
Dividends	3,000
Extraordinary gain (net of tax)	1,000
Income taxes	9,300
Interest expense	8,700
Other income	1,600
Retained earnings, 1/1	270,000
Sales	480,000
Selling and administrative expense	42,000

Required Prepare an income statement combined with a reconciliation of retained earnings for the year ended December 31, 2017

Exercise 3 Homework

The accounts of Consolidated for Can company contain the following amounts at December 31, 2016:

Cost of products sold	$510,000
Dividends 32%	
Extraordinary gain (net of tax)	2,000
Income taxes	9,300
Interest expense 25%	
Other income	1,600
Retained earnings, 1/1	200,000
Sales	880,000
Selling and administrative expense	50,000

Required Prepare an income statement combined with a reconciliation of retained earnings for the year ended December 31, 2016.

Exercise 4 **Homework**

Presented below is financial information for two different companies.

Details		Jenkins Company
Net income		13,000
Sales		D
Operating expenses		25,000
Cost of goods sold		E
Sales return		10,000
Gross profit		38,000
Net sales		110,000

Required : Compute the missing amount!

Exercise 5 Homework

Presented below is financial information for two different companies.

	Summer Company	Winter Company
Sales revenue	$92,000	(d)
Sales returns and allowances	(a)	$5,000
Net Sales	87,000	102,000
Cost of goods sold	56,000	(e)
Gross profit	(b)	41,500
Operating expenses	15,000	(f)
Net income	(c)	18,000

Required/

1. Determine the missing amounts.

2. Determine the gross profit rates. (Round to one decimal place.)