

Exercises Chapter 5 Capital Budgeting

Exercise 5.1 Free Cash Flow > section 5.1

In a specific year the period profit after tax of a project amounts to € 200,000. The depreciation amounts to € 100,000.

Calculate the free cash flow in that specific year.

Exercise 5.2 Free Cash Flow > section 5.1

A company considers opening a new establishment. The Finance director composed the operational overview (in euro) below.

	Year 1	Year 2	Year 3	Year 4
Revenue	700,000	750,000	800,000	825,000
Cost				
Personnel	300,000	360,000	400,000	420,000
Marketing & Sales	150,000	135,000	110,000	100,000
Depreciation	<u>150,000</u>	<u>125,000</u>	<u>100,000</u>	<u>75,000</u>
Total Costs	600,000	620,000	610,000	595,000
Operating Income	100,000	130,000	190,000	230,000
Corporate Tax	<u>20,000</u>	<u>25,000</u>	<u>40,000</u>	<u>50,000</u>
Profit after tax	80,000	105,000	150,000	180,000

Calculate the free cash flow for each year.

Exercise 5.3 Free Cash Flow > section 5.1

For an investment project the project manager has provided the following information for a specific year.

- revenue € 375,000
- operating costs (excluding depreciation) € 125,000
- depreciation € 45,000

During this specific year no investments or disinvestments took place. The corporate tax rate amounts to 25%.

Calculate the free cash flow in this specific year.

Exercise 5.4 Free Cash Flow > section 5.1

A recently started new airline company buys a second-hand Boeing 737 in December for € 6 million. The airline company expects to achieve a turnover of € 20 million in the next year of service of this aeroplane.

The annual operating cost of the aeroplane are € 16 million and the annual depreciation is € 1 million. No further investments nor disinvestments are conducted in fixed or current assets.

The corporate tax rate is 25%.

Calculate the free cash flow in this specific year.

Exercise 5.5 Residual Value, Free Cash Flow > section 5.1

For an investment project in a new installation the operational overview (in euro) below has been drawn up.

	2022	2023	2024	2025
Revenue	320,000	400,000	460,000	480,000
Costs				
Personnel	160,000	180,000	200,000	220,000
Maintenance	50,000	60,000	75,000	100,000
Depreciation	<u>70,000</u>	<u>60,000</u>	<u>50,000</u>	<u>50,000</u>
Total Costs	280,000	300,000	325,000	370,000
Operating income	40,000	100,000	135,000	110,000
Corporate Tax	<u>10,000</u>	<u>25,000</u>	<u>35,000</u>	<u>25,000</u>
Income after tax	30,000	75,000	100,000	85,000

The investment in the installation takes place at the end of 2021 and amounts to € 250,000. On December 31st, 2025 the installation will be sold against book value.

- A** Calculate the residual value of the installation on December 31st, 2025.
- B** Calculate the free cash flow for each year during 2021 t/m 2025.

Exercise 5.6 Payback period > section 5.3

The initial investment in a project amounts to € 400,000. The monthly free cash flow generated by the project is € 20,000.

Calculate the payback period of the project expressed in months.

Exercise 5.7 Payback period > section 5.3

For an investment project the free cash flows are estimated as follows:

2020	-450,000
2021	150,000
2022	200,000
2023	200,000
2024	100,000

The investment takes place at the end of 2020.

- A** Calculate the payback period if the free cash flows 2021 up until and including 2024 are received evenly spread during the year.
- B** Calculate the payback period if the free cash flows 2021 up until and including 2024 are received at the end of each year.

Exercise 5.8 Free cash flow and Payback period

A company considers an investment in fixed assets for an amount of € 2,375,000. It is expected that a revenue of € 4,000,000 per year can be generated with this investment. The depreciation amounts to € 500,000 per year. The operating expenditures are budgeted for € 2,900,000 per year. Corporate tax rate is 25% of the profit before tax. The free cash flow will be received evenly spread during the year.

- A** Calculate the free cash flow per year.
- B** Calculate the payback period: the expected number of years (in one decimal point) necessary in order to receive the amount that has been spent on the investment.

Exercise 5.9 Residual Value, Payback period > section 5.3

A Dutch travel agency organizes adventurous journey's from 6 to 9 months to developing countries by bus or refurbished truck. The travel agency wants to offer a new destination and has to choose between a bus (project A) or a truck (project B) as means of transportation.

Project A

The investment in the bus is € 80,000 and has an expected life span of four years, after that period there is no residual value. The expected annual free cash flows are respectively: € 20,000; € 26,000; € 34,000 and € 43,000.

Project B

The truck is more firm than the bus and will last longer. On the other hand, the truck is more expensive. The truck requires an investment of € 140,000, has an expected life span of five years and a residual value of € 20,000. The truck will be sold at the end of year 5. The expected annual free cash flows are respectively: € 15,000, € 23,000, € 32,000, € 40,000 and € 40,000 (excluding the receipt of the residual value = disinvestment).

The free cash flows of both project A and project B are received evenly spread during the year.

- A** Which choice will the management of the travel agency make if payback period is the only consideration in making this choice.
- B** It seems that the free cash flow in the fourth year of project A was calculated incorrectly, this amount should be € 23,000 instead of € 43,000. Explain whether this has an influence on the choice being made in section A of this exercise.

Exercise 5.10 Payback period > section 5.3

For an investment project the free cash flows (in euro) are estimated as follows:

2020	-600,000
2021	100,000
2022	300,000
2023	400,000
2024	250,000

The free cash flows are received and paid evenly spread during the year.

- A** Compose a graph (a line-diagram; see figure 5.2 page 110 of the Basics book) of the development of the cumulative free cash flow during these years.
- B** What is the payback period resulting from this graph?
- C** Check your answer on section **B** by calculating the payback period.

Exercise 5.11 Interest calculation > section 5.4

Wim deposits € 1,000 on a bank account against 2% compound interest per year. Calculate the amount on the bank account after 5 years.

Exercise 5.12 Interest calculation > section 5.4

Shyam deposits € 600 on January 1st of each year during 4 years on a bank account against 0.8% compound interest per year.

Calculate the amount on the bank account at the end of the fourth year.

Exercise 5.13 Interest calculation > section 5.4

Calculate the deposit to be put on a bank account today for 10 years against 3% compound interest per year in order to reach an end value of € 15,000.

Exercise 5.14 Interest calculation > section 5.4

You open a bank account against 1% compound interest per year. Calculate the deposit to be put on the bank account today in order to reach an end value after 5 years of € 10,000?

Exercise 5.15 Net Present Value (NPV) > section 5.4

A travel organization considers an investment in a touring car. The free cash flows of this investment project are as follows:

Year	Free cash flows (euro)
0	-300,000
1	90,000
2	100,000
3	120,000
4	100,000

The weighted average cost of capital is 5% per year.

Regarding this project, calculate the following:

- A** The present value of the free cash flows from year 1 up until and including year 4.
- B** The net present value.

Exercise 5.16 Residual Value, Free Cash Flow and Net Present Value (NPV)

The following information on an investment project regarding the development of a new generation espresso machines is available: this project requires an investment in equipment of € 1,800,000. The project has a duration of 3 years. The depreciation amounts to € 500,000 per year.

The free cash flows of this project are: 500,000 (year 1), 700,000 (year 2), 1,200,000 (year 3). The free cash flow in year 3 excludes the proceeds of the sale of the equipment against residual value (disinvestment). The cost of capital is 7% per year.

Regarding this project, calculate the following:

- A** the residual value of the investment at the end of the project.
- B** the free cash flow in year 3 including the free cash flow from the disinvestment.
- C** the net present value.

Exercise 5.17 Payback period and Net Present Value

The management of Hardersloot LLC can choose between two projects. Each project requires an investment of € 300.000.

The expected free cash flows (in euro) are reflected in the table below. The duration of each project is four years.

	project A	project B
year 1	120,000	60,000
year 2	100,000	90,000
year 3	80,000	100,000
year 4	60,000	150,000
Residual value (year 4)	20,000	0

The free cash flows of both project A and project B are received evenly spread during the year. The cost of capital for this company is 6%.

- A** What is the payback period of project A and project B?
- B** Calculate the net present value of project A and of project B.
- C** Which project will be chosen if payback period is the only selection criterion? Motivate your answer.
- D** Which project will be chosen if net present value is the only selection criterion? Motivate your answer.

Exercise 5.18 Depreciation, Residual value, Free Cash Flow, Net Present Value (NPV)

A shipping-company considers an investment in a high speed ferry-boat. The purchase price is € 300,000. The expected economic lifespan is four years. The residual value of the ferry-boat amounts to € 20,000. The depreciation is a fixed amount per year. If the investment project goes ahead, the ferry-boat will be purchased at the end of 2021 and put into operation on January 1st, 2022.

- A** Calculate the annual depreciation.

The shipping-company expects a revenue of € 400,000 per year from the ferry-services carried out by this ferry-boat. The operating costs (personnel, maintenance etc.) are budgeted for € 220,000 per year. The corporate tax is 30% of the profit before tax.

- B** Calculate the annual profit after tax.

The cost of capital for this company is 8% per year. The boat will be sold after four years (on December 31st, 2025) against book value.

- C** Calculate the annual free cash flow for each of the years 2021 up until and including 2025.
- D** Calculate the net present value of the investment in the ferry-boat.
- E** Can the investment in the ferry-boat go ahead based on the net present value as calculated in section **D** ? Motivate your answer.

Exercise 5.19 Free Cash Flow, Internal Rate of Return, payback period, Net Present Value (NPV)

A hotel group in Eindhoven is considering an investment in a new establishment in Tilburg. In preparation for the investment decision the financial manager received the overview (in euro) below containing an estimate of the revenue and costs of the new establishment for the next four years.

	Year 1	Year 2	Year 3	Year 4
Revenue	730,000	905,000	1,100,000	1,115,000
Costs				
Personnel	270,000	300,000	340,000	340,000
Marketing & Sales	90,000	100,000	110,000	115,000
Rent	150,000	220,000	290,000	290,000
Depreciation	<u>250,000</u>	<u>250,000</u>	<u>250,000</u>	<u>250,000</u>
Operating Income	- 30,000	35,000	110,000	120,000
Tax	<u>0</u>	<u>10,000</u>	<u>20,000</u>	<u>40,000</u>
Result after tax	- 30,000	25,000	90,000	80,000

The expected weighted average cost of capital is 9% per year.

The free cash flows are received evenly spread during the year.

- A** Calculate the annual free cash flow for each year.
- B** Calculate the present value of the annual free cash flows.

The manager expects an investment of € 1.0 million.

- C** Explain whether the investment can go ahead based on the net present value method.
- D** The general director expects a free cash flow in the first year that is € 100,000 higher. Explain how much extra funding becomes available in the net present value calculation.
- E** The internal rate of return of this project is 6,0%. Explain whether the investment can go ahead based on the internal rate of return.
- F** Calculate the payback period, without taking the extra funding as mentioned in section **D** into account.
- G** How does the extra funding as mentioned in section **D** influence the payback period (becomes shorter, remains the same, becomes longer) ? Motivate your answer without making a calculation.

Exercise 5.20 Free cash flow, payback period, Net Present Value (NPV)

Sport Complete LLC is a retail chain preparing an investment in a web shop to sell sports articles online. The finance director received the following overview. It states the expected revenue and costs during 3 years of the web shop to be established. In this overview some information is still missing.

Operational budget for a new web shop (in euro)

	2022	2023	2024
Revenue			
Sportswear and sports articles	300,000	369,000	435,000
Costs			
Purchases	85,000	132,000	165,000
Personnel	45,000	52,000	55,000
Marketing	40,000	45,000	50,000
Other costs	50,000	50,000	50,000
Depreciation			
Total costs			
Result before tax			
Corporate tax			
Result after tax			

The weighted average cost of capital (WACC) is 8% per year.

The investment amounts to € 240,000, the expected residual value is zero. If the project will be approved, the investment takes place on December, 31st 2021. The investment is being depreciated annually in 3 equal amounts.

The corporate tax rate is 20% on the profit before tax.

- A** Calculate the annual depreciation.
- B** Calculate the corporate tax for each of the three years.
- C** Calculate the annual free cash flow for 2021 up until and including 2024.
- D** Calculate the net present value of the free cash flows.
- E** Explain whether the investment can go ahead based on the net present value method.
- F** Calculate the payback period in years and months using the information from the operational budget overview. The free cash flows are received evenly spread during the year.

The finance director received a message from the bank regarding the application for a loan to finance the investment in the new web shop. The interest rates have been lowered. The weighted average cost of capital (WACC) is now 6%.

- G** Substantiate, based on a calculation, what the consequence of the lower interest rate is for the feasibility of the investment in the web shop based on the net present value method.
- H** What is the influence of the change of the weighted average cost of capital on the payback period (becomes shorter, remains the same, becomes longer) ? Motivate your answer.

Exercises Chapter 6: Working Capital Management

Exercise 6.1 Inventory Management > section 6.2

The following information of a furniture shop regarding 2020 has been provided:

Costs of goods sold	€ 280,000
Inventory on January 1 st , 2020	€ 90,000
Inventory on December 31 st , 2020	€ 70,000

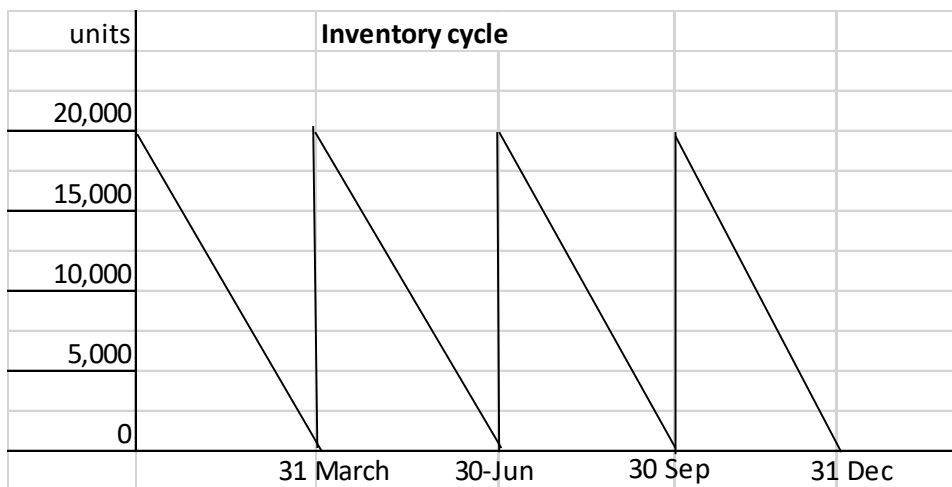
A Calculate the Inventory turnover ratio.

The inventory turnover ratio 2019 is 4.0.

B Did the inventory turnover ratio in 2020 compared to 2019 improve, remain the same, or get worse? Motivate your answer.

Exercise 6.2 Inventory Management > section 6.2

For a trading company the inventory cycle during a year is shown in the graph below.



- A** Determine the level of the average inventory.
- B** Determine the number of purchase orders a year.
- C** Determine the number of units purchased per order.
- D** Determine the demand per year.
- E** Determine the time interval between 2 orders.

Exercise 6.3 Inventory Management > section 6.2

A trading company sells calculators. The following information is available:

- Total demand (= sales volume) per year: 40,000 units
- Order quantity: 5,000 units
- Ordering costs: €50 per order
- Carrying costs: €2 per unit per year

Calculate:

- A** the number of purchasing orders per year
- B** the ordering costs per year
- C** the average inventory
- D** total carrying costs per year
- E** total inventory costs per year

This company decides to increase the order quantity to 6,000 units.

- F** What are the consequences of this decision on the ordering costs per order (increases, remains the same, decreases)? Motivate your answer.
- G** What are the consequences of this decision on the total ordering costs per year (increases, remains the same, decreases)? Motivate your answer
- H** What are the consequences of this decision on the total carrying costs per year (increases, remains the same, decreases)? Motivate your answer without making a calculation.

Exercise 6.4 Inventory Management > section 6.2

Top Shoe LLC, a wholesale trader in shoes, purchases 14,000 pair of shoes per order (order quantity). Every 4 weeks an order is placed by this wholesaler. The lead time (the period between placing an order and the delivery of the goods ordered) is 1 week (7 days). The wholesale trader is also opened during the weekend.

- A** How many purchase orders are placed by Top Shoe LLC per year?
- B** Calculate the sales volume per day.
- C** At which inventory level (= reorder point) does Top Shoe place a purchase order for the inventory to be exactly zero at the time the order is being delivered.

Recently it became clear that the lead time can run up to a period of maximum 9 days. It also occurs that the demand for shoes during a certain period of time is maximum 10% higher than average.

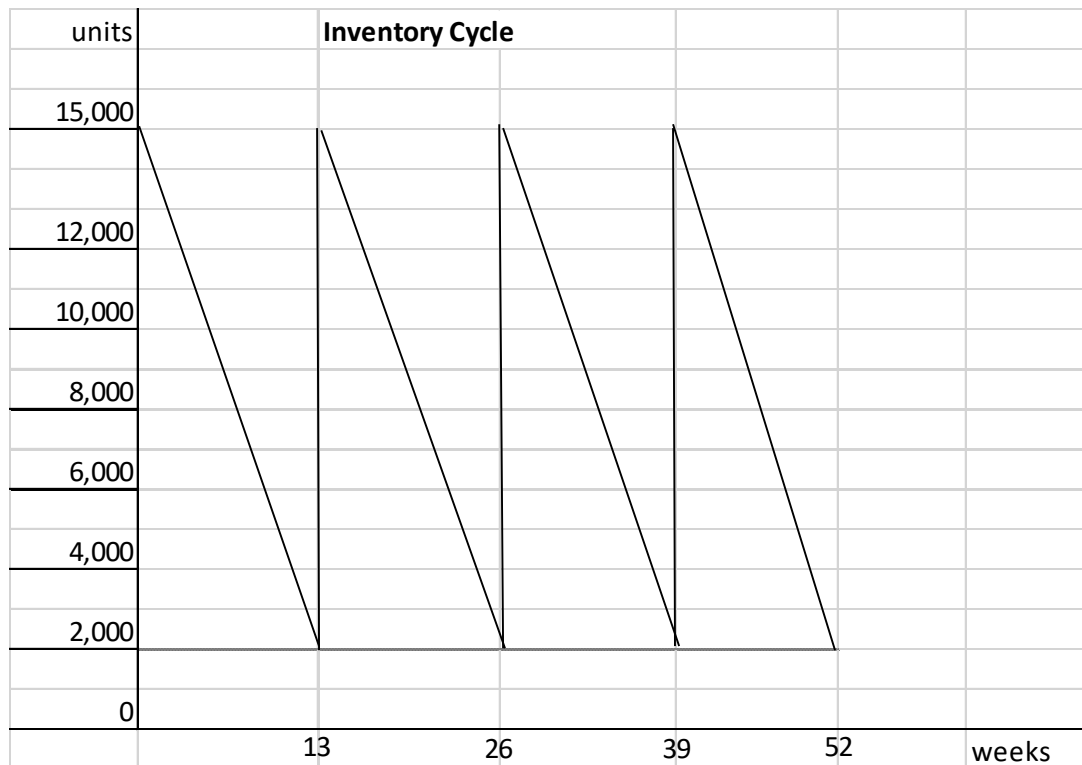
- D** What risk occurs as a consequence of the longer delivery time respectively a higher demand than average if Top Shoe does not change its purchasing policy?

In order to avoid the risk as mentioned in section D Top Shoe starts keeping a safety inventory.

- E** Calculate the reorder point at which the risk as mentioned in section D is completely ruled out.
- F** Calculate the level of safety inventory.

Exercise 6.5 Inventory Management > section 6.2

Of Edammer & Co LLC, a wholesale trader of cheese, the following inventory cycle is provided:



Furthermore the carrying costs are € 3 per unit per year and the ordering costs are € 70 per order.

- A** Determine the level of safety inventory.
- B** Determine the order quantity.
- C** Calculate the average inventory.
- D** Calculate the sales volume per week.
- E** Calculate the maximum number of weeks the delivery of goods ordered can be delayed, while customer's demand can still be fulfilled. Assume a sales volume per week as calculated in section D.
- F** Calculate the increase in carrying costs per year because of keeping a safety inventory.
- G** Calculate the total inventory costs (= ordering costs + carrying costs) per year.

Exercise 6.6 Credit Management > section 6.3

Of a supplier of office furniture the following information regarding 2020 is available:

Revenue (the entire revenue is invoiced)	€ 350,000
Accounts Receivable on January 1 st , 2020	€ 40,000
Accounts Receivable on December 31 st , 2020	€ 30,000

A Calculate the average days sales outstanding.

In 2019 the average days sales outstanding is 39 days.

B Did the average days sales outstanding in 2020 improve or get worse? Motivate your answer.

Exercise 6.7 Credit Management > section 6.3

Company FETCH LLC was established on January 1st. FETCH LLC produces and sells one product only. The selling price per unit of this product is € 60. The sales volume forecast is as follows:

Month	Sales volume (units):
January	6,000
February	12,000
March	8,000
April	10,000

The products are sold for 60% in cash and for 40% an invoice is sent, the payment term is one month.

Calculate for the month of February the amount in euro to be received by FETCH from its customers.

Exercise 6.8 Credit Management > section 6.3

Of trading company De Groot (a partnership) the following information is available:

- Annual revenue is estimated at € 840,000.
- Revenue is evenly spread during the year.
- All sales are billed, the payment term is payment within one month.

A Calculate the average amount of accounts receivable if De Groot receives all payments on average 1 month after invoice date.

Of the billed revenue 5% is uncollectable (will never be received). The uncollectable outstanding receivables are written off directly after the payment term has expired.

B Calculate the amount that is written off each year as uncollectable.

This trading company want to motivate its debtors to pay sooner. De Groot grants a discount of 2% on cash payments. De Groot expects that 20% of the revenue will be paid in cash. The billed revenue is still being received or written off after one month on average.

C Calculate the average amount of accounts receivable after introduction of the discount offer.

D Calculate the total discount per year that De Groot grants to its customers.

E Why would De Groot want to speed up payment from its debtors?

Exercise 6.9 Credit Management > section 6.3

Of company Jansen the following information on the month of **June** is available:

- Receipts from debtors	€ 540,000
- Costs of goods sold	€ 630,000
- Total operating costs	€ 120,000
- Accounts Receivable on June 1 st	€ 690,000
- Accounts Receivable on June 30 th	€ 740,000

Next to sales on credit (billed revenue) a part of the revenue is paid in cash.

Goods are sold against purchase value + a mark-up of 20% of the purchase value.

- A** Calculate the sales on credit in June.
- B** Calculate the sales received in cash in June.
- C** Calculate the operating income in June.

The following information is available on an **annual** basis:

• Accounts Receivable on January 1 st	€ 780,000
• Accounts Receivable on December 31 st	€ 840,000
• Sales on credit	€ 7,000,000
• Sales received in cash	€ 2,000,000

- D** Calculate the average days sales outstanding on an annual basis.

Exercise 6.10 Inventory Management and Credit Management

A trading company invoices the sale of its products completely (no cash sales). The bookkeeper has drawn up the following overview on an annual basis:

- average balance of accounts receivable € 5,000,000
- average balance of accounts payable € 3,000,000
- inventory of products at the beginning of the year € 4,000,000
- inventory of products at the end of the year € 3,600,000
- revenue (against selling price) € 45,000,000
- gross margin on products sold on average amounts to 25% of the purchase value

- A** Calculate the inventory turnover ratio of the products.
- B** Calculate the average days sales outstanding.

Exercise 6.11 Cash Management > section 6.4

Sandra owns a fashion shop (sole proprietorship). In order to draw up a cash flow forecast for next year she has collected the following data:

- Investment in shop equipment (counters, displays etc.) € 6,000, to be purchased in March. The expected economic lifespan of the equipment is 3 years, residual value zero. For the payment of the shop equipment a credit term of 1 month applies.
- Rent € 18,000 a year, annually to be paid upfront in December for the forthcoming year.
- Purchase of clothing per quarter amounts to 70% of the total revenue in that quarter. She negotiated a credit term of 3 months with her suppliers.
- The expected billed revenue is as follows:
 - 4th quarter of the preceding year € 12,000
 - 1st quarter € 8,000
 - 2nd quarter € 6,000
 - 3rd quarter € 12,000
 - 4th quarter € 14,000On the invoice Sandra states a payment term of 3 months
- The expected revenue received in cash is as follows:
 - 4th quarter of the preceding year € 42,000
 - 1st quarter € 28,000
 - 2nd quarter € 36,000
 - 3rd quarter € 26,000
 - 4th quarter € 44,000
- On January 1st Sandra has a bank loan of € 27,000. Annually she needs to repay € 3,000 on May 1st. The interest percentage amounts to 5% per year. The interest is paid annually on December 31st.
- All receipts and expenditures run via the bank account of the shop. The limited revenue paid in cash in the cash register is transferred to the bank account of the shop on a daily basis.
- At the beginning of the year Sandra expects a bank balance of € 1,000 on the bank account of the shop.
- To cover her cost of living, Sandra withdraws € 6,000 per quarter from the bank account of the shop.

A Draw up the cash flow forecast on a quarterly basis (see lay-out on page 145 of the Basics book).

B The cash flow forecast periodically shows a negative bank balance. Which measures could Sandra take in order not to jeopardize the continuity of her shop?

Exercises Chapter 7: Equity

Exercise 7.1 > section 7.1 Equity in Companies with a Non-legal Entity Status

On January 1st Karin de Wit and Jan Zwart start a new company, the legal form is a partnership.

Karin and Jan are both general partners of this company.

Karin contributes €45,000 as equity, Jan contributes €15,000. Both contributions have been fully paid on January 1st.

The first year the company generated a profit of € 10,000. The profit will be distributed to Karin and Jan according to the proportion of their equity contribution. Karin and Jan decide that the profit will not be paid out to them but that it remains in the company.

Give a specification of the total equity on December 31st.

Exercise 7.2 Profit distribution > section 7.2 Equity in Companies with a Legal Entity Status

The share capital of a company organizing events amounts to € 20,000,000, consisting of 200,000 shares with a par value of € 100 per share. The share capital has been fully paid-up.

At the time the company was established it has been decided that the shareholders will receive 4% primary dividend. Of the remaining surplus profit 50% will be retained in the company and 50% will be paid to the shareholders.

Profit after tax for the past financial year was € 2,000,000.

- A** Establish the profit distribution after tax.
- B** Calculate the dividend percentage that the shareholders receive.

Exercise 7.3 Profit distribution > section 7.2 Equity in Companies with a Legal Entity Status

The issued share capital of Travel Far Inc amounts to € 10 million, consisting of 1.000.000 shares with a par value of € 10 per share.

Of this capital € 4 million still needs to be paid.

In the corporation's articles of association, the following has been determined with respect to the profit distribution:

- The shareholders receive 5% primary dividend.
- Of the remaining profit 40% is retained and 60% is paid to the shareholders.

Profit after tax for the past financial year was € 1.5 million.

- A** Establish the profit distribution for the past financial year.
- B** Calculate the dividend percentage that the shareholders receive.

Exercise 7.4 Profit distribution > section 7.2 Equity in Companies with a Legal Entity Status

The profit distribution of SBRM Inc. is as follows:

- The preferred shareholders receive 10% primary dividend;
- The common shareholders receive 5% primary dividend;
- Of the surplus profit 40% will be added to the retained earnings, 20% will be paid to the preferred shareholders, the remaining 40% will be paid to the common shareholders.

Profit before tax amounts to € 600,000. The tax rate is 20%.

There are 20.000 common shares issued with a par value of € 50 per share and 4.000 preferred shares with a par value of € 25 per share. The preferred and the common share capital have both been fully paid-up.

- A** Establish the profit distribution after tax.
- B** Calculate the dividend percentage that the common shareholders receive.

Exercise 7.5 > section 7.3 Share Value

The equity of ABC Inc. is composed as follows:

Share capital	€ 30,000,000
Reserves	<u>€ 6,000,000</u>
Equity	€ 36,000,000

Number of shares issued: 3,000,000.

- A** Calculate the par value per share.
- B** Calculate the net asset value per share.

Exercise 7.6 > section 7.4 Reserves

Of a company the following specification of the equity is provided:

Equity	January 1 st	December 31 st
Share capital	600,000	X
Share premium reserve	200,000	Y
Retained earnings	300,000	400,000
Revaluation reserve	<u>100,000</u>	<u>150,000</u>
	1,200,000	Z

A On January 1st 15,000 shares were issued in total. Calculate the par value per share.

On July 1st 2,000 new shares were issued against a price of €60 per share.

- B** Calculate the share capital on December 31st.
- C** Calculate the share premium per share of the new shares issued on July 1st.
- D** Calculate the share premium reserve on December 31st.
- E** Explain the increase of the retained earnings.
- F** Explain the increase of the revaluation reserve.

Exercise 7.7

Of a Corporation the following abridged balance sheet before profit distribution is provided:

Balance sheet per December 31 st (amounts x € 1,000) before profit distribution			
Fixed Assets	2,500	Share capital	2,000
		Reserves	300
Accounts Receivable	200	Profit after tax	700
Bank	<u>900</u>	Liabilities	<u>600</u>
	3,600		3,600

The par value per share is € 10. The share capital is fully paid-up.

From the profit after tax shareholders receive a primary dividend of 10%.

Of the profit after deduction of the primary dividend 20% is added to the reserves (retained earnings), the employees receive a profit payment of € 50,000 and the remaining profit will be paid to the shareholders as secondary dividend.

- A** Calculate the dividend percentage the shareholders receive.
- B** Draw up the balance sheet after profit distribution. Copy the balance sheet items above and fill out the amount after profit distribution for each item.
- C** Calculate the net asset value per share *before* as well as *after* profit distribution.

Exercise 7.8

The board of directors of a company quoted at the stock market composes a proposal for the profit (after tax) distribution of the past financial year for the annual general meeting of shareholders. The following is stated in the articles of association of this Corporation regarding the profit distribution.

- The preferred shareholders receive a dividend of € 0.10 per share.
- The common shareholders receive 5% primary dividend.

If any profit is left over then the following applies:

- The remaining profit will be distributed 50%/50% between the common shareholders and the retained earnings of the company.

The preferred shares have a par value of €5 per share.

The par value of a common share amounts to €10.

The preferred and the common share capital have both been fully paid-up.

Balance sheet per December 31st

	Dec 31 st		Dec 31 st
Fixed assets	4,000,000	Equity	
		Common share capital	800,000
		Preferred share capital	200,000
		Share premium reserve	200,000
		Revaluation reserve	150,000
		Retained earnings	100,000
		Profit to be distributed	300,000
Current assets	1,400,000	Liabilities	3,650,000
Total	5,400,000	Total	5,400,000

- A** Establish the profit distribution.
- B** Calculate the dividend per common share.
- C** Management considers to pay out dividend as stock dividend instead of cash. Provide a plausible argument to change the dividend policy in this way.

After the dividend has been paid out the common share capital is increased by 10,000 shares at an issue price of € 25 per share.

- D** Which balance sheet item(s) on the equity and liability section will be affected by this share issue and by what amount?

The value of the buildings are adjusted from the historical value to the much higher market value.

This concerns an increase in the value of the properties by € 250,000.

- E** Which balance sheet item(s) will be affected by this value increase and by what amount?

In September of the next year the company pays € 100,000 interim dividend on common shares out of the retained earnings: € 40,000 as cash dividend and € 60,000 as stock dividend.

F Which balance sheet item(s) will be affected by this and by what amount?

Exercises Chapter 8: Liabilities

Exercise 8.1 > section 8.3 Bonds

A company has as part of the liabilities a convertible bond loan of € 200,000 reported on its balance sheet. The conversion price amounts to € 10 per share. The shares have a par value of € 10 per share. The bond loan will be converted for its full amount.

- A Calculate the increase of the number of shares issued.
- B Which balance sheet item(s) will be affected by this and by what amount?

Exercise 8.2 Trade credit > section 8.4 Current Liabilities

An entrepreneur will always try to reduce the amount of accounts receivable. The company can influence this with its terms of payment. With the customer the following terms of payment have been agreed upon: in case of payment within 8 days you may deduct 1.5% of the invoiced amount. If payment is not done within 8 days then payment is due within 45 days.

Calculate the cost of the supplier's credit on an annual basis.

Exercise 8.3 Trade credit > section 8.4 Current Liabilities

A hotel entrepreneur receives an invoice of € 1.500 for the purchase of office furniture. The supplier grants him a discount if payment takes place within 10 days. On the invoice is stated: *"Payment is due within 30 days. In case of payment within 10 days you'll receive 1% discount. This discount may be deducted from the invoice amount."*

- A If the hotel entrepreneur makes use of the trade credit, what are the costs of this credit in euro?
- B A line of credit from the bank will cost the hotel entrepreneur 14% on an annual basis.
Which credit is cheaper: the trade credit or the line of credit?

Exercise 8.4 Trade credit > section 8.4 Current Liabilities

A supplier delivers goods for an amount of € 3,000.

On the invoice is stated that the payment term is 30 days. In case of payment within 10 days the client receives a discount of 1.5%.

- A Calculate the amount the client may deduct from the invoice amount if he pays within 10 days.
- B Calculate the cost of the trade credit on an annual basis.

Exercise 8.5 Provisions > section 8.6

A hotel owner has a dispute in 2020 with one of his employees. The employee is fired and demands a compensation of € 10,000. The hotel owner is at first not willing to pay the compensation, but from a point of view of prudence he creates a provision.

Indicate for each of the following events for which amount the balance sheet, the income statement and the cash flow overview is affected in the respective year:

- A** The creation of the provision in 2020.
- B** In 2021 a legal court definitely establishes the compensation on € 8,000. The hotel owner pays this amount in 2021.

Exercises Chapter 9: Assessment of the financial structure

ALSO SEE THE EXERCISES CHAPTER 9 IN THE IBEE TIO EXERCISE BOOKLET

Exercise 9.1 > section 9.2 Profitability Ratios

Underneath please find the balance sheet (per December 31st, amounts in euro) and the income statement (amounts in euro) of biscuit wholesale trader Bakker.

Balance sheet	2019	2020		2019	2020
Equipment	110,000	128,000	Equity	180,000	210,000
Inventory	130,000	140,000	Bank loan	65,000	57,000
Accounts Receivable	15,000	18,000	Accounts Payable	45,000	35,000
Bank	<u>35,000</u>	<u>16,000</u>			
	290,000	302,000		290,000	302,000

Income statement 2020

Revenue	1,200,000
Cost of goods sold	<u>970,000</u>
Gross margin	230,000
Operating costs	<u>185,000</u>
Operating income (EBIT)	45,000
Interest	<u>6,000</u>
Profit before tax	39,000
Tax	<u>9,000</u>
Net Profit	30,000

- A** Calculate the average total assets.
- B** Calculate the average invested equity.
- C** Calculate the average debt.

Calculate the following ratios 2020:

- D** Return on assets (ROA).
- E** Return on equity before tax (ROEbt).
- F** Return on equity after tax (ROEat).
- G** Average cost of debt (ACD).

In 2019 the ratios above were:

ROA: 14.4%
ROEbt: 18.0%
ROEat: 15.0%
ACD: 5.0%

- H** Indicate for each ratio 2020 compared to 2019 whether it has improved or deteriorated. Indicate for each ratio what could be the possible cause of this development.

Exercise 9.2 Return on Equity > section 9.2 Profitability Ratios

Of company Aspen the following information is provided:

Average invested equity: € 1.000.000

Average debt: € 2.000.000

Average interest percentage on debt: 10%

Return on assets: 15%

Tax rate: 20%

A Calculate the net profit (= profit after deduction of interest and tax) of Aspen.

Use the following scheme for your calculation:

Operating income (EBIT)

minus interest

= Profit before tax

minus tax

= Net profit

B Calculate the return on equity before tax van Aspen.

C Calculate the return on equity after tax van Aspen.

D What is the relation between the answers to section B and C ?

Exercise 9.3 Return on assets > section 9.2 Profitability Ratios

The following information is available: a company with an average invested equity of € 2 million, an average debt of € 1 million and an average interest percentage of 5% per year, a profit **after** tax (= net profit) of € 225,000 and a corporate tax rate of 25%.

Calculate the return on assets.

Exercise 9.4 Financial Leverage > section 9.2 Profitability Ratios

Company Bos LLC presents the following information:

The company has an average invested equity of € 5,000,000 and an average debt of € 2,000,000. The profit before tax (after deduction of interest) amounts to 500,000 euro; the interest is € 140,000.

A Calculate the return on equity before tax.

B Calculate the average cost of debt.

C Calculate the return on assets.

D Check the answer to section **A** by calculating the return on equity before tax again using the leverage formula.

This company wants to increase its return on equity before tax by making use of the financial leverage effect. After refinancing the capital structure of the company the average invested equity amounts to € 4,000,000 and the average debt € 3,000,000. The ACD remains the same as calculated in section **B**. Assume that the operating income also remains the same.

- E** Calculate the return on equity before tax after the refinancing using the leverage formula.
- F** Check your calculation in section **E** with the formula as used in answering section **A**.

Exercise 9.5 Solvency > section 9.3 Solvency Ratios

On December 31st, 2021 a company has an amount of total assets of € 800,000, financed by equity amounting to € 480,000 and liabilities € 320,000. The average liabilities are € 300,000. The earnings before interest and tax (EBIT) 2021 amounts to € 60,000. The average cost of debt (ACD) is 5%.

- A** Calculate the debt ratio.
- B** Calculate the interest coverage ratio.

Exercise 9.6 Liquidity > section 9.4 Liquidity Ratios

Aqua Beach, a camping site for water sports, presents the following balance sheet per January 1st

January 1st

Building	1,015,000	Equity	1,000,000
Ground	450,000	4.2% Mortgage	400,000
Harbour fees to be received*	258,500	Provision	125,000
Rabo-bank	20,000	ING-bank (line of credit)	74,300
Cash and cash equivalents	5,800	Accounts payable	150,000
	<hr/>		<hr/>
	1,749,300		1,749,300

*) Harbour fees will be received within 6 months

- A** Calculate the current liabilities per January 1st.
- B** Calculate the current assets per January 1st.
- C** Calculate the current ratio per January 1st.
- D** Calculate the net working capital per January 1st.

Exercise 9.7 Liquidity > section 9.4 Liquidity Ratios

A production company presents the following balance sheet per January 1st:

Balance sheet per January 1 st (amounts x € 1.000)			
Buildings	7,500	Share capital	10,000
Machines	4,600	Share premium reserve	1,900
Company cars	620	Loan agreement*)	3,000
Inventory	1,990	Bank loan	2,900
Accounts receivable	2,000	Accounts payable	2,100
Cash and cash equivalents	<u>3,190</u>		
	19,900		<u>19,900</u>

*) The loan agreement needs to be repaid after 4 years as a one-off payment for the full amount.

- A** Calculate the current liabilities per January 1st.
- B** Calculate the current assets per January 1st.
- C** Calculate the current ratio per January 1st.
- D** Calculate the acid test ratio per January 1st.

Exercise 9.8 Liquidity and Solvency

Underneath please find the balance sheet (per December 31st, amounts in euro) and a part of the income statement 2020 (amounts in euro) of bicycle wholesale trader Jelle Inc.

Balance sheet		2019	2020			2019	2020
Equipment	2,800,000	2,650,000	Share capital	1,800,000	1,800,000		
Prepaid rent*)	400,000	430,000	Retained earnings	750,000	500,000		
Inventory	700,000	600,000	Bond loan**)	1,000,000	1,000,000		
Accounts receivable	250,000	380,000	Bank loan	500,000	660,000		
Bank	<u>350,000</u>	<u>250,000</u>	Accounts payable	<u>450,000</u>	<u>350,000</u>		
	4,500,000	4,310,000		4,500,000	4,310,000		

*) rent needs to be paid 6 months in advance.

***) the bond loan will be repaid as a one-off payment for the full amount in 2025.

Part of the income statement 2020

EBIT	250,000
Interest	<u>83,000</u>
Profit before tax	167,000
Tax	<u>35,000</u>
Net Profit	132,000

- A** Calculate the debt ratio 2019 and 2020.
- B** Indicate whether the debt ratio 2020 compared to 2019 has improved or deteriorated. Motivate your answer based on changes in the balance sheet 2020 compared to the balance sheet 2019.
- C** Calculate the interest coverage ratio 2020.
- D** The interest coverage ratio 2019 was 3.4. Indicate whether the interest coverage ratio 2020 compared to 2019 has improved or deteriorated. What does this mean for the extent to which the company can fulfil its obligation to pay the interest?
- E** Calculate the current ratio 2020.
- F** Calculate the acid test ratio 2019 and 2020.
- G** Indicate whether the acid test ratio 2020 compared to 2019 has improved or deteriorated. Motivate your answer based on changes in the balance sheet 2020 compared to the balance sheet 2019.

Exercise 9.9 Liquidity and Solvency

The finance director of a production company presents the following balance sheet per January 1st:

Balance sheet per January 1 st (amounts x € 1,000)			
Ground	3,000	Share capital	9,000
Buildings	4,000	Retained earnings	3,000
Machines	6,000	Loan agreement *)	9,000
Inventory raw materials	7,000	Line of credit	5,000
Inventory finished goods	2,000	Accounts payable	3,000
Accounts receivable	6,000		
Cash and cash equivalents	<u>1,000</u>		
	29,000		<u>29,000</u>

*) The loan agreement needs to be repaid after eight years as a one-off payment for the full amount.

The director is interested in the liquidity and solvency of the company.

- A** What is meant by the liquidity of a company?
- B** What is meant by the solvency of a company?
- C** Calculate the debt ratio
- D** Calculate the current ratio.
- E** Calculate the net working capital.
- F** Calculate the acid test ratio.

The company purchases raw materials for an amount of € 200,000 and pays these using the line of credit.

- G** Which balance sheet item(s) will be affected by this purchase and by what amount?
- H** What is the effect of this purchase on the net working capital (improved, remains the same or deteriorated)? Motivate your answer based on changes that occurred in the balance sheet.
- I** What is the effect of this purchase on the acid test ratio (improved, remains the same or deteriorated)? Motivate your answer based on changes that occurred in the balance sheet.