CHAPTER 16
FINANCING CURRENT ASSETS

(Difficulty: E = Easy, M = Medium, and T = Tough)

Multiple Choice: Conceptual

Easy:

Current asset financing policy **Answer: a Diff: E**

1. Firms generally choose to finance temporary assets with short-term debt because

   a. Matching the maturities of assets and liabilities reduces risk.
   b. Short-term interest rates have traditionally been more stable than long-term interest rates.
   c. A firm that borrows heavily long-term is more apt to be unable to repay the debt than a firm that borrows heavily short-term.
   d. The yield curve has traditionally been downward sloping.
   e. Sales remain constant over the year, and financing requirements also remain constant.

Current asset financing **Answer: e Diff: E N**

2. Which of the following statements is most correct?

   a. Permanent current assets are those current assets that must be increased when sales increase during an upswing.
   b. Temporary current assets are those current assets on hand at the low point of the business cycle.
   c. Maturity matching is considered an aggressive financing policy.
   d. An aggressive current asset financing policy uses a minimum amount of short-term debt.
   e. None of the statements above is correct.

Commercial paper **Answer: d Diff: E**

3. Which of the following statements concerning commercial paper is incorrect?

   a. Commercial paper is generally written for terms less than 270 days.
   b. Commercial paper generally carries an interest rate below the prime rate.
   c. Commercial paper is sold to money market mutual funds, as well as to other financial institutions and nonfinancial corporations.
   d. Commercial paper can be issued by virtually any firm so long as it is willing to pay the going interest rate.
   e. Commercial paper is a type of unsecured promissory note issued by large, strong firms.

Working capital financing **Answer: e Diff: E**

4. Which of the following statements is most correct?

   a. Trade credit is provided to a business only when purchases are made.
   b. Commercial paper is a form of short-term financing that is primarily used by large, financially stable companies.
   c. Short-term debt, while often cheaper than long-term debt, exposes a firm to the potential problems associated with rolling over loans.
   d. Statements b and c are correct.
   e. All of the statements above are correct.

Working capital financing **Answer: a Diff: E**

5. Which of the following statements is incorrect?

   a. Commercial paper can be issued by virtually any firm so long as it is willing to pay the going interest rate.
   b. Accrued liabilities represent a source of "free" financing in the sense that no explicit interest is paid on these funds.
   c. A conservative approach to working capital will result in all permanent assets being financed using long-term securities.
   d. The risk to the firm of borrowing with short-term credit is usually greater than with long-term debt. Added risk can stem from greater variability of interest costs on short-term debt.
   e. Trade credit is often the largest source of short-term credit.

Medium:

Working capital financing policy **Answer: c Diff: M**

6. Ski Lifts Inc. is a highly seasonal business. The following summary balance sheet provides data for peak and off-peak seasons (in thousands of dollars):

	Peak	Off-peak
Cash	$ 50	$ 30
Marketable securities	0	20
Accounts receivable	40	20
Inventories	100	50
Net fixed assets	500	500
Total assets	$690	$620
Spontaneous liabilities	$ 30	$ 10
Short-term debt	50	0
Long-term debt	300	300
Common equity	310	310
Total claims	$690	$620

From this data we may conclude that

a. Ski Lifts has a working capital financing policy of exactly matching asset and liability maturities.
b. Ski Lifts' working capital financing policy is relatively aggressive; that is, the company finances some of its permanent assets with short-term discretionary debt.
c. Ski Lifts follows a relatively conservative approach to working capital financing; that is, some of its short-term needs are met by permanent capital.
d. Without income statement data, we cannot determine the aggressiveness or conservatism of the company's working capital financing policy.
e. Statements a and c are correct.

Working capital financing policy **Answer: b Diff: M**

7. Which of the following statements is most correct?

a. Net working capital may be defined as current assets minus current liabilities. Any increase in the current ratio will automatically lead to an increase in net working capital.
b. Although short-term interest rates have historically averaged less than long-term rates, the heavy use of short-term debt is considered to be an aggressive strategy because of the inherent risks of using short-term financing.
c. If a company follows a policy of "matching maturities," this means that it matches its use of common stock with its use of long-term debt as opposed to short-term debt.
d. All of the statements above are correct.
e. None of the statements above is correct.

Working capital financing policy **Answer: c Diff: M**

8. Which of the following statements is most correct?

a. Accrued liabilities are an expensive way to finance working capital.
b. A conservative financing policy is one in which the firm finances all of its fixed assets with long-term capital and part of its permanent current assets with short-term, nonspontaneous credit.
c. If a company receives trade credit under the terms 2/10 net 30, this implies the company has 10 days of free trade credit.
d. Statements a and b are correct.
e. None of the answers above is correct.

Short-term financing **Answer: a Diff: M**

9. Which of the following statements is most correct?

a. Under normal conditions, a firm's expected ROE would probably be higher if it financed with short-term rather than with long-term debt, but the use of short-term debt would probably increase the firm's risk.
b. Conservative firms generally use no short-term debt and thus have zero current liabilities.
c. A short-term loan can usually be obtained more quickly than a long-term loan, but the cost of short-term debt is likely to be higher than that of long-term debt.
d. If a firm that can borrow from its bank buys on terms of 2/10, net 30, and if it must pay by Day 30 or else be cut off, then we would expect to see zero accounts payable on its balance sheet.
e. If one of your firm's customers is "stretching" its accounts payable, this may be a nuisance but does not represent a real financial cost to your firm as long as the firm periodically pays off its entire balance.

Short-term versus long-term financing **Answer: d Diff: M**

10. Which of the following statements is most correct?

a. Under normal conditions the shape of the yield curve implies that the interest cost of short-term debt is greater than that of long-term debt, although short-term debt has other advantages that make it desirable as a financing source.
b. Flexibility is an advantage of short-term credit but this is somewhat offset by the higher flotation costs associated with the need to repeatedly renew short-term credit.
c. A short-term loan can usually be obtained more quickly than a long-term loan but the penalty for early repayment of a short-term loan is significantly higher than for a long-term loan.
d. Statements about the flexibility, cost, and riskiness of short-term versus long-term credit are dependent on the type of credit that is actually used.
e. Short-term debt is often less costly than long-term debt and the major reason for this is that short-term debt exposes the borrowing firm to much less risk than long-term debt.

Choosing a bank **Answer: e Diff: M**

11. Which one of the following aspects of banks is considered most relevant to businesses when choosing a bank?

    a. Convenience of location.
    b. Competitive cost of services provided.
    c. Size of the bank's deposits.
    d. Experience of personnel.
    e. Loyalty and willingness to assume lending risks.

Multiple Choice: Problems

Easy:

Maturity matching **Answer: e Diff: E**

12. Wildthing Amusement Company's total assets fluctuate between $320,000 and $410,000, while its fixed assets remain constant at $260,000. If the firm follows a maturity matching or moderate working capital financing policy, what is the likely level of its long-term financing?

    a. $ 90,000
    b. $260,000
    c. $350,000
    d. $410,000
    e. $320,000

Cost of trade credit **Answer: a Diff: E R**

13. A firm is offered trade credit terms of 3/15, net 45 days. The firm does not take the discount, and it pays after 67 days. What is the nominal annual cost of not taking the discount? (Assume a 365-day year.)

    a. 21.71%
    b. 22.07%
    c. 22.95%
    d. 23.48%
    e. 24.52%

Cost of trade credit **Answer: d Diff: E R**

14. Dixie Tours Inc. buys on terms of 2/15, net 30 days. It does not take discounts, and it typically pays 35 days after the invoice date. Net purchases amount to $720,000 per year. What is the nominal annual cost of its non-free trade credit? (Assume a 365-day year.)

    a. 17.2%
    b. 23.6%
    c. 26.1%
    d. 37.2%
    e. 50.6%

Cost of trade credit **Answer: b Diff: E R**

15. Your company has been offered credit terms on its purchases of 4/30, net 90 days. What will be the nominal annual cost of trade credit if your company pays on the 35th day after receiving the invoice? (Assume a 365-day year.)

a. 30%
b. 304%
c. 3%
d. 87%
e. 156%

Free trade credit **Answer: a Diff: E R**

16. Phillips Glass Company buys on terms of 2/15, net 30 days. It does not take discounts, and it typically pays 30 days after the invoice date. Net purchases amount to $730,000 per year. On average, how much "free" trade credit does Phillips receive during the year? (Assume a 365-day year.)

a. $30,000
b. $40,000
c. $50,000
d. $60,000
e. $70,000

Free trade credit **Answer: b Diff: E N**

17. HBC Inc. buys on terms of 2/10, net 30 days. It does not take discounts, and it typically pays 30 days after the invoice date. Net purchases amount to $1,750,000 per year. On average, how much "free" trade credit does HBC receive during the year? (Assume a 365-day year.)

a. $25,293.45
b. $47,945.21
c. $68,651.33
d. $75,000.00
e. $95,890.42

Nominal interest rate **Answer: d Diff: E**

18. Coverall Carpets Inc. is planning to borrow $12,000 from the bank. The bank offers the choice of a 12 percent discount interest loan or a 10.19 percent add-on, 1-year installment loan, payable in 4 equal quarterly payments. What is the approximate (nominal) rate of interest on the 10.19 percent add-on loan?

a. 5.10%
b. 10.19%
c. 12.00%
d. 20.38%
e. 30.57%

Discount interest face value **Answer: c Diff: E**

19. Picard Orchards requires a $100,000 annual loan in order to pay laborers to tend and harvest its fruit crop. Picard borrows on a discount interest basis at a nominal annual rate of 11 percent. If Picard must actually receive $100,000 net proceeds to finance its crop, then what must be the face value of the note?

a. $111,000
b. $100,000
c. $112,360
d. $ 89,000
e. $108,840

Discount interest face value **Answer: a Diff: E**

20. Viking Farms harvests crops in roughly 90-day cycles based on a 360-day year. The firm receives payment from its harvests sometime after shipment. Due in part to the firm's rapid growth, it has been borrowing to finance its harvests using 90-day bank notes on which the firm pays 12 percent discount interest. If the firm requires $60,000 in proceeds from each note, what must be the face value of each note?

a. $61,856
b. $67,531
c. $60,000
d. $68,182
e. $67,423

Revolving credit agreement cost **Answer: b Diff: E**

21. Inland Oil arranged a $10,000,000 revolving credit agreement with a group of small banks. The firm paid an annual commitment fee of one-half of one percent of the unused balance of the loan commitment. On the used portion of the loan, Inland paid 1.5 percent above prime for the funds actually borrowed on an annual, simple interest basis. The prime rate was at 9 percent for the year. If Inland borrowed $6,000,000 immediately after the agreement was signed and repaid the loan at the end of one year, what was the total dollar cost of the loan agreement for one year?

a. $560,000
b. $650,000
c. $540,000
d. $900,000
e. $675,000

Medium:

Accounts payable balance **Answer: e Diff: M R**

22. Your firm buys on credit terms of 2/10, net 45 days, and it always pays on Day 45. If you calculate that this policy effectively costs your firm $159,621 each year, what is the firm's average accounts payable balance? (Hint: Use the nominal cost of trade credit and carry its cost out to 6 decimal places.)

a. $1,234,000
b. $ 75,000
c. $ 157,500
d. $ 625,000
e. $ 750,000

EAR cost of trade credit **Answer: e Diff: M R**

23. Suppose the credit terms offered to your firm by your suppliers are 2/10, net 30 days. Out of convenience, your firm is not taking discounts, but is paying after 20 days, instead of waiting until Day 30. You point out that the nominal cost of not taking the discount and paying on Day 30 is approximately 37 percent. But since your firm is not taking discounts and is paying on Day 20, what is the effective annual cost of your firm's current practice, using a 365-day year?

a. 36.7%
b. 105.4%
c. 73.4%
d. 43.6%
e. 109.0%

EAR cost of trade credit **Answer: e Diff: M R**

24. Hayes Hypermarket purchases $4,562,500 in goods over a 1-year period from its sole supplier. The supplier offers trade credit under the following terms: 2/15, net 50 days. If Hayes chooses to pay on time but not to take the discount, what is the average level of the company's accounts payable, and what is the effective annual cost of its trade credit? (Assume a 365-day year.)

a. $208,333; 17.81%
b. $416,667; 17.54%
c. $416,667; 27.43%
d. $625,000; 17.54%
e. $625,000; 23.45%

EAR cost of trade credit **Answer: d Diff: M N**

25. A firm is offered trade credit terms of 3/15, net 30 days. The firm does not take the discount, and it pays after 50 days. What is the effective annual cost of not taking this discount? (Assume a 365-day year.)

a. 44.30%
b. 32.25%
c. 30.00%
d. 37.39%
e. 45.50%

EAR cost of trade credit **Answer: d Diff: M R**

26. A firm is offered trade credit terms of 2/8, net 45 days. The firm does not take the discount, and it pays after 58 days. What is the effective annual cost of not taking this discount? (Assume a 365-day year.)

a. 21.63%
b. 13.35%
c. 14.90%
d. 15.89%
e. 18.70%

EAR discount loan **Answer: d Diff: M**

27. Coverall Carpets Inc. is planning to borrow $12,000 from the bank. The bank offers the choice of a 12 percent discount interest loan or a 10.19 percent add-on, 1-year installment loan, payable in 4 equal quarterly payments. What is the effective rate of interest on the 12 percent discount loan?

a. 10.7%
b. 12.0%
c. 12.5%
d. 13.6%
e. 14.1%

EAR discount/compensating balance loan **Answer: d Diff: M**

28. Suppose you borrow $2,000 from a bank for one year at a stated annual interest rate of 14 percent, with interest prepaid (a discounted loan). Also, assume that the bank requires you to maintain a compensating balance equal to 20 percent of the initial loan value. What effective annual interest rate are you being charged?

a. 14.00%
b. 8.57%
c. 16.28%
d. 21.21%
e. 28.00%

EAR discount/compensating balance loan **Answer: b Diff: M**

29. Wentworth Greenery harvests its crop four times annually and receives payment 90 days after it is picked and shipped. However, the firm must plant, irrigate, and harvest on a near continual schedule. The firm uses 90-day bank notes to finance its operations. The firm arranges an 11 percent discount interest loan with a 20 percent compensating balance four times annually. What is the effective annual interest rate of these discount loans?

a. 11.00%
b. 15.94%
c. 11.46%
d. 13.75%
e. 12.72%

EAR add-on installment loan **Answer: d Diff: M**

30. Matheson Manufacturing Inc. is planning to borrow $12,000 from the bank. The bank offers the choice of a 12 percent discount interest loan or a 10.19 percent add-on, 1-year installment loan, payable in 4 equal quarterly payments. What is the effective rate of interest on the 10.19 percent add-on loan?

a. 9.50%
b. 10.19%
c. 15.22%
d. 16.99%
e. 22.05%

EAR add-on installment loan **Answer: c Diff: M**

31. XYZ Company needs to borrow $200,000 from its bank. The bank has offered the company a 12-month installment loan (monthly payments) with 9 percent add-on interest. What is the effective annual rate (EAR) of this loan?

a. 16.22%
b. 17.97%
c. 17.48%
d. 18.67%
e. 18.00%

EAR monthly loan **Answer: e Diff: M**

32. First National Bank of Micanopy has offered you the following loan alternatives in response to your request for a $75,000, 1-year loan.

Alternative 1: 7 percent discount interest, with a 10 percent compensating balance.

Alternative 2: 8 percent simple interest, with interest paid monthly.

What is the effective annual rate on the cheaper loan?

a. 8.00%
b. 7.23%
c. 7.67%
d. 8.43%
e. 8.30%

EAR short-term financing **Answer: e Diff: M**

33. The Lasser Company needs to finance an increase in its working capital for the coming year. Lasser is reviewing the following three options: (1) The firm can borrow from its bank on a simple interest basis for one year at 13 percent. (2) It can borrow on a 3-month, but renewable, loan at a 12 percent nominal rate. The loan is a simple interest loan, completely paid off at the end of each quarter, then renewed for another quarter. (3) The firm can increase its accounts payable by not taking discounts. Lasser buys on credit terms of 1/30, net 60 days. What is the effective annual cost (not the nominal cost) of the least expensive type of credit, assuming 360 days per year?

a. 13.00%
b. 12.82%
c. 11.46%
d. 12.12%
e. 12.55%

EAR short-term financing **Answer: c Diff: M**

34. You need to borrow $25,000 for one year. Your bank offers to make the loan, and it offers you three choices: (1) 15 percent simple interest, annual compounding; (2) 13 percent nominal interest, daily compounding (360-day year); (3) 9 percent add-on interest, 12 end-of-month payments. The first two loans would require a single payment at the end of the year, the third would require 12 equal monthly payments beginning at the end of the first month. What is the difference between the highest and lowest effective annual rates?

a. 1.12%
b. 2.48%
c. 3.60%
d. 4.25%
e. 5.00%

Costly trade credit **Answer: a Diff: M R**

35. Phranklin Pharms Inc. purchases merchandise from a company that gives sales terms of 2/15, net 40 days. Phranklin Pharms has gross purchases of $819,388 per year. What is the maximum amount of costly trade credit Phranklin could get, assuming it abides by the supplier's credit terms? (Assume a 365-day year.)

a. $88,000
b. $33,000
c. $55,000
d. $50,000
e. $44,000

Stretching accounts payable **Answer: e Diff: M R**

36. C+ Notes' business is booming, and it needs to raise more capital. The company purchases supplies from a single supplier on terms of 1/10, net 20 days, and it currently takes the discount. One way of getting the needed funds would be to forgo the discount, and C+'s owner believes she could delay payment to 40 days without adverse effects. What is the effective annual rate of stretching the accounts payable?

a. 10.00%
b. 11.11%
c. 11.75%
d. 12.29%
e. 13.01%

Permanent assets financing **Answer: c Diff: M R**

37. Wicker Corporation is determining whether to support $100,000 of its permanent current assets with a bank note or a short-term bond. The firm's bank offers a two-year note for which the firm will receive $100,000 and repay $118,810 at the end of two years. The firm has the option to renew the loan at market rates. Alternatively, Wicker can sell 8.5 percent annual coupon bonds with a 2-year maturity and $1,000 par value at a price of $973.97. How many percentage points lower is the interest rate on the less expensive debt instrument?

a. 0.0%
b. 1.2%
c. 1.0%
d. 1.8%
e. 0.6%

Tough:

Accounts payable balance **Answer: d Diff: T N**

38. Dalrymple Grocers buys on credit terms of 2/10, net 30 days, and it always pays on the 30th day. Dalrymple calculates that its annual costly trade credit is $375,000. What is the firm's average accounts payable balance? Assume a 365-day year.

a. $187,475
b. $374,951
c. $223,333
d. $562,426
e. $457,443

Financial statements and trade credit **Answer: d Diff: T R**

39. Quickbow Company currently uses maximum trade credit by not taking discounts on its purchases. Quickbow is considering borrowing from its bank, using notes payable, in order to take trade discounts. The firm wants to determine the effect of this policy change on its net income. The standard industry credit terms offered by all its suppliers are 2/10, net 30 days, and Quickbow pays in 30 days. Its net purchases are $11,760 per day, using a 365-day year. The interest rate on the notes payable is 10 percent and the firm's tax rate is 40 percent. If the firm implements the plan, what is the expected change in Quickbow's net income?

a. -$23,520
b. -$31,440
c. +$23,520
d. +$38,448
e. +$69,888

DSO and the cost of trade credit **Answer: e Diff: T**

40. Leiner Corp. is a retailer that finances its purchases with trade credit under the following terms: 1/10, net 30 days. The company plans to take advantage of the free trade credit that is offered. After all the free trade credit is used, the company can either finance the clothing purchases with a bank loan that has an effective rate of 10.1349 percent (on a 365-day year), or the firm can continue to use trade credit.

The company has an understanding with its suppliers that within moderation, it is all right to "stretch out" its payments beyond 30 days without facing any additional financing costs. Therefore, the longer it takes the company to pay its suppliers, the lower the cost of trade credit. How many days would the firm wait to pay its suppliers in order for the cost of the trade credit to equal the cost of the bank loan?

a. 30 days
b. 36 days
c. 40 days
d. 46 days
e. 48 days

EAR short-term financing **Answer: d Diff: T**

41. Judy's Fashions Inc. purchases supplies from a single supplier on terms of 1/10, net 20. Currently, Judy takes the discount, but she believes she could extend the payment to 40 days without any adverse effects if she decided not to take the discount. Judy needs an additional $50,000 to support an expansion of fixed assets. This amount could be raised by making greater use of trade credit or by arranging a bank loan. The banker has offered to loan the money at 12 percent discount interest. Additionally, the bank requires an average compensating balance of 20 percent of the loan amount. Judy already has a commercial checking account at this bank that could be counted toward the compensating balance, but the required compensating balance amount is twice the amount that Judy would otherwise keep in the account. Which of the following statements is most correct?

    a. The nominal cost of using additional trade credit is 36 percent.
    b. Considering only the explicit costs, Judy should finance the expansion with the bank loan.
    c. The cost of expanding trade credit using the nominal formula is less than the cost of the bank loan. However, the true cost of the trade credit when compounding is considered is greater than the cost of the bank loan.
    d. The effective cost of the bank loan is decreased from 17.65 percent to 15.38 percent because Judy would hold a cash balance of one-half the compensating balance amount even if the loan were not taken.
    e. If Judy had transaction balances that exceeded the compensating balance requirement, the effective cost of the bank loan would be 12.00 percent.

Multiple Part:

(The following data apply to the next two problems.)

You have just taken out a loan for $75,000. The stated (simple) interest rate on this loan is 10 percent, and the bank requires you to maintain a compensating balance equal to 15 percent of the initial face amount of the loan. You currently have $20,000 in your checking account, and you plan to maintain this balance. The loan is an add-on installment loan that you will repay in 12 equal monthly installments, beginning at the end of the first month.

Add-on loan payments **Answer: e Diff: E**

42. How large are your monthly payments?

    a. $6,250
    b. $7,000
    c. $7,500
    d. $5,250
    e. $6,875

Nominal add-on interest rate **Answer: d Diff: E**

43. What is the nominal annual add-on interest rate on this loan?

a. 10.00%
b. 16.47%
c. 18.83%
d. 20.00%
e. 24.00%

CHAPTER 16
ANSWERS AND SOLUTIONS

1. Current asset financing policy **Answer: a Diff: E**

2. Current asset financing **Answer: e Diff: E N**

The correct answer is statement e. The definitions for permanent and temporary current assets have been reversed. Statement a is the definition of temporary current assets, while statement b is the definition of permanent current assets. Statement c is incorrect because maturity matching is considered a conservative financing policy. Statement d is also incorrect because an aggressive current asset financing policy uses the greatest amount of short-term debt.

3. Commercial paper **Answer: d Diff: E**

4. Working capital financing **Answer: e Diff: E**

5. Working capital financing **Answer: a Diff: E**

Statement a is incorrect, and therefore the right answer. Commercial paper is a type of unsecured promissory note issued by large, strong firms. Statements b, c, d, and e are all accurate statements.

6. Working capital financing policy **Answer: c Diff: M**

7. Working capital financing policy **Answer: b Diff: M**

8. Working capital financing policy **Answer: c Diff: M**

Statement b illustrates an aggressive financing policy, not a conservative one.

9. Short-term financing **Answer: a Diff: M**

Under normal conditions the yield curve is upward sloping, thus, short-term interest rates are lower than long-term interest rates. Consequently, a firm financing with short-term debt will pay less interest than a firm financing with long-term debt--increasing its ROE. However, a firm increases its risk by financing with short-term debt because such debt must be "rolled over" frequently, and the firm is exposed to the volatility of short-term rates. The other statements are false.

10. Short-term versus long-term financing **Answer: d Diff: M**

11. Choosing a bank **Answer: e Diff: M**

12. Maturity matching **Answer: e Diff: E**

A maturity matching policy implies that fixed assets and permanent current assets are financed with long-term sources. Thus, since the minimum balance that total assets approach is $320,000, and $260,000 of that balance is fixed assets, permanent current assets equal $60,000. The likely level of long-term financing is $320,000.

Long-term debt financing = Permanent cash assets + Fixed assets.

Permanent cash assets = Low end of total assets - Fixed assets
= $320,000 - $260,000 = $60,000.

Long-term debt financing = $60,000 + $260,000 = $320,000.

13. Cost of trade credit **Answer: a Diff: E R**

$$\text{Nominal percentage cost} = \frac{3}{97} \times \frac{365}{52} = 21.71\%.$$

14. Cost of trade credit **Answer: d Diff: E R**

$$\text{Nominal percentage cost} = \frac{2}{98} \times \frac{365}{35 - 15} = 37.24\%.$$

15. Cost of trade credit **Answer: b Diff: E R**

$$\text{Nominal percentage cost} = \left(\frac{4}{96}\right)\left(\frac{365}{5}\right) = 3.042 = 304.2\%.$$

16. Free trade credit **Answer: a Diff: E R**

$$\text{Daily purchases} = \frac{\$730{,}000}{365} = \$2{,}000.$$

Free trade credit = $2,000 × 15 = $30,000.

17. Free trade credit **Answer: b Diff: E N**

$$\text{Daily purchases} = \frac{\$1{,}750{,}000}{365} = \$4{,}794.52.$$

Free trade credit = $4,794.52 × 10 = $47,945.21.

18. Nominal interest rate **Answer: d Diff: E**

Total to be repaid = $12,000(1.1019) = $13,222.80.
Interest = $13,222.80 - $12,000 = $1,222.80.

$$\text{Approximate rate}_{\text{Add-on}} = \frac{\$1{,}222.80}{\$12{,}000 / 2} = 0.2038 = 20.38\%.$$

19. Discount interest face value **Answer: c Diff: E**

$$\text{Face value} = \frac{\text{Funds required}}{1.0 - \text{Nominal rate (decimal)}}$$

$$= \frac{\$100,000}{1.0 - 0.11} = \frac{\$100,000}{0.89} = \$112,359.55 \approx \$112,360.$$

20. Discount interest face value **Answer: a Diff: E**

Convert the annual rate to a periodic rate (quarterly) in the denominator of the face value formula:

$$\text{Face value} = \frac{\text{Funds required}}{1.0 - \text{Nominal rate} \_ 90/360}$$

$$= \frac{\$60,000}{1.0 - 0.12(0.25)} = \frac{\$60,000}{0.97} = \$61,855.67 \approx \$61,856.$$

21. Revolving credit agreement cost **Answer: b Diff: E**

Interest rate on borrowed funds = 0.09 + 0.015 = 10.5%.

Cost of unused portion:	\$4,000,000 × 0.005 =	\$ 20,000
Cost of used portion:	\$6,000,000 × 0.105 =	630,000
Total cost of loan agreement		\$650,000

22. Accounts payable balance **Answer: e Diff: M R**

$$\text{Approximate percentage cost} = \frac{2}{98} \times \frac{365}{35} = 0.212828.$$

$$\text{Accounts payable} = \frac{\$159,621}{0.212828} = \$750,000.$$

23. EAR cost of trade credit **Answer: e Diff: M R**

Calculate the nominal percentage, which is the nominal annual cost:

$$\text{Nominal cost} = \frac{2}{100 - 2} \times \frac{365 \text{ days}}{20 - 10} = 0.0204 \times 36.5 = 0.7449 \approx 74.5\%.$$

Calculate the effective annual rate (EAR):
Numerical solution:
$\text{EAR} = (1.0204)^{36.5} - 1.0 = 2.0905 - 1.0 = 109.05\% \approx 109\%.$

Financial calculator solution: (EAR)
Inputs: P/YR = 36.5; NOM% = 74.49. Output: EFF% = 109%.

24. EAR cost of trade credit **Answer: e Diff: M R**

The company pays every 50 days or 365/50 = 7.3 times per year. Thus, the average accounts payable are \$4,562,500/7.3 = \$625,000. The effective cost of trade credit can be found as follows:
$\text{EAR} = (1 + 2/98)^{365/35} - 1 = 1.2345 - 1 = 0.2345 = 23.45\%.$

25. EAR cost of trade credit **Answer: d Diff: M N**

Calculate the interest rate per period:
Periodic rate = 3/97 = 3.093%.

Calculate the number of compounding periods:
Number of compounding periods = 365/35 = 10.4286.

Use periodic rate and compounding periods to determine annual nominal rate:
3.093% × 10.4286 = 32.25%.

Calculate EAR:
EAR = $(1 + 3/97)^{365/35} - 1 = (1.03093)^{10.4286} - 1 = 1.37389 - 1 = 37.39\%$.

26. EAR cost of trade credit **Answer: d Diff: M R**

Calculate the interest rate per period:
Periodic rate = 2/98 = 2.04%.

Calculate the number of compounding periods:
Number of compounding periods = 365/50 = 7.30.

Use periodic rate and compounding periods to determine the annual nominal rate
2.04% × 7.3 = 14.90%.

Calculate EAR
EAR = $(1 + 2/98)^{365/50} - 1 = (1.0204)^{7.3} - 1 = 1.1589 - 1 = 0.1589 = 15.89\%$.

27. EAR discount loan **Answer: d Diff: M**

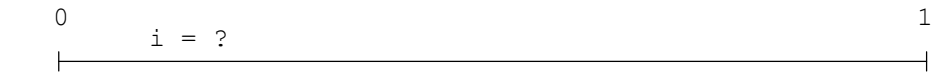
Will receive $12,000.
Face amount of loan = $12,000/(1 - 0.12) = $13,636.36.
Discount interest = 0.12($13,636.36) = $1,636.36.

13,636.36 -13,636.36
- 1,636.36 discount interest
12,000.00

With a financial calculator, enter N = 1; PV = 12000; PMT = 0; FV = -13636.36; and then solve for I/YR = 13.64% ≈ 13.6%.

28. EAR discount/compensating balance loan **Answer: d Diff: M**

Will receive $2,000.
Face amount of loan = $2,000/(1 - 0.14 - 0.20) = $3,030.30.
Discount interest = 0.14($3,030.30) = $424.24.
Compensating balance = 0.20($3,030.30) = $606.06.

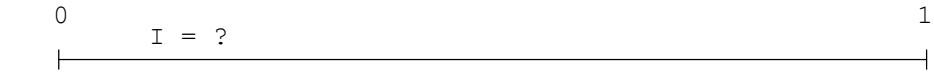


3,030.30		-3,030.30
- 424.24	discount interest	+ 606.06
- 606.06	comp. balance	-2,424.24
2,000.00		

With a financial calculator, enter N = 1; PV = 2000; PMT = 0; FV = -2424.24; and then solve for I/YR = 21.21%.

29. EAR discount/compensating balance loan **Answer: b Diff: M**

Assume firm needs $10,000.
Face amount of loan = $10,000/(1 - 0.11 - 0.20) = $14,492.75.
Discount interest = 0.11($14,492.75) = $1,594.20.
Compensating balance = 0.20($14,492.75) = $2,898.55.



14,492.75		-14,492.75
- 1,594.20	discount interest	+ 2,898.55
- 2,898.55	comp. balance	-11,594.20
10,000.00		

With a financial calculator, enter N = 1; PV = 10000; PMT = 0; FV = -11594.20; and then solve for I/YR = 15.94%.

30. EAR add-on installment loan **Answer: d Diff: M**

Calculate total to be repaid and quarterly payments:
Total to be repaid = $12,000(1.1019) = $13,222.80.
Quarterly payment = $13,222.80/4 = $3,305.70.

Calculate the nominal interest rate per period:
Inputs: N = 4; PV = -12000; PMT = 3305.71; FV = 0. Output: I = 4.0%.
Calculate EAR using periodic rate and interest rate conversion feature:
Nominal annual rate = NOM% = 4 × 4.0% = 16.0%.
Inputs: NOM% = 16; P/YR = 4. Output: EFF% = 16.99%.

31. EAR add-on installment loan **Answer: c Diff: M**

Interest is 9%($200,000) = $18,000. Thus, the face value of the loan is $200,000 + $18,000 = $218,000. Monthly payments are $218,000/12 = $18,166.67.

Calculate the periodic rate as follows:
N = 12; PV = 200000; FV = 0; PMT = -18166.67; and then solve for I/YR = 1.3514%. Convert this to an annual rate: 1.3514% × 12 = 16.2168%. Applying the EAR formula, solve for EAR = $(1 + 0.162168/12)^{12} - 1 = 17.48\%$.

32. EAR monthly loan **Answer: e Diff: M**

Alternative 1:
Face amount of loan = $75,000/(1 - 0.07 - 0.10) = $90,361.45 ≈ $90,361.

90,361	-90,361
- 6,325 discount interest	+ 9,036
- 9,036 comp. balance	-81,325
75,000	

To solve for the loan's effective rate enter N = 1; PV = 75000; PMT = 0; FV = -81325; and then solve for I/YR = 8.43%.

Alternative 2:
EAR = $(1 + 0.08/12)^{12} - 1 = 8.30\%$.

33. EAR short-term financing **Answer: e Diff: M**

(1) Simple interest: 13.0%. EAR = 13.0%.
(2) Renewable loan: The rate on this loan is essentially a 12% nominal annual rate with quarterly compounding.
Inputs: NOM% = 12; P/YR = 4. Output: EFF% = 12.55%.
(3) Trade credit: Terms 1/30, net 60.
Note that the nominal rate is really the rate per period multiplied by the number of periods, or a nominal annual rate.
(1/99)(360/(60 - 30)) = (0.0101)(12) = 12.12% nominal rate.
Inputs: NOM% = 12.12; P/YR = 12. Output: EFF% = 12.82%.

The least expensive type of credit is the quarterly renewable loan at 12.55% effective annual rate.

34. EAR short-term financing **Answer: c Diff: M**

Simple interest: EAR = 15%.
Nominal interest, daily compounding:

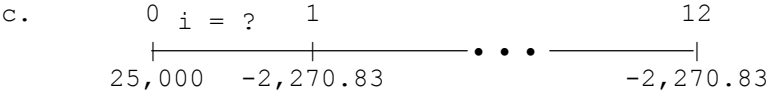
$$EAR = \left(1 + \frac{0.13}{360}\right)^{360} - 1.$$

9% add-on, 12 mos. payments:

a. Total amount to be repaid is $25,000 principal, plus 0.09($25,000) = $2,250 of interest, or $27,250.

b. The monthly payment = $27,250/12 = $2,270.83.

c.



With a financial calculator, enter N = 12; PV = 25000; PMT = -2270.83; and FV = 0 to solve for I = 1.3514%. However, this is a monthly rate.

d. $EAR_{Add\text{-}on} = (1.013514)^{12} - 1 = 17.48\%$.

The difference between the highest and lowest EAR is 17.48% - 13.88% = 3.60%.

35. Costly trade credit **Answer: a Diff: M R**

Phranklin's net purchases are $819,388 × (1 - 0.02) = $803,000. Purchases per day are $803,000/365 = $2,200.00. Total trade credit is 40 × $2,200 = $88,000. Free trade credit is 15 × $2,200 = $33,000. Thus, costly trade credit, assuming discounts are taken, is $88,000 - $33,000 = $55,000. If discounts are not taken, then the maximum amount of costly trade credit is $88,000.

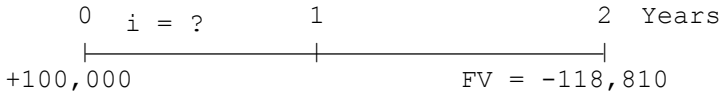
36. Stretching accounts payable **Answer: e Diff: M R**

Accounts payable: (1/99)(365/(40 - 10)) = 12.29%. However, this is a nominal rate. EAR is calculated as follows:
$EAR = (1 + 1/99)^{12.1667} - 1 = 13.01\%$.

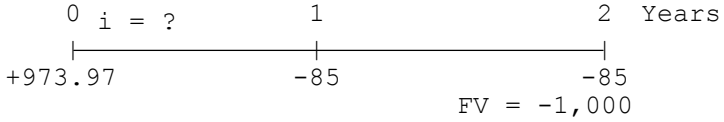
37. Permanent assets financing **Answer: c Diff: M R**

Time lines: Note that the cash flows viewed from the firm's perspective involve inflows at time 0, and repayment of coupon and/or maturity value in the future.

2-year note:



2-year bond:



Note: Inputs: N = 2; PV = 100000; PMT = 0; FV = -118810.
Output: I = 9.0%.

Bond: Inputs: N = 2; PV = 973.97; PMT = -85; FV = -1000.
Output: I = 10.0%.

The difference is 10.0% - 9.0% = 1.0%.

38. Accounts payable balance **Answer: d Diff: T N**

Step 1: Calculate the nominal annual cost of trade credit.

$$\text{Nominal annual cost} = \frac{2}{98} \times \frac{365}{30 - 10}$$
$$= 0.0204 \times 18.25$$
$$= 37.24\%.$$

Step 2: Using the nominal annual cost from Step 1 determine the amount of free trade credit.

$$37.24\% = \frac{\text{Free trade credit}}{\text{Costly trade credit}}$$
$$37.24\% = \frac{\text{Free trade credit}}{\$375{,}000}$$
$$\text{Free trade credit} = \$139{,}650.$$

Step 3: Determine gross and net sales.
$139,650 = Discount, which represents 2% of sales.

$$.02\text{Sales} = \$139{,}650$$
$$\text{Sales} = \$6{,}982{,}500.$$

$$\text{Net sales} = 0.98\text{Sales}$$
$$= 0.98(\$6{,}982{,}500)$$
$$= \$6{,}842{,}850.$$

Step 4: Since accounts payable are shown net of discounts, determine daily sales based on net sales figure. Then multiply this amount by 30 days.

$$\text{Daily net sales} = \frac{\$6{,}842{,}850}{365}$$
$$= \$18{,}747.53.$$

Accounts payable balance = $18,747.53 × 30 = $562,426.03 ≈ $562,426.

39. Financial statements and trade credit **Answer: d Diff: T R**

Calculate A/P with and without taking discounts:
$A/P_{No\ discount}$ = \$11,760 × 30 days = \$352,800.
$A/P_{Discount}$ = \$11,760 × 10 days = \$117,600.

Calculate financing amount in notes payable and interest cost. The firm will need to borrow the difference in notes payable.
\$352,800 - \$117,600 = \$235,200.
The additional interest cost is \$235,200 × 0.10 = \$23,520.

Calculate total purchases and discounts lost:
Total purchases = 365 days × 12,000 gross purchases = \$4,380,000.
Discounts lost = \$4,380,000 × 0.02 = \$87,600.

Construct comparative financial statements:
I. Partial balance sheet:

	Take Discounts (Borrow N/P)	Don't Take Discounts (Use Max. Trade Cdt)	Difference
Accounts payable	\$117,600	\$352,800	-\$235,200
Notes payable (10%)	235,200	-	+235,200
Total current liab.	\$352,800	\$352,800	\$ 0

II. Partial income statement:

EBIT*	\$140,000	\$140,000	\$ 0
Less: Interest	23,520	0	+23,520
Discounts lost	0	87,600	-87,600
EBT	\$116,480	\$ 52,400	+\$ 64,080
Less: Taxes (at 40%)	46,592	20,960	+25,632
Net income	\$ 69,888	\$ 31,440	+\$ 38,448

*Any EBIT can be used, since the difference in EBIT from the two policies is zero.

40. DSO and the cost of trade credit **Answer: e Diff: T**

Determine the number of days the firm would wait to pay its suppliers so that the cost of the trade credit equals the cost of the bank loan:
I/YR = 10.1349; PV = -99; PMT = 0; FV = 100; and then solve for N = 0.1041.

Multiply 0.1041 by 365 to convert it to the number of days per year:
0.1041(365) = 38 days.

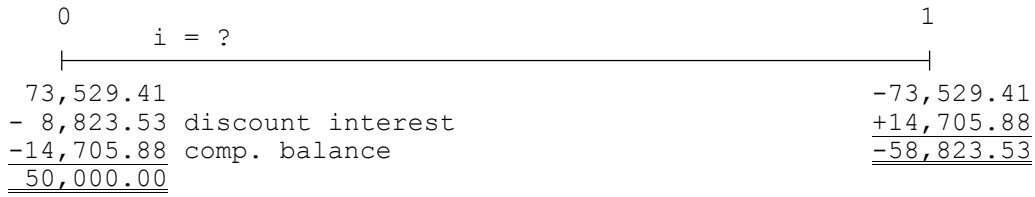
To get the final answer we must add back the initial 10 days of "free" financing. This gives 38 + 10 = 48 days.

41. EAR short-term financing **Answer: d Diff: T**

Bank loan with account: Requires loan of $50,000.
Face amount of loan = $50,000/(1 - 0.12 - 0.10) = $64,102.56.
Discount interest = 0.12($64,102.56) = $7,692.30.
Compensating balance = 0.10($64,102.56) = $6,410.26.

With a financial calculator, enter N = 1; PV = 50000; PMT = 0; FV = -57692.30, and then solve for I/YR = 15.38%.

Bank loan without account: Requires loan of $50,000.
Face amount of loan = $50,000/(1 - 0.12 - 0.20) = $73,529.41.
Discount interest = 0.12($73,529.41) = $8,823.53.
Compensating balance = 0.20($73,529.41) = $14,705.88.



With a financial calculator, enter N = 1; PV = 50000; PMT = 0; FV = -58823.53; and then solve for I/YR = 17.65%.

Trade credit:
Nominal: (1/99)[360/(40 - 10)] = 12.12%.
Effective rate: $(1.0101)^{12} - 1.0 = 12.82\%$.

Calculate the periodic rate and number of compounding periods and use to calculate annual nominal rate:
Periodic rate = 1/99 = 1.01%.
Number of compounding periods = [360/(40 - 10)] = 12.
Annual nominal rate = (1.01%)(12) = 12.12%.

Calculate EAR using interest rate conversion feature:
Inputs: NOM% = 12.12; P/YR = 12. Output: EFF% = EAR = 12.82%.

42. Add-on loan payments **Answer: e Diff: E**

The monthly payments would be:

$$\text{Monthly payment} = \frac{\$75,000 + \$7,500}{12} = \$6,875.$$

43. Nominal add-on interest rate **Answer: d Diff: E**

$$\text{Approximate rate} = \frac{\$7,500}{\$75,000 / 2} = 20\%.$$