c1

Student: _____

1. You invest $800 on May 25, 2007, on what day will you have earned exactly $31.96 of interest if your investment earns simple interest at $r = 6\%$?

   A. August 31, 2007

   B. January 20, 2008

   C. January 23, 2008

   D. January 25, 2008

2. You invest $50,000 today. It earns simple interest at 15% for the first 5 months, 10% for the next 3 months and 12% for the last 2 months. What is the accumulated value at the end of 10 months?

   A. $56,450

   B. $56,250

   C. $55,542

   D. $55,375

3. You buy a stove for $1500 on February 20. The store gives you 4 months "interest free", after which you must pay the $1500. However, the store charges an administration fee of $50, to be paid today. What rate of simple interest, r, are you being charged for this "interest free" plan?

   A. 10.49%

   B. 10.34%

   C. 10.14%

   D. 10.00%

4. You buy some furniture for $600. The department store offers you "no interest for 8 months" after which you can pay the $600 in one lump sum. To take advantage of this deal, the store charges a $25 service fee, which is to be paid today. What rate of simple interest is the store charging you for this "no interest" loan?

   A. 0%

   B. 5.80%

   C. 6.05%

   D. 6.52%

5. You invest $2300 on June 10. On November 10, you have earned $72.42 of interest. What rate of simple interest did you earn?

   A. 7.41%

   B. 7.51%

   C. 7.56%

   D. 7.66%

6. You invest $20,000 in a fund that earns simple interest at $r = 7\%$ for 2 years, followed by simple interest at $r = 5\%$ for 3 years. How much will you have at the end of 5 years?

   A. $25,800.00

   B. $26,220.00

   C. $26,507.30

   D. $26,050.50

7. You take out a loan of A at a simple interest rate of r for n-days ($n > 0$). Under exact interest, you have to pay back $8230 at the end of n-days. If ordinary interest is used instead, what would be the amount to be paid back at the end of n-days?

   A. $8,230

   B. More than $8230

   C. Less than $8230

   D. Need more information to determine

8. Suppose you deposit $10,000 on March 21 in a fund earning simple interest at $r = 13\%$. How much will you have exactly 6 months later?

   A. $10,664.44

   B. $10,658.91

   C. $10,655.34

   D. $10,650.00

9. A merchant receives an invoice for $8000 with terms 2/10, *n*/50. What is the maximum interest rate that the merchant could borrow money at to take advantage of the discount?

   A. 18.62%
   B. 18.25%
   C. 14.90%
   D. 14.60%

10. A loan of $10,000 is taken out on November 7, 2006 at a simple interest rate of *r* = 9%. The loan will be paid back on May 11, 2007. If the bank uses ordinary interest (the Banker's Rule), how much interest is charged?

   A. $443.84
   B. $450.00
   C. $456.16
   D. $462.50

11. You deposit $10,000 in a 9-month investment that pays *r* = 8% for the first 6 months and *r* = 6% for the last 3 months. What is the maturity value of the investment at the end of 9 months?

   A. $10,544.80
   B. $10,550.00
   C. $10,556.00
   D. $10,563.61

12. How long does it take for $5000 to become $10,000 at a simple interest rate of $r = 18\%$ using ordinary interest (Banker's Rule)?

    A. 5 years, 203 days

    B. 5 years, 200 days

    C. 5 years, 175 days

    D. 5 years, 173 days

13. A wholesale electrical supply store is offering to its customers terms of 3/30, n/90. What is the highest simple interest rate that A-1 Electric can afford to borrow money in order to take advantage of the discount?

    A. 12.17%

    B. 12.54%

    C. 18.25%

    D. 18.81%

14. Interest of $300 is charged on a loan of $7300 bearing interest at $r = 11\%$. What was the term of the loan? (Answer to the nearest day)

    A. 131 days

    B. 134 days

    C. 136 days

    D. 142 days

15. A merchant receives an invoice for $25,000 with terms 4/15, n/60. What is the highest simple interest rate at which he can afford to borrow in order to take advantage of the discount?

A. 24.3%

B. 25.3%

C. 32.4%

D. 33.8%

16. An invoice for $12,000 has terms 1/20, n/45. If you take out a loan to take advantage of the discount and the bank uses <u>ordinary interest</u> (i.e. the banker's rule), what is the maximum rate of simple interest that you would be willing to pay?

A. 8.08%

B. 8.19%

C. 14.55%

D. 14.75%

17. A merchant receives an invoice for a motor boat for $5000 with term 4/30, n/100. In order to take advantage of discount, he wants to borrow the required money. If he can borrow at r = 14%, how much money does he save?

A. $74.08

B. $71.12

C. $65.75

D. $63.12

18. You deposit $100,000 on March 31, 2010 in a fund earning simple interest at $r = 6\%$. Using the banker's rule (ordinary interest), how much do you have on July 31, 2010?

    A. $102,000.00

    B. $102,005.48

    C. $102,033.33

    D. $102,050.00

19. A merchant receives an invoice for $4000 with terms 4/30, n/100. What is the highest rate of simple interest at which he can afford to borrow in order to take advantage of the discount?

    A. 14.60%

    B. 15.21%

    C. 20.86%

    D. 21.73%

20. You invest $8000 in a fund earning simple interest at $r = 4\%$ for the first 150 days followed by $r = 6\%$ for the last 120 days. How much do you have in your fund at the end of 270 days?

    A. $8291.91

    B. $8289.32

    C. $8287.24

    D. $8284.72

21. You invest $20,000. It earns simple interest at 7% for the first 5 months and 8% for the next 3 months. What is the accumulated value at the end of 8 months?

    A. $20,998.06

    B. $20,995.00

    C. $20,986.30

    D. $20,983.33

22. You buy a stove for $1500 on March 20, 2010. The store gives you 4 months "interest free", so on July 20, 2010 you must pay the $1500. However, the store charges an administration fee of $50, to be paid today. What rate of simple interest, r, are you being charged for this "interest free" plan?

    A. 9.97%

    B. 10.00%

    C. 10.32%

    D. 10.35%

23. You buy goods for $10,000 and receive an invoice with terms 1/10, n/40. What is the maximum simple interest rate that you would borrow money at to take advantage of the discount?

    A. 9.13%

    B. 9.22%

    C. 12.17%

    D. 12.29%

24. A $12,000 short term loan was taken out on April 3, 2010 at a simple interest rate of 8%. The amount repaid was $12,481.32. On what date in 2010 was the loan repaid?

    A. October 1

    B. October 3

    C. October 6

    D. October 9

25. A merchant receives an invoice for a motor boat for $5000 with term 3/30, n/100. In order to take advantage of discount, he wants to borrow the required money. If he can borrow at $r = 18\%$, how much money does he lose (negative) or save (positive)?

    A. -$17.42

    B. -$22.60

    C. $22.60

    D. $17.42

26. On March 24, 2014, Chen and Mary borrow $18,000 each at a simple interest rate $r = 12\%$. Chen's bank calculates interest using exact interest, while Mary's bank uses the Banker's Rule (ordinary interest). Let X = amount Chen pays back on September 24, 2014, and Y = amount Mary pays back on September 24, 2014. What is the value of $X - Y$?

    A. -$15.12

    B. -$8.88

    C. $8.88

    D. $15.12

27. Dave takes out a loan for $5000 to be repaid at the end of 9 months. The simple interest rate on the loan is $r = 9\%$ for the first two month, $r = 12\%$ for the next 6 months, and $r = 6\%$ thereafter. How much does Dave have to pay back at the end of 9 months?

A. $5337.50

B. $5450.00

C. $5225.00

D. $5400.00

28. You buy some furniture for $800 and pay "no interest" for n-days. This means that after n-days, you owe the furniture company $800. However, there is an administration fee of $50 that you must pay today (when you buy the furniture). If the rate of simple interest that you are being charged is 12.4%, what is n (Answer to nearest day)?

A. 99 days

B. 184 days

C. 173 days

D. 196 days

29. Mary deposits $15,000 in a bank account earning simple interest rate $r = 5.25\%$ on October 25, 2013 and leaves it on deposit until February 4, 2014. Using exact interest, how much interest is earned during the entire investment period?

A. $217.91

B. $223.13

C. $220.07

D. $222.23

30. Bob purchases a new smart phone for $500. The terms for the purchase are 2/30 n/90. If Bob would need to borrow money to take advantage of the discount, at what simple interest rate r will he be indifferent as to borrowing to take advantage of the discount versus paying the full balance when due? (Assume exact interest).

A. 12.41%

B. 8.28%

C. 12.24%

D. 8.11%

31. You invest $15,000 on December 2, 2010 at a simple interest rate of r = 6%. Interest is to be calculated using ordinary interest (banker's rule). What is the accumulated value of your investment on June 12, 2011?

A. $15,407.50

B. $15,473.42

C. $15,477.53

D. $15,480.00

32. A merchant receives an invoice for $8000 with terms 2/10, n/60. What is the highest rate of simple interest at which he can afford to borrow in order to take advantage of the discount?

A. 14.60%

B. 12.17%

C. 14.90%

D. 12.42%

33. You deposit $200,000 on April 29, 2012 in a fund earning simple interest at $r = 7\%$. Using the banker's rule (ordinary interest), how much do you have on September 29, 2012?

    A. $205,950.00

    B. $205,911.11

    C. $205,868.49

    D. $205,833.33

34. You buy an oven for $1500 on March 20, 2013. The store gives you 4 months "interest free", so on July 20, 2013 you must pay the $1500. However, the store charges an administration fee of $75, which must be paid up front when you buy the oven (March 20, 2013). What rate of simple interest, r, are you being charged for this "interest free" plan?

    A. 15.79%

    B. 14.25%

    C. 14.96%

    D. 15.75%

35. You borrow $800 today at $r = 12\%$ from a bank that uses ordinary interest (Banker's rule). You pay back at least $845 in n-days. What is the value of n?

    A. 168 days

    B. 169 days

    C. 171 days

    D. 172 days

Jim borrows $10,000 and writes a promissory note on November 10, 2007. The due date of the note is February 18, 2008. The legal due date value (or maturity value) is $10,472.00.

36. What simple interest rate, r, is Jim being charged on the promissory note?

    A. 17.23%

    B. 16.73%

    C. 16.50%

    D. 15.97%

37. The note is sold to Kim on December 21, 2007. Kim discounts the note at a simple interest rate of $r = 15\%$. How much does Kim pay for the note?

    A. $10,298.48

    B. $10,211.81

    C. $10,224.10

    D. $10,168.49

A promissory note for $6000 is written on April 23, 2007. The due date is October 4, 2007. The simple interest rate on the note is $r = 10.5\%$.

38. What is the maturity value of the note if ordinary interest (banker's rule) is used?

    A. $6283.07

    B. $6287.00

    C. $6288.25

    D. $6292.25

39. The note is sold after 80 days to a bank for $6142.29. What rate of return, r, is earned by the original owner (payee) of the note?

    A. 10.43%

    B. 10.57%

    C. 10.67%

    D. 10.82%

40. Jim lends $8000 to Sally on September 23, 2006. Sally signs a promissory note, with the note due in 10 months. The maturity value of the note is $8536.55. Jim sells the note to a bank on February 23, 2007. If the bank wishes to earn $r = 8\%$, what price does Jim get for the note?

    A. $8259.57

    B. $8261.18

    C. $8264.83

    D. $8268.27

You borrow P on May 15, 2007. You write a promissory note to repay the loan in 9 months at a simple interest rate of $r = 7\%$.

41. If the maturity value is $15,012.47, what is the face value of the note? (to nearest dollar)

    A. $14,264

    B. $14,258

    C. $14,250

    D. $14,209

42. The note was sold 132 days prior to the maturity date to a bank. The bank pays $14,655.23 for the note. What rate of simple discount, *d,* did they use to determine this price?

    A. 5.91%

    B. 6.43%

    C. 6.58%

    D. 6.74%

43. A 6-month non-interest bearing promissory note with a face value of $2500 is taken out on Jan. 5, 2007. What are the proceeds on Feb. 12, 2007 if the note is discounted using a simple interest rate of *r* = 10%?

    A. $2380.02

    B. $2403.85

    C. $2405.75

    D. $2497.40

44. What is the price of a $100,000 182-day T-bill if the yield rate is 5%?

    A. $97,506.85

    B. $97,567.50

    C. $102,493.15

    D. $102,556.90

45. A loan was taken out on January 1, 2007 at a simple interest rate of 8.5%. Interest is to be calculated using <u>ordinary interest</u> (banker's rule). The amount repaid on December 29, 2007 is $13,027.02. What was the original amount of the loan?

    A. $11,998.64

    B. $12,001.25

    C. $12,006.47

    D. $12,014.21

46. A $10,000 91-day T-Bill was purchased for $9889.05 to yield 4.5%. The T-bill is sold 32 days later to an investor who wishes to yield 4.15%. At what price is the T-bill sold?

    A. $9897.59

    B. $9925.03

    C. $9928.06

    D. $9933.36

47. A retailer buys goods from a supplier for $8000. The goods cost the supplier $7750. The retailer signs a non-interest bearing promissory note due in 120 days. After 10 days, the supplier sells the note to a bank that discounts the note using a simple interest rate of 10%. What rate of return, r, did the supplier earn over the 10 days?

    A. 0.1%

    B. 4.6%

    C. 7.5%

    D. 9.6%

48. A loan was taken out on March 3, 2010 at a simple interest rate of 8%. Interest is to be calculated using <u>ordinary interest</u> (Banker's rule). The amount repaid in 6 months is $12,482.67. What was the original amount of the loan?

    A. $11,992.32

    B. $11,998.77

    C. $12,002.57

    D. $12,003.83

49. A loan was taken out on January 1, 2010 at a simple interest rate of 8.5%. Interest is to be calculated using <u>ordinary interest</u> (Banker's rule). The amount repaid on December 29, 2010 is $13,027.02. What was the original amount of the loan?

    A. $12,014.21

    B. $12,011.63

    C. $12,001.25

    D. $11,998.64

50. An investor bought a 91-day $25,000 Treasury Bill to yield $r = 3.5\%$. The investor sold the T-bill 40 days later to another investor who wishes to yield $r = 3.25\%$. What price did the T-bill sell for?

    A. $25,104.15

    B. $25,089.04

    C. $24,886.99

    D. $24,880.37

51. Andrew has a promissory note for $15,000 dated April 6, 2010. The note has a legal due date 123 days later, with simple interest at 12%. Andrew sells the note on June 1, 2010 to a bank charging a simple interest rate of 15%. What are the proceeds of the sale?

    A. $15,202.77
    B. $15,188.40
    C. $15,184.55
    D. $15,170.17

52. A 182-day T-Bill with a face value of $25,000 is purchased for $X by an investor who wishes to yield $r = 3.50\%$. What is X?

    A. $24,558.29
    B. $24,564.24
    C. $24,565.33
    D. $24,571.18

53. A loan of P is taken out at a simple interest rate of $r = 10.4\%$. Two months later, a partial loan payment of $500 is made. Of this payment, $301.34 went towards paying interest on the loan while $198.66 went to reducing the outstanding balance of the loan. What is the value of P? (Answer to nearest dollar)

    A. $2898
    B. $3096
    C. $11,461
    D. $17,385

54. ABC Company borrows P from XYZ bank on March 3, 2010 by writing a promissory note, due in 6 months at a simple interest rate of 5%. The bank uses <u>ordinary</u> interest in its calculations. If the maturity value of the note is $257,000, what is P? (Answer to nearest dollar)

A. $250,494

B. $250,581

C. $250,596

D. $250,682

55. Mr. A lends $20,000 to Mr. B on May 6, 2010. A promissory note is written by Mr. B at a simple interest rate of 9%. The due date of the note is October 6, 2010. The maturity value of the note is $20,769.32. Mr. C sells the note to a bank on August 6, 2010 for $20,419.16. What rate of return does the bank earn on their investment?

A. 9.78%

B. 10.26%

C. 11.71%

D. 11.95%

56. On July 8, 2014, Josephine lends Joni $10,000. Joni gives Josephine a 90-day non-interest bearing promissory note with face amount $10,000. On August 12, 2014, Josephine sells the note to a finance company that uses a simple interest rate $r = 5\%$. What are the proceeds received by Josephine?

A. $9,925.22

B. $9,921.17

C. $10,043.49

D. $10,047.95

57. Which of the following statements is (are) true?

(i) A merchant receives an invoice for $10,000 with terms 4/30, n/90. He/she should not take advantage of the discount if he/she can borrow money at $r = 20\%$

(ii) A 60-day promissory note has a maturity value of $5000. Its price 30- days before maturity, at a rate of simple discount $d = 4\%$, is $4983.56

A. Both are true

B. (i) only

C. (ii) only

D. Neither are true

58. Jane borrows $10,000 and writes a promissory note on July 10, 2011. The due date is December 12, 2011. The value on the maturity date is $10,472.00. Prior to the maturity date, it is sold to a bank that discounts the note at $r = 5\%$. If the bank pays $10,383.81 for the note, on what day was it sold?

A. October 11

B. October 14

C. October 17

D. October 20

59. A 120-day promissory note for $50,000 bears interest at $r = 10\%$. It is sold 90-days before the maturity date to a bank that discounts the note at $r = 15\%$. What does the bank pay for the note?

A. $49,742.71

B. $49,801.85

C. $49,782.29

D. $49,841.48

John borrows $5000 from Brenda and writes a 90-day promissory note. The amount due back on the maturity date (legal due date) is $5137.50.

60. What was the interest rate on the loan?

A. 10.79%

B. 11.15%

C. 10.50%

D. 10.65%

61. After 30-days, the note is sold by Brenda to a bank that charges a simple <u>discount</u> rate of $d =$ 10%. What are the proceeds of the sale?

A. $5050.33

B. $5053.05

C. $5048.83

D. $5054.41

62. A 182-day T-Bill with a face value of $50,000 is purchased for X by an investor who wishes to yield $r = 2.85\%$. What is X?

A. $49,289.45

B. $49,299.41

C. $50,720.42

D. $50,710.55

63. A person borrows $100,000 at a simple interest rate $r = 24\%$. He is to repay the loan with 2 payments, one at the end of 2 months and the other at the end of 6 months. The first payment is the same as the 2nd payment. Determine the size of the payments, using the end of 6 months as the focal date.

   A. $46,296.30

   B. $48,076.92

   C. $53,846.15

   D. $53,925.93

64. A debt of $3000 is due in 4 months and another $5000 is due in 9 months. Instead, it is agreed that a payment of $X, made in 3 months, followed by a payment of $4000 in 10 months, will fully pay off the loan. Using 9 months as the focal date, what is X if the simple interest rate on the loan is $r = 10\%$?

   A. $4365.96

   B. $3960.06

   C. $3896.83

   D. $3841.01

65. A person owes $4000 ten (10) months from now. It is agreed that she can, instead, pay $X now and another $2000 two years from now to replace the given debts. If simple interest is $r = 9\%$, what is X using 8 months as the focal date?

   A. $1929.20

   B. $2026.02

   C. $2033.18

   D. $2155.17

66. A loan is to be paid by installments of $800 1-month from now, $600 3-months from now, and $500 4-months from now. Instead of this payment scheme, the borrower wishes to make one single payment 2 months from now. What is the amount of the alternative single payment using a focal date of 3 months and $r = 6\%$?

    A. $1905.51

    B. $1901.00

    C. $1896.03

    D. $1890.55

67. A person borrows $4000 at a simple interest rate of 7%. They agree to repay the loan with payments of X at the end of 2 months, $2X$ at the end of 4 months, and $2X$ at the end of 6 months. Using 6 months as the focal date, what is X?

    A. $798.20

    B. $809.12

    C. $820.34

    D. $828.00

68. Bill has a debt of $5000 which was due 30 days ago. He also has another debt of $6000 due 90 days from now. It has been decided that these 2 debts will be settled by a payment of $4000 today and a final payment of X made 70 days from now. If the simple interest rate is $r = 9\%$, what is the value of X if you use a focal date of now?

    A. $7025.94

    B. $7024.80

    C. $7000.00

    D. $6906.73

69. A payment of $5000 that was due 20 days ago and another payment of $4000 that is due 50 days from now are to be settled/replaced by a payment of $6000 today and a payment of $X 90-days from today. If r = 11%, what is the value of X using today as the focal date?

   A. $3051.33

   B. $3008.81

   C. $3001.67

   D. $2892.31

70. You have two options available in repaying a loan. You can pay $200 at the end of 5 months and $300 at the end of 10 months or you can pay $X at the end of 3 months and $2X at the end of 6 months. What is X if the simple interest rate is 6% and the focal date is at the end of 5 months.

   A. $169.16

   B. $168.05

   C. $164.22

   D. $163.14

71. You have two options available in repaying a loan. You can pay $2000 at the end of 5-months and $3000 at the end of 10-months OR you can pay $X at the end of 2-months and $3X at the end of 9-months. If the simple interest rate is r = 4% and the focal date is at the end of 5-months, what is X?

   A. $1246.89

   B. $2479.32

   C. $2685.41

   D. $2727.19

72. A debt of $5000 is due today and another debt of $4000 is due in 70 days. These debts are to be settled/replaced by a payment of $6000 in 20-days and a payment of $X in 110-days (from today). If r = 11%, what is the value of X using the end of 20 days as the focal date?

A. $2892.31

B. $3008.81

C. $3001.67

D. $3051.34

73. A loan of P is taken out at a simple interest rate of r = 10.4%. Two months later, a partial loan payment of $500 is made. Of this payment, $301.34 went towards paying interest on the loan while $198.66 went to reducing the outstanding balance of the loan. What is the value of P? (Answer to nearest dollar)

A. $2898

B. $11,461

C. $3096

D. $17,385

74. A company owes $100,000 at the end of 1-month and another $200,000 at the end of 11-months. Instead, they wish to consolidate their loans and make one single payment of $X at the end of 6 months. It is agreed that the end of 5-months will be the focal date. If the interest is r = 12%, what is the value of X?

A. $295,476.19

B. $295,606.04

C. $300,000.00

D. $295,941.49

A man borrows $6000. A payment of $100 is made 100 days later. A second payment of $4000 is paid 200 days after the first payment. A third payment of X is due 50 days after the second payment, after which the loan balance is 0. The loan is charged a simple interest rate of $r = 10\%$.

75. What is X, if the declining balance method is used?

    A. $2413.70

    B. $2418.04

    C. $2425.93

    D. $2429.51

76. What is X, if the Merchant's rule is used?

    A. $2429.51

    B. $2425.93

    C. $2418.04

    D. $2413.70

77. A loan of $5000 is taken out on May 25. The interest rate on the loan is $r = 12\%$. A payment of $105 is made 102 days later and a payment of X, is due 175 days after May 25. What is X if the declining balance method is used?

    A. $5180.15

    B. $5182.67

    C. $5184.18

    D. $5287.67

78. A loan of P is taken out. It is to be repaid with a payment of $2000 in 2 months, $50 in 6 months and a final payment due in 10 months. If the merchant's rule is used, the final payment turns out to be $3000. If the rate of simple interest on the loan is $r = 12\%$, what is P?

   A. $4733.51

   B. $4735.23

   C. $4736.36

   D. $4738.18

79. A loan of $4000 is due in 9 months with simple interest at 8%. The borrower makes partial payments of $150 in 3 months and $2500 in 6 months. Using the declining balance method, what is the balance due in 9 months?

   A. $1508.60

   B. $1534.00

   C. $1538.77

   D. $1540.20

80. A loan of $20,000 is to be paid off with 2 equal installments of X, occurring 3 months from now and 8 months from now. What is the value of X if $r = 9\%$ and Merchant's Rule is used?

   A. $10,291.26

   B. $10,404.91

   C. $10,409.12

   D. $10,413.19

81. A debt of $5000 is to be paid off by installments of $2000 in 30 days, $2500 in 60 days, and a final payment of $584.15. If simple interest is charged at $r = 12\%$ and the Declining Balance Method is used, in how many days should the final payment be made?

A. 25

B. 32

C. 85

D. 92

82. You take out a loan of $10,000 today at simple interest at $r = 15\%$. You make the following payments: $100 in two months, $8000 in four months and the balance in 6 months. What is the final balance according to the Declining Balance Method?

A. $2445.00

B. $2460.00

C. $2463.84

D. $2562.50

83. A loan of $15,000 was repaid as follows: $8000 in 4 months, $150 in 6 months and a payment of $X in 9 months which will fully pay off the loan. If the rate of simple interest on the loan is 10%, what is the value of X according to the Merchant's rule?

A. $7637.92

B. $7641.67

C. $7661.88

D. $7700.83

84. Using the Merchant's rule, a debt of $4000 is paid off as follows: $1000 in 30 days from today, $2000 in 60 days from today, and a final payment of $1026.51 in 80 days from today. What simple interest rate, r, was used?

    A. $r < 4\%$

    B. $4\% < r < 4.5\%$

    C. $4.5\% < r < 5.0\%$

    D. $5.0\% < r$

85. A debt of $60,000 is to be paid off by installments of $20,000 in 20 days from today, $1500 in 60 days from today and a final payment of X in 85 days from today. If simple interest is charged at $r = 16\%$ and the declining balance method is used, what is X?

    A. $40,149.32

    B. $40,172.09

    C. $40,180.74

    D. $41,585.76

86. A debt of $5000 is to be paid off by installments of $2000 30-days from now, $2500 60-days from now, and a final payment of $613.68 d-days from now. If simple interest is charged at $r = 12\%$ and the declining balance method is used, what is the value of d?

    A. 245

    B. 240

    C. 180

    D. 111

87. A loan of $10,000 was taken out at a simple interest rate of 12%. The first two partial payments are: $200 (91 days after the loan date) and $Y (39 days later). Using the declining balance method, the loan balance immediately after the payment of Y is $8228.67. What is the value of Y?

   A. $2198.73

   B. $2002.56

   C. $2000.00

   D. $1998.73

88. A $2000 loan is paid off with a payment of $800 in 50 days and a final payment of $1240 in 90 days (after date of loan). Assuming the Merchant's rule, what simple interest rate, r, was used?

   A. $r \geq 10.20\%$

   B. $9.40\% < r \leq 10.20\%$

   C. $8.60\% < r \leq 9.40\%$

   D. $r < 8.60\%$

89. Using the Merchant's rule, a debt of $4000 is paid off as follows: $2000 in 50 days and a final payment of $2026.51 in 80 days from today. What simple interest rate, r, was used?

   A. $r < 3.0\%$

   B. $3.0\% < r < 3.5\%$

   C. $3.5\% < r < 4.0\%$

   D. $r > 4.0\%$

90. A loan of \$12,000 is taken out today at a simple interest rate of $r = 15\%$. It is repaid with a payment of \$200 in 3-months, \$6000 in 6-months (from today) and the balance, X, due in 11 months (from today). What is the value of X using the declining balance method?

A. \$7055.00

B. \$7131.25

C. \$7118.75

D. \$7128.71

91. Which of the following statements is (are) true with respect to simple interest loans repaid by a series of partial payments?

(I) Using the Declining Balance Method, a partial payment is not deducted from the outstanding balance at the time the partial payment is made if the partial payment is <u>greater</u> than the interest due at the time.

(II) The total interest paid over the term of the loan will be the same under the Merchant's Rule and the Declining Balance Method.

A. Both are true

B. (I) only

C. (II) only

D. None are true

92. A loan of $10,000 is taken out on October 29, 2010 and is to be paid off with 2 equal installments of X, to be paid on November 18 and December 29. What is the value of X if $r = 7\%$ and the Merchant's rule is used?

    A. $5038.68
    B. $5057.21
    C. $5102.45
    D. $5171.99

93. A loan of $4000 is paid off over 9-months at a simple interest rate of $r = 8\%$. The borrower makes partial payments of $150 in 3-months and $2500 in 6-months. Using the declining balance method, what is the final balance due at the end of 9-months?

    A. $1508.60
    B. $1534.00
    C. $1538.77
    D. $1540.20

94. A debt of $60,000 is to be paid off with partial payments of $20,000 in 20-days (from today), $1500 in 60-days (from today) and a final payment of X in 85-days (from today). If simple interest is charged at 16% and the declining balance method is used, what is X?

    A. $40,149.32
    B. $40,172.09
    C. $40,180.74
    D. $41,585.76

95. A deposit of $25,000 is made on February 28th, 2007. Given a simple discount rate of $d = 8\%$, what is the accumulated value of the $25,000 on May 18th, 2007, assuming the bankers rule for t?

A. $25,446.73

B. $25,440.50

C. $25,438.89

D. $25,432.88

96. You owe the bank $2000 in 9 months. Instead you negotiate with the bank to pay $1200 in 3 months and $X in 7 months to fully pay off the loan. Using a simple discount rate of $d = 9\%$ and a focal date of 7 months from now, what is X?

A. $732.89

B. $734.44

C. $866.46

D. $877.08

97. A bank gives a customer $30,000 on June 5, 2001. What is the amount to be repaid after 3 months if the bank charges $d = 7\%$?

A. $30,525.00

B. $30,529.32

C. $30,534.35

D. $30,538.82

98. How long will it take $2000 to accumulate to $2119.63 at a simple <u>discount</u> rate of 10%?

    A. 206 days

    B. 215 days

    C. 218 days

    D. 223 days

99. A bank offers you a 9 month discounted loan, at a simple discount rate of $d = 9.5\%$. In order to receive $5000 today, what size loan should you ask for?

    A. $5383.58

    B. $5356.25

    C. $5000.00

    D. $4643.75

100. A man takes out a discounted loan at a simple discount rate of $d = 10.5\%$. If the amount he pays back in 9 months is $5712, how much money does he actually receive today?

    A. $5112.24

    B. $5262.18

    C. $5295.02

    D. $5332.00

101.What rate of simple interest, r, is equivalent to a rate of simple discount, $d = 9\%$, over a period of 10 months?

A. 8.25%

B. 8.37%

C. 9.73%

D. 9.89%

102.A man takes out a discounted loan, with face amount $8235, at a simple discount rate of $d =$ 7.5%. If the amount he pays back in 11 months is $8235, how much interest does the man pay on the loan and when does he pay the interest?

A. $529.74, paid today at issue of the loan

B. $529.74, paid at the end of 11 months

C. $566.16, paid today at issue of the loan

D. $566.16, paid at the end of 11 months

103.A merchant issues a promissory note. The note has a term of 90 days and a maturity value of $6122.30. The note is sold after 30 days to a bank that discounts the note at $d =$ 10% simple discount. How much does the bank pay for the note?

A. $6016.63

B. $6018.42

C. $6021.66

D. $6023.29

104. How long will it takes $4000 to accumulate to $4262.77 at a simple discount rate of 9%?

    A. 247 days

    B. 250 days

    C. 263 days

    D. 267 days

105. What simple discount rate d is equivalent over a 200-day period to simple interest rate of 8% for the first 100 days and 10% thereafter, if interest from the first 100 days does not earn interest during the last 100 days?

    A. 9.11%

    B. 9.00%

    C. 8.68%

    D. 8.58%

106. A 90-day promissory note with face value $5000, has a maturity value of $5127.40. After 30-days, it is sold to a bank that charges a simple discount rate of d = 10%. What rate of simple interest did the original owner of the note earn?

    A. 9.47%

    B. 9.83%

    C. 10.49%

    D. 10.82%

107. A man takes out a discounted loan, with face amount $8235, at a simple discount rate of $d =$ 7.5%. If the amount he pays back in 11 months is $8235, how much interest does the man pay on the loan and when does he pay the interest?

A. $529.74, paid today at issue of the loan

B. $529.74, paid at the end of 11 months

C. $566.16, paid today at issue of the loan

D. $566.16, paid at the end of 11 months

108. You go to a bank that offers a 270-day discounted loan at $d = 9\%$. You wish to walk out the door with $5000. What size loan should you ask for?

A. $5360.87

B. $5356.62

C. $5332.88

D. $4667.12

109. What simple discount rate d is equivalent to a simple interest rate of 8% over a 200-day period?

A. 9.00%

B. 7.66%

C. 8.58%

D. 7.41%

110. Mr. A lends $20,000 to Mr. B on May 6, 2010. A promissory note is written by Mr. B at a simple interest rate of 9%, with a due date of October 6, 2010. The maturity value of the note is $20,769.32. The note was sold by Mr. A on June 26, 2010 to Mr. C who discounts the note at a simple discount rate of 8%. What price does Mr. A receive for the note?

    A. $20,291.34

    B. $20,302.09

    C. $20,305.00

    D. $20,315.15

111. A 180-day discounted loan is taken out today from a bank that charges a simple discount rate of $d = 9\%$. The bank also uses ordinary interest in determining the value of t (time). If the amount to be paid back in 180 days is $3000, how much money is actually received today?

    A. $2865.00

    B. $2866.85

    C. $2870.81

    D. $2872.5

112. A bank lends money using a simple discount rate $d = 8\%$. If John needs $10,000 today and will repay the loan in 8 months, what loan amount should he request?

    A. $10,800.00

    B. $10,533.33

    C. $10,563.38

    D. $9,466.67

113.Joanne loans Mark $2500. Mark agrees to repay the loan with simple interest rate $r = 7\%$ in 1 year. Joanne then turns around and immediately sells her loan repayment rights to a bank which uses a simple discount rate of $d = 7\%$. Which of the following statements is (are) true?

(I) Joanne has an immediate net loss of $12.25.

(II) The bank will earn $175 on their investment.

A. Both are true

B. (I) only

C. (II) only

D. None are true

114.You go to a lending institution that offers a 270-day discounted loan at $d = 9\%$. You wish to walk out the door with $5000. What size loan should you ask for?

A. $4667.12

B. $5332.88

C. $5356.62

D. $5360.87

115.A man takes out a loan at a simple discount rate of $d = 7.5\%$. If the amount he pays back in 11 months is $8235, what is the fee he pays for borrowing the money and when does he pay this fee?

A. $529.74, paid today at issue of the loan

B. $529.74, paid at the end of 11 months

C. $566.16, paid today at issue of the loan

D. $566.16, paid at the end of 11 months

116. You are given that $2000 accumulates to $2032.88 at the end of 120 days at a simple interest rate equal to r. What is the equivalent simple discount rate, d, over the same 120-days period?

    A. 5.00%

    B. 4.92%

    C. 4.53%

    D. 1.62%

117. Which of the following statements is TRUE?

    A. An investment earning simple interest at rate r always earns less interest compared to the same investment using a compound interest rate of $j_1 = r$.

    B. When discounting a promissory note, the larger the simple interest rate used to discount the note, the larger will be the proceeds of the note.

    C. On a loan, interest calculated using ordinary interest is always less than that calculate using exact interest.

    D. If a simple discount rate of d is <u>equivalent</u> to a simple interest rate of r, then $d < r$ as long as time t is positive.

118. A loan of P is taken out at a simple interest rate of $r = 10.4\%$. Two months later a loan payment of $500 is made. Of this payment, $198.66 went to actually paying off the loan while $301.34 went towards interest on the loan. What is the value of P? (Answer to nearest dollar)

    A. $2898

    B. $3096

    C. $11,461

    D. $17,385

c1 Key

1.   You invest $800 on May 25, 2007, on what day will you have earned exactly $31.96 of interest if your investment earns simple interest at $r = 6\%$?

   A. August 31, 2007

   B. January 20, 2008

   <u>C.</u> January 23, 2008

   D. January 25, 2008

   $t = I/Pr = 31.96/(800)(0.06) = 0.66583333$; Number of days $= 365(0.66583333) = 243$ and 243 days after May 25 is January 23.

2. You invest $50,000 today. It earns simple interest at 15% for the first 5 months, 10% for the next 3 months and 12% for the last 2 months. What is the accumulated value at the end of 10 months?

A. $56,450
B. $56,250
C. $55,542
D. $55,375

S = 50,000 + 50,000(0.15)(5/12) + 50,000(0.10)(3/12) + 50,000(0.12)(2/12) = $55,375

3. You buy a stove for $1500 on February 20. The store gives you 4 months "interest free", after which you must pay the $1500. However, the store charges an administration fee of $50, to be paid today. What rate of simple interest, r, are you being charged for this "interest free" plan?

A. 10.49%
B. 10.34%
C. 10.14%
D. 10.00%

$50 paid today along with $1500 in 4 months (June 20, which is 120 days later) is equivalent to paying $1500 today. We need to solve the following equation for r (focal date time 0):

50[1 + r(120/365)] + 1500 = 1500[1 + r(120/365)] → r = 10.49%

4. You buy some furniture for $600. The department store offers you "no interest for 8 months" after which you can pay the $600 in one lump sum. To take advantage of this deal, the store charges a $25 service fee, which is to be paid <u>today</u>. What rate of simple interest is the store charging you for this "no interest" loan?

A. 0%

B. 5.80%

C. 6.05%

<u>D.</u> 6.52%

$25 paid today along with $600 in 8 months is equivalent to paying $600 today. We need to solve the following equation for r (focal date time 0):

$25[1 + r(8/12)] + 600 = 600[1 + r(8/12)] \rightarrow r = 6.52\%$

5.   You invest $2300 on June 10. On November 10, you have earned $72.42 of interest. What rate of simple interest did you earn?

A. 7.41%

B. 7.51%

C. 7.56%

D. 7.66%

Nov 10 - June 10 = 153 days. $r = I/P\,t = 72.42/(2300)(153/365) = 7.51\%$

6.   You invest $20,000 in a fund that earns simple interest at $r = 7\%$ for 2 years, followed by simple interest at $r = 5\%$ for 3 years. How much will you have at the end of 5 years?

A. $25,800.00

B. $26,220.00

C. $26,507.30

D. $26,050.50

$S = 20{,}000 + 20{,}000(0.07)2 + 20{,}000(0.05)3 = \$25{,}800$

7. You take out a loan of $A at a simple interest rate of r for n-days ($n > 0$). Under exact interest, you have to pay back $8230 at the end of n-days. If ordinary interest is used instead, what would be the amount to be paid back at the end of n-days?

A. $8,230

B. More than $8230

C. Less than $8230

D. Need more information to determine

Under exact interest, $t_1 = n/365$; Under ordinary interest, $t_2 = n/360$.
Since $t_2 > t_1$, accumulated values under ordinary interest will be higher.

8. Suppose you deposit $10,000 on March 21 in a fund earning simple interest at $r = 13\%$. How much will you have exactly 6 months later?

A. $10,664.44

B. $10,658.91

C. $10,655.34

D. $10,650.00

6 months after March 21 is September 21, which is 184 days.
$S = 10,000[1 + (0.13)(184/365)] = \$10,655.34$

9.   A merchant receives an invoice for $8000 with terms 2/10, *n*/50. What is the maximum interest
      rate that the merchant could borrow money at to take advantage of the discount?

      A. 18.62%

      B. 18.25%

      C. 14.90%

      D. 14.60%

      r = 160/7840(40/365) = 0.186224 = 18.62%

10.   A loan of $10,000 is taken out on November 7, 2006 at a simple interest rate of *r* = 9%. The
      loan will be paid back on May 11, 2007. If the bank uses ordinary interest (the Banker's Rule),
      how much interest is charged?

      A. $443.84

      B. $450.00

      C. $456.16

      D. $462.50

      May 11 - Nov 7 = 185 days; *I* = 10,000(0.09)(185/360) = $462.50

11.   You deposit $10,000 in a 9-month investment that pays $r =$ 8% for the first 6 months and $r =$ 6% for the last 3 months. What is the maturity value of the investment at the end of 9 months?

  A. $10,544.80

  B. $10,550.00

  C. $10,556.00

  D. $10,563.61

$S = 10{,}000 + 10{,}000(0.08)(6/12) + 10{,}000(0.06)(3/12) = \$10{,}550$

12.   How long does it take for $5000 to become $10,000 at a simple interest rate of $r =$ 18% using ordinary interest (Banker's Rule)?

  A. 5 years, 203 days

  B. 5 years, 200 days

  C. 5 years, 175 days

  D. 5 years, 173 days

$t = n/360 = I/P\,r = 5000/(5000)(0.18) = 5.55555;\ n = 2000\ \text{days} = 5\ \text{years},\ 175\ \text{days}$

13. A wholesale electrical supply store is offering to its customers terms of 3/30, *n*/90. What is the highest simple interest rate that A-1 Electric can afford to borrow money in order to take advantage of the discount?

A. 12.17%

B. 12.54%

C. 18.25%

D. 18.81%

r = 0.03/(0.97)(60/365) = 0.188144 = 18.81%

14. Interest of $300 is charged on a loan of $7300 bearing interest at *r* = 11%. What was the term of the loan? (Answer to the nearest day)

A. 131 days

B. 134 days

C. 136 days

D. 142 days

t = *n*/365 = *I*/*P r* = 300/(7300)(0.11) = 0.373599; *n* = 136 days

15.   A merchant receives an invoice for $25,000 with terms 4/15, *n*/60. What is the highest simple interest rate at which he can afford to borrow in order to take advantage of the discount?

A. 24.3%

B. 25.3%

C. 32.4%

D. 33.8%

r = 1,000/24,000(45/365) = 0.33796 = 33.8%

16.   An invoice for $12,000 has terms 1/20, n/45. If you take out a loan to take advantage of the discount and the bank uses ordinary interest (i.e. the banker's rule), what is the maximum rate of simple interest that you would be willing to pay?

A. 8.08%

B. 8.19%

C. 14.55%

D. 14.75%

r = 120/11,880(25/360) = 0.14545 = 14.55%

17. A merchant receives an invoice for a motor boat for $5000 with term 4/30, $n/100$. In order to take advantage of discount, he wants to borrow the required money. If he can borrow at $r =$ 14%, how much money does he save?

A. $74.08

B. $71.12

C. $65.75

D. $63.12

Discount = 5000(0.04) = 200; Borrow 4800 for 70 days

Repay = 4800(0.14)(70/365) = $128.88

Save = 200 - 128.88 = $71.12

18. You deposit $100,000 on March 31, 2010 in a fund earning simple interest at $r =$ 6%. Using the banker's rule (ordinary interest), how much do you have on July 31, 2010?

A. $102,000.00

B. $102,005.48

C. $102,033.33

D. $102,050.00

Mar 31 to July 31 = 122 days; S = 100,000[1 + (0.06)(122/360)] = $102,033.33

19. A merchant receives an invoice for $4000 with terms 4/30, n/100. What is the highest rate of simple interest at which he can afford to borrow in order to take advantage of the discount?

    A. 14.60%

    B. 15.21%

    C. 20.86%

    D. 21.73%

Discount = 4000(0.04) = 160; Borrow 3840 for 70 days

r = 160/3840(70/365) = 21.73%

20. You invest $8000 in a fund earning simple interest at r = 4% for the first 150 days followed by r = 6% for the last 120 days. How much do you have in your fund at the end of 270 days?

    A. $8291.91

    B. $8289.32

    C. $8287.24

    D. $8284.72

8000 + 8000(0.04)(150/365) + 8000(0.06)(120/365) = $8289.32

21. You invest $20,000. It earns simple interest at 7% for the first 5 months and 8% for the next 3 months. What is the accumulated value at the end of 8 months?

A. $20,998.06

B. $20,995.00

C. $20,986.30

D. $20,983.33

20,000 + 20,000(0.07)(5/12) + 20,000(0.08)(3/12) = $20,983.33

22. You buy a stove for $1500 on March 20, 2010. The store gives you 4 months "interest free", so on July 20, 2010 you must pay the $1500. However, the store charges an administration fee of $50, to be paid today. What rate of simple interest, r, are you being charged for this "interest free" plan?

A. 9.97%

B. 10.00%

C. 10.32%

D. 10.35%

P = 1500 - 50 = 1450; S = 1500; t = 122/365
r = 50/1450(122/365) = 10.32%

23. You buy goods for $10,000 and receive an invoice with terms 1/10, *n*/40. What is the maximum simple interest rate that you would borrow money at to take advantage of the discount?

A. 9.13%

B. 9.22%

C. 12.17%

D. 12.29%

Discount = 10,000(0.01) = 100; Borrow 9900 for 30 days

r = 100/9900(30/365) = 12.29%

24. A $12,000 short term loan was taken out on April 3, 2010 at a simple interest rate of 8%. The amount repaid was $12,481.32. On what date in 2010 was the loan repaid?

A. October 1

B. October 3

C. October 6

D. October 9

t = 481.32/12,000(0.08) = 0.501375 x 365 = 183 days later, which is October 3

25. A merchant receives an invoice for a motor boat for $5000 with term 3/30, $n/100$. In order to take advantage of discount, he wants to borrow the required money. If he can borrow at $r =$ 18%, how much money does he lose (negative) or save (positive)?

A. -$17.42

B. -$22.60

C. $22.60

D. $17.42

Discount = 5000(0.03) = 150; Borrow 4850 for 70 days

I = 4850(0.18)(70/365) = $167.42; Lose $17.42

26. On March 24, 2014, Chen and Mary borrow $18,000 each at a simple interest rate $r = 12\%$. Chen's bank calculates interest using exact interest, while Mary's bank uses the Banker's Rule (ordinary interest). Let $X =$ amount Chen pays back on September 24, 2014, and $Y =$ amount Mary pays back on September 24, 2014. What is the value of $X - Y$?

A. -$15.12

B. -$8.88

C. $8.88

D. $15.12

Days = Set 24 - Mar 24 = 184 days

$X = 18\ 000[1 + (0.12)\ (184/365)] = 19088.88$;

$Y = 18\ 000[1 + (0.12)(184/360)] = 19\ 104$

$X - Y = -\$15.12$

27. Dave takes out a loan for $5000 to be repaid at the end of 9 months. The simple interest rate on the loan is $r = 9\%$ for the first two month, $r = 12\%$ for the next 6 months, and $r = 6\%$ thereafter. How much does Dave have to pay back at the end of 9 months?

A. $5337.50

B. $5450.00

C. $5225.00

D. $5400.00

$S = 5000 + 5000[(0.09)(2/12) + (0.12)(6/12) + (0.06)(1/12)] = \$5400$

28. You buy some furniture for $800 and pay "no interest" for n-days. This means that after n-days, you owe the furniture company $800. However, there is an administration fee of $50 that you must pay today (when you buy the furniture). If the rate of simple interest that you are being charged is 12.4%, what is n (Answer to nearest day)?

A. 99 days

B. 184 days

C. 173 days

D. 196 days

$P = S -$ fee $= 800 - 50 = 750$; $t = n/365 = I/P\,t = 50/(750)(0.124) = 0.537634409$

Which solves for $n = 365(0.537634409) = 196$ days

29.   Mary deposits $15,000 in a bank account earning simple interest rate $r = 5.25\%$ on October 25, 2013 and leaves it on deposit until February 4, 2014. Using exact interest, how much interest is earned during the entire investment period?

A. $217.91

B. $223.13

C. $220.07

D. $222.23

Days = Oct 25 - Feb 4 = 102; $I = Prt$ = 15 000(0.0525)(102/365) = $220.07

30.   Bob purchases a new smart phone for $500. The terms for the purchase are 2/30 n/90. If Bob would need to borrow money to take advantage of the discount, at what simple interest rate r will he be indifferent as to borrowing to take advantage of the discount versus paying the full balance when due? (Assume exact interest).

A. 12.41%

B. 8.28%

C. 12.24%

D. 8.11%

Discount = 500(0.02) = 10; Borrow 490 for 90 - 30 = 60 days

Thus, $r = I/Pt$ = 10/(490)(60/365) = 0.12414966 = 12.41%

31.   You invest $15,000 on December 2, 2010 at a simple interest rate of $r = 6\%$. Interest is to be calculated using ordinary interest (banker's rule). What is the accumulated value of your investment on June 12, 2011?

A. $15,407.50

B. $15,473.42

C. $15,477.53

<u>D.</u> $15,480.00

Days = June 12 - Dec 2 = 192 days

$S = 15,000[1 + (0.06)(192/360)] = \$15,480$

32.   A merchant receives an invoice for $8000 with terms 2/10, n/60. What is the highest rate of simple interest at which he can afford to borrow in order to take advantage of the discount?

A. 14.60%

B. 12.17%

<u>C.</u> 14.90%

D. 12.42%

Discount = 8000(0.02) = 160; Borrow 8000 - 160 = 7840 for 50 days

$r = 160/(7840)(50/365) = 14.90\%$

33.   You deposit $200,000 on April 29, 2012 in a fund earning simple interest at r = 7%. Using the banker's rule (ordinary interest), how much do you have on September 29, 2012?

A. $205,950.00
B. $205,911.11
C. $205,868.49
D. $205,833.33

Days = Sept 29 - April 29 = 153 days
S = 200 000[1 + (0.07)(153/360)] = $205 950

34.   You buy an oven for $1500 on March 20, 2013. The store gives you 4 months "interest free", so on July 20, 2013 you must pay the $1500. However, the store charges an administration fee of $75, which must be paid up front when you buy the oven (March 20, 2013). What rate of simple interest, r, are you being charged for this "interest free" plan?

A. 15.79%

B. 14.25%

C. 14.96%

D. 15.75%

$P = S$ - fee = 1500 - 75 = 1425; S = 1500; I = 75;
days = July 20 - March 20 = 122
Thus, $r = I/Pt$ = 75/(1425)(122/365) = 15.75%

35.   You borrow $800 today at r = 12% from a bank that uses ordinary interest (Banker's rule). You pay back at least $845 in n-days. What is the value of n?

A. 168 days

B. 169 days

C. 171 days

D. 172 days

$t = n/360 = I/Pr$ = 45/(800)(0.12) = 0.46875,
which solves for n = 360(0.46875) = 168.75 = 169 days

Jim borrows $10,000 and writes a promissory note on November 10, 2007. The due date of the note is February 18, 2008. The legal due date value (or maturity value) is $10,472.00.

Brown - Chapter 01

36.   What simple interest rate, r, is Jim being charged on the promissory note?

A. 17.23%

B. 16.73%

C. 16.50%

D. 15.97%

Feb 21 - Nov 10 = 103 days; 10,000[1 + r(103/365)] = 10,472.00

Solves for r = 0.16726 = 16.73%

37.   The note is sold to Kim on December 21, 2007. Kim discounts the note at a simple interest rate of $r = 15\%$. How much does Kim pay for the note?

     A. $10,298.48

     B. $10,211.81

     C. $10,224.10

     D. $10,168.49

Feb 21 - Dec 21 = 62 days; Proceeds = $10,472[1 + (0.15)(62/365)]^{-1}$ = $10,211.81

A promissory note for $6000 is written on April 23, 2007. The due date is October 4, 2007. The simple interest rate on the note is $r = 10.5\%$.

38.   What is the maturity value of the note if ordinary interest (banker's rule) is used?

     A. $6283.07

     B. $6287.00

     C. $6288.25

     D. $6292.25

Oct 7 - Apr 23 = 167 days; $S = 6000[1 + (0.105)(167/360)]$ = $6292.25

39. The note is sold after 80 days to a bank for $6142.29. What rate of return, r, is earned by the original owner (payee) of the note?

    A. 10.43%

    B. 10.57%

    C. 10.67%

    D. 10.82%

$r = I/P\,t = 142.29/(6000)(80/365) = 0.108199 = 10.82\%$

40. Jim lends $8000 to Sally on September 23, 2006. Sally signs a promissory note, with the note due in 10 months. The maturity value of the note is $8536.55. Jim sells the note to a bank on February 23, 2007. If the bank wishes to earn $r = 8\%$, what price does Jim get for the note?

    A. $8259.57

    B. $8261.18

    C. $8264.83

    D. $8268.27

10 months after September 23 is July 23 and the maturity date is July 26

July 26 - Feb 23 = 153 days; Proceeds = $8536.55[1 + 0.08(153/365)]^{-1} = \$8259.57$

You borrow $\$P$ on May 15, 2007. You write a promissory note to repay the loan in 9 months at a simple interest rate of $r = 7\%$.

41.   If the maturity value is $15,012.47, what is the face value of the note? (to nearest dollar)

A. $14,264

B. $14,258

C. $14,250

D. $14,209

9 months after May 15 is Feb 15 and maturity date is Feb 18 (279 days)

$P = 15{,}012.47[1 + 0.07(279/365)]^{-1} = \$14{,}250$

42.   The note was sold 132 days prior to the maturity date to a bank. The bank pays $14,655.23 for the note. What rate of simple discount, $d,$ did they use to determine this price?

A. 5.91%

B. 6.43%

C. 6.58%

D. 6.74%

$14{,}655.23 = 15{,}012.47[1 - d(132/365)]$ solves for $d = 0.065800 = 6.58\%$

43.   A 6-month non-interest bearing promissory note with a face value of $2500 is taken out on Jan. 5, 2007. What are the proceeds on Feb. 12, 2007 if the note is discounted using a simple interest rate of $r = 10\%$?

A. $2380.02

B. $2403.85

C. $2405.75

D. $2497.40

6 months after Jan 5 is July 5 and maturity date is July 8

July 8 - Feb 12 = 146 days; Proceeds = $2500[1 + 0.10(146/365)]^{-1}$ = $2403.85

44.   What is the price of a $100,000 182-day T-bill if the yield rate is 5%?

A. $97,506.85

B. $97,567.50

C. $102,493.15

D. $102,556.90

Price = $100,000[1 + (0.05)(182/365)]^{-1}$ = $97,567.50

45. A loan was taken out on January 1, 2007 at a simple interest rate of 8.5%. Interest is to be calculated using <u>ordinary interest</u> (banker's rule). The amount repaid on December 29, 2007 is $13,027.02. What was the original amount of the loan?

    A. $11,998.64

    <u>B.</u> $12,001.25

    C. $12,006.47

    D. $12,014.21

Dec 29 - Jan 1 = 362 days; $P = 13{,}027.02[1 + (0.085)(362/360)]^{-1} = \$12{,}001.25$

46. A $10,000 91-day T-Bill was purchased for $9889.05 to yield 4.5%. The T-bill is sold 32 days later to an investor who wishes to yield 4.15%. At what price is the T-bill sold?

    A. $9897.59

    B. $9925.03

    C. $9928.06

    <u>D.</u> $9933.36

$P = 10{,}000[1 + (0.0415)(59/365)]^{-1} = \$9933.36$

47. A retailer buys goods from a supplier for $8000. The goods cost the supplier $7750. The retailer signs a non-interest bearing promissory note due in 120 days. After 10 days, the supplier sells the note to a bank that discounts the note using a simple interest rate of 10%. What rate of return, r, did the supplier earn over the 10 days?

A. 0.1%

B. 4.6%

C. 7.5%

D. 9.6%

Proceeds paid by bank = $8000[1 + (0.10)(123 - 10)/365]^{-1} = \$7759.77$

Supplier earned $r = I/P\,t = (7759.77 - 7750)/7750(10/365) = 0.046013 = 4.6\%$

48. A loan was taken out on March 3, 2010 at a simple interest rate of 8%. Interest is to be calculated using <u>ordinary interest</u> (Banker's rule). The amount repaid in 6 months is $12,482.67. What was the original amount of the loan?

A. $11,992.32

B. $11,998.77

C. $12,002.57

D. $12,003.83

March 3 to Sept 3 = 184 days; $P = 12,482.67[1 + 0.08(184/360)]^{-1} = \$11,992.32$

49.   A loan was taken out on January 1, 2010 at a simple interest rate of 8.5%. Interest is to be calculated using <u>ordinary interest</u> (Banker's rule). The amount repaid on December 29, 2010 is $13,027.02. What was the original amount of the loan?

A. $12,014.21

B. $12,011.63

C. $12,001.25

<u>D.</u> $11,998.64

Jan 1 to Dec 29 = 363 days; P = 13,027.02[1 + 0.085(363/360)]$^{-1}$ = $11,998.64

50.   An investor bought a 91-day $25,000 Treasury Bill to yield r = 3.5%. The investor sold the T-bill 40 days later to another investor who wishes to yield r = 3.25%. What price did the T-bill sell for?

A. $25,104.15

B. $25,089.04

<u>C.</u> $24,886.99

D. $24,880.37

P = 25,000[1 + 0.0325(51/365)]$^{-1}$ = $24,886.99

51.   Andrew has a promissory note for $15,000 dated April 6, 2010. The note has a legal due date
        123 days later, with simple interest at 12%. Andrew sells the note on June 1, 2010 to a bank
        charging a simple interest rate of 15%. What are the proceeds of the sale?

        A. $15,202.77
        B. $15,188.40
        C. $15,184.55
        D. $15,170.17

        S = 15,000[1 + 0.12(123/365)] = $15,606.57 (legal due date is Aug 7)
        P = 15,606.57[1 + 0.15(67/365)]$^{-1}$ = $15,188.40

52.   A 182-day T-Bill with a face value of $25,000 is purchased for $$X$ by an investor who wishes to
        yield r = 3.50%. What is X?

        A. $24,558.29
        B. $24,564.24
        C. $24,565.33
        D. $24,571.18

        X = 25,000 [1 + 0.035(182/365)]$^{-1}$ = $24,571.18

53. A loan of P is taken out at a simple interest rate of $r = 10.4\%$. Two months later, a partial loan payment of $500 is made. Of this payment, $301.34 went towards paying interest on the loan while $198.66 went to reducing the outstanding balance of the loan. What is the value of P? (Answer to nearest dollar)

    A. $2898

    B. $3096

    C. $11,461

    D. $17,385

$301.34 = P(0.104)(2/12)$, solves for $P = \$17,385$

54. ABC Company borrows $$P$ from XYZ bank on March 3, 2010 by writing a promissory note, due in 6 months at a simple interest rate of 5%. The bank uses <u>ordinary</u> interest in its calculations. If the maturity value of the note is $257,000, what is P? (Answer to nearest dollar)

    A. $250,494

    B. $250,581

    C. $250,596

    D. $250,682

6 months after Mar 3 is Sept 3 + 3 days = Sept 6 or 184 + 3 = 187 days

$P = 257,000 \, [\, 1 + 0.05(187/360)]^{-1} = \$250,494.11$

55.   Mr. A lends $20,000 to Mr. B on May 6, 2010. A promissory note is written by Mr. B at a simple interest rate of 9%. The due date of the note is October 6, 2010. The maturity value of the note is $20,769.32. Mr. C sells the note to a bank on August 6, 2010 for $20,419.16. What rate of return does the bank earn on their investment?

A. 9.78%

B. 10.26%

C. 11.71%

D. 11.95%

Legal due date is Oct 9; Aug 6 to Oct 9 = 64 days

r = (20,769.32 - 20,419.16)/20,419.16(64/365) = 9.78%

56.   On July 8, 2014, Josephine lends Joni $10,000. Joni gives Josephine a 90-day non-interest bearing promissory note with face amount $10,000. On August 12, 2014, Josephine sells the note to a finance company that uses a simple interest rate $r = 5\%$. What are the proceeds received by Josephine?

A. $9,925.22
B. $9,921.17
C. $10,043.49
D. $10,047.95

Note is sold after Aug 12 - July 8 = 35 days, which is 58 days before maturity

Proceeds = 10 000[1 + (0.05)(58/365)]$^{-1}$ = $9921.17

57.   Which of the following statements is (are) true?

(i) A merchant receives an invoice for $10,000 with terms 4/30, n/90. He/she should not take advantage of the discount if he/she can borrow money at $r = 20\%$

(ii) A 60-day promissory note has a maturity value of $5000. Its price 30- days before maturity, at a rate of simple discount $d = 4\%$, is $4983.56

A. Both are true

B. (i) only

C. (ii) only

D. Neither are true

(i) r = 10 000(0.04)/(9600)(60/365) = 0.25347; so if can borrow at less than 25.3%, you should FALSE

(ii) Price = 5000[1 - (0.04)(30/365)] = $4983.56 TRUE

58.   Jane borrows $10,000 and writes a promissory note on July 10, 2011. The due date is December 12, 2011. The value on the maturity date is $10,472.00. Prior to the maturity date, it is sold to a bank that discounts the note at $r = 5\%$. If the bank pays $10,383.81 for the note, on what day was it sold?

A. October 11
B. October 14
C. October 17
D. October 20

$10\,383.81 = 10\,472.00[1 - (0.05)(n/365)]^{-1}$ which solves for $n = 62$ days
The date of sale is 62 days prior to Dec 15, which is October 14

59.   A 120-day promissory note for $50,000 bears interest at $r = 10\%$. It is sold 90-days before the maturity date to a bank that discounts the note at $r = 15\%$. What does the bank pay for the note?

A. $49,742.71
B. $49,801.85
C. $49,782.29
D. $49,841.48

$S = 50\,000[1 + (0.10)(123/365)] = \$51\,684.93$
$P = 51\,684.93[1 + (0.15)(90/365)]^{-1} = \$49\,841.48$

John borrows $5000 from Brenda and writes a 90-day promissory note. The amount due back on the maturity date (legal due date) is $5137.50.

60.   What was the interest rate on the loan?

A. 10.79%

B. 11.15%

C. 10.50%

D. 10.65%

$r = 137.50/(5000)(93/365) = 0.10793 = 10.79\%$

61.   After 30-days, the note is sold by Brenda to a bank that charges a simple <u>discount</u> rate of $d =$ 10%. What are the proceeds of the sale?

A. $5050.33

B. $5053.05

C. $5048.83

D. $5054.41

$P = 5137.50[1 - (0.10)(63/365)] = \$5048.83$

62.   A 182-day T-Bill with a face value of $50,000 is purchased for X by an investor who wishes to yield $r = 2.85\%$. What is X?

    A. $49,289.45

    B. $49,299.41

    C. $50,720.42

    D. $50,710.55

$X = 50\,000[1 + (0.0285)(182/365)]^{-1} = \$49\,299.41$

63.   A person borrows $100,000 at a simple interest rate $r = 24\%$. He is to repay the loan with 2 payments, one at the end of 2 months and the other at the end of 6 months. The first payment is the same as the 2nd payment. Determine the size of the payments, using the end of 6 months as the focal date.

    A. $46,296.30

    B. $48,076.92

    C. $53,846.15

    D. $53,925.93

$100,000[1 + (0.24)(6/12)] = X[1 + (0.24)(4/12)] + X$ solves for $X = \$53,846.15$

64. A debt of $3000 is due in 4 months and another $5000 is due in 9 months. Instead, it is agreed that a payment of $X, made in 3 months, followed by a payment of $4000 in 10 months, will fully pay off the loan. Using 9 months as the focal date, what is X if the simple interest rate on the loan is r = 10%?

   A. $4365.96
   B. $3960.06
   C. $3896.83
   D. $3841.01

   $3000[1 + (0.10)(5/12)] + 5000 = X[1 + (0.10)(6/12)] + 4000[1 + (0.10)(1/12)]^{-1}$

   solves for X = $3960.06

65. A person owes $4000 ten (10) months from now. It is agreed that she can, instead, pay $X now and another $2000 two years from now to replace the given debts. If simple interest is r = 9%, what is X using 8 months as the focal date?

A. $1929.20

B. $2026.02

C. $2033.18

D. $2155.17

$4000[1 + (0.09)(2/12)]^{-1} = X[1 + (0.09)(8/12)] + 2000[1 + (0.09)(16/12)]^{-1}$

solves for X = $2033.18

66. A loan is to be paid by installments of $800 1-month from now, $600 3-months from now, and $500 4-months from now. Instead of this payment scheme, the borrower wishes to make one single payment 2 months from now. What is the amount of the alternative single payment using a focal date of 3 months and r = 6%?

A. $1905.51

B. $1901.00

C. $1896.03

D. $1890.55

$800[1 + (0.06)(2/12)] + 600 + 500[1 + (0.06)(1/12)]^{-1} = X[1 + (0.06)(1/12)]$

which solves for X = $1896.03

67.   A person borrows $4000 at a simple interest rate of 7%. They agree to repay the loan with payments of X at the end of 2 months, $2X$ at the end of 4 months, and $2X$ at the end of 6 months. Using 6 months as the focal date, what is X?

A. $798.20

B. $809.12

C. $820.34

D. $828.00

$4000[1 + (0.07)(6/12)] = X[1 + (0.07)(4/12)] + 2X[1 + (0.07)(2/12)] + 2X$

Solves for X = $820.34

68. Bill has a debt of $5000 which was due 30 days ago. He also has another debt of $6000 due 90 days from now. It has been decided that these 2 debts will be settled by a payment of $4000 today and a final payment of X made 70 days from now. If the simple interest rate is $r =$ 9%, what is the value of X if you use a focal date of now?

A. $7025.94
B. $7024.80
C. $7000.00
D. $6906.73

5000[1 + (0.09)(30/365)] + 6000[1 + (0.09)(90/365)]$^{-1}$ = 4000 + X[1 + (0.09)(70/365)]$^{-1}$ solves for X = $7025.94

69. A payment of $5000 that was due 20 days ago and another payment of $4000 that is due 50 days from now are to be settled/replaced by a payment of $6000 today and a payment of X 90-days from today. If $r =$ 11%, what is the value of X using today as the focal date?

A. $3051.33
B. $3008.81
C. $3001.67
D. $2892.31

5000[1 + 0.11(20/365)] + 4000[1 + 0.11(50/365)]$^{-1}$ = 6000 + X[1 + 0.11(90/365)]$^{-1}$, solves for X = $3051.33

70.   You have two options available in repaying a loan. You can pay $200 at the end of 5 months and $300 at the end of 10 months <u>or</u> you can pay $*X* at the end of 3 months and $2*X* at the end of 6 months. What is *X* if the simple interest rate is 6% and the focal date is at the end of 5 months.

A. $169.16

B. $168.05

<u>C.</u> $164.22

D. $163.14

$200 + 300[1 + 0.06(5/12)]^{-1} = X[1 + 0.06(2/12)] + 2X[1 + 0.06(1/12)]^{-1}$, solves for *X* = $164.22

71. You have two options available in repaying a loan. You can pay $2000 at the end of 5-months and $3000 at the end of 10-months OR you can pay $X at the end of 2-months and $3X at the end of 9-months. If the simple interest rate is $r = 4\%$ and the focal date is at the end of 5-months, what is X?

A. $1246.89

B. $2479.32

C. $2685.41

D. $2727.19

$2000 + 3000[1 + (0.04)(5/12)]^{-1} = X[1 + (0.04)(3/12)] + 3X[1 + (0.04)(4/12)]^{-1}$

Which solves for $X = \$1246.89$

72. A debt of $5000 is due today and another debt of $4000 is due in 70 days. These debts are to be settled/replaced by a payment of $6000 in 20-days and a payment of $X in 110-days (from today). If $r = 11\%$, what is the value of X using the end of 20 days as the focal date?

A. $2892.31

B. $3008.81

C. $3001.67

D. $3051.34

$5000[1 + (0.11)(20/365)] + 4000[1 + (0.11)(50/365)]^{-1} = 6000 + X[1 + (0.11)(90/365)]^{-1}$

Which solves for $X = \$3051.34$

73.   A loan of P is taken out at a simple interest rate of $r = 10.4\%$. Two months later, a partial loan payment of $500 is made. Of this payment, $301.34 went towards paying interest on the loan while $198.66 went to reducing the outstanding balance of the loan. What is the value of P? (Answer to nearest dollar)

   A. $2898

   B. $11,461

   C. $3096

   D. $17,385

$I = Prt$; $P = 301.34/(0.104)(2/12) = \$17\ 385$

74. A company owes $100,000 at the end of 1-month and another $200,000 at the end of 11-months. Instead, they wish to consolidate their loans and make one single payment of $X at the end of 6 months. It is agreed that the end of 5-months will be the focal date. If the interest is $r = 12\%$, what is the value of X?

A. $295,476.19
B. $295,606.04
C. $300,000.00
D. $295,941.49

$X[1 + (0.12)(1/12)]^{-1} = 100\ 000[1 + (0.12)(4/12)] + 200\ 000[1 + (0.12)(6/12)]^{-1}$

Which solves for $X = \$295\ 606.04$

A man borrows $6000. A payment of $100 is made 100 days later. A second payment of $4000 is paid 200 days after the first payment. A third payment of X is due 50 days after the second payment, after which the loan balance is 0. The loan is charged a simple interest rate of $r = 10\%$.

75.   What is X, if the declining balance method is used?

A. $2413.70

B. $2418.04

<u>C.</u> $2425.93

D. $2429.51

Note: 6000(0.10)(100/365) = 164.38 > 100, thus first payment is carried forward to next payment date: 6000[1 + (0.10)(300/365)] - 4000 - 100 = 2393.15;

X = 2393.15[1 + (0.10)(50/365)] = $2425.93

76.   What is X, if the Merchant's rule is used?

A. $2429.51

B. $2425.93

C. $2418.04

<u>D.</u> $2413.70

6000[1 + (0.10)(350/365)] - 100[1 + (0.10)(250/365)] - 4000[1 + (0.10)(50/365)] = $2413.70

77. A loan of $5000 is taken out on May 25. The interest rate on the loan is r = 12%. A payment of $105 is made 102 days later and a payment of X, is due 175 days after May 25. What is X if the declining balance method is used?

A. $5180.15
B. $5182.67
C. $5184.18
D. $5287.67

Note: 5000(0.12)(102/365) = 167.67 > 105, thus first payment is carried forward to next date
Thus, 5000[1 + (0.12)(175/365)] - (X + 105) = 0 solves for X = $5182.67

78. A loan of $$P$ is taken out. It is to be repaid with a payment of $2000 in 2 months, $50 in 6 months and a final payment due in 10 months. If the merchant's rule is used, the final payment turns out to be $3000. If the rate of simple interest on the loan is r = 12%, what is P?

A. $4733.51
B. $4735.23
C. $4736.36
D. $4738.18

P[1 + (0.12)(10/12)] = 2000[1 + (0.12)(8/12)] + 50[1 + (0.12)(4/12)] + 3000 solves for P = $4738.18

79. A loan of $4000 is due in 9 months with simple interest at 8%. The borrower makes partial payments of $150 in 3 months and $2500 in 6 months. Using the declining balance method, what is the balance due in 9 months?

A. $1508.60

B. $1534.00

C. $1538.77

D. $1540.20

$4000[1 + (0.08)(9/12)] - 150[1 + (0.08)(6/12)] - 2500[1 + (0.08)(3/12)] = \$1534.00$

80. A loan of $20,000 is to be paid off with 2 equal installments of X, occurring 3 months from now and 8 months from now. What is the value of X if r = 9 % and Merchant's Rule is used?

A. $10,291.26

B. $10,404.91

C. $10,409.12

D. $10,413.19

$20,000[1 + (0.09)(8/12)] = X[1 + (0.09)(5/12)] + X;$ solves for $X = \$10,404.91$

81. A debt of $5000 is to be paid off by installments of $2000 in 30 days, $2500 in 60 days, and a final payment of $584.15. If simple interest is charged at $r = 12\%$ and the Declining Balance Method is used, in how many days should the final payment be made?

A. 25
B. 32
C. 85
D. 92

$5000[1 + (0.12)(30/365)] - 2000 = 3049.32$; $3049.32[1 + (0.12)(30/365)] - 2500 = 579.40$
$579.40[1 + (0.12)(t/365)] = 584.15$ solves for $t = 25$ days

82. You take out a loan of $10,000 today at simple interest at $r = 15\%$. You make the following payments: $100 in two months, $8000 in four months and the balance in 6 months. What is the final balance according to the Declining Balance Method?

A. $2445.00
B. $2460.00
C. $2463.84
D. $2562.50

$10,000[1 + (0.15)(4/12)] - (8000 + 100) = 2400$; $2400[1 + (0.15)(2/12)] = \$2460.00$

83.   A loan of $15,000 was repaid as follows: $8000 in 4 months, $150 in 6 months and a payment

of $X in 9 months which will fully pay off the loan. If the rate of simple interest on the loan is

10%, what is the value of X according to the Merchant's rule?

A. $7637.92

B. $7641.67

C. $7661.88

D. $7700.83

15,000[1 + 0.10(9/12)] = 8000[1 + 0.10(5/12)] + 150[1 + 0.10(3/12)] + X

Solves for X = $7637.92

84.   Using the Merchant's rule, a debt of $4000 is paid off as follows: $1000 in 30 days from today,

$2000 in 60 days from today, and a final payment of $1026.51 in 80 days from today. What

simple interest rate, r, was used?

A. r < 4%

B. 4% < r < 4.5%

C. 4.5% < r < 5.0%

D. 5.0% < r

4000[1 + r(80/365)] = 1000[1 + r(50/365)] + 2000[1 + r(20/365)] + 1026.51

Solves for r = 4.21%

85. A debt of $60,000 is to be paid off by installments of $20,000 in 20 days from today, $1500 in 60 days from today and a final payment of X in 85 days from today. If simple interest is charged at r = 16% and the declining balance method is used, what is X?

    A. $40,149.32

    B. $40,172.09

    C. $40,180.74

    D. $41,585.76

60,000[1 + 0.16(20/365)] - 20,000 = 40,526.03

40,526.03[1 + 0.16(40/365] - 1500 = 39,736.62

X = 39,736.62[1 + 0.16(25/365)] = $40,172.09

86. A debt of $5000 is to be paid off by installments of $2000 30-days from now, $2500 60-days from now, and a final payment of $613.68 d-days from now. If simple interest is charged at $r =$ 12% and the declining balance method is used, what is the value of d?

A. 245

B. 240

C. 180

D. 111

5000[1 + 0.12(30/365)] - 2000 = 3049.32

3049.32[1 + 0.12(30/365)] - 2500 = 579.40

X = 579.40[1 + 0.12(d/365)] = $613.68; which solves for d = 180 days after the last payment, so that it is 180 + 60 = 240 days from the date of the loan.

87. A loan of $10,000 was taken out at a simple interest rate of 12%. The first two partial payments are: $200 (91 days after the loan date) and $$Y$ (39 days later). Using the declining balance method, the loan balance immediately after the payment of Y is $8228.67. What is the value of Y?

    A. $2198.73

    B. $2002.56

    C. $2000.00

    D. $1998.73

$10,000(0.12)(91/365) = 299.18 > 200$; payment gets carried forward

$10,000[1 + 0.12 (130/365)] - (200 + Y) = 8228.67$; solves for $Y = 1998.73

88. A $2000 loan is paid off with a payment of $800 in 50 days and a final payment of $1240 in 90 days (after date of loan). Assuming the Merchant's rule, what simple interest rate, r, was used?

    A. $r \geq 10.20\%$

    B. $9.40\% < r \leq 10.20\%$

    C. $8.60\% < r \leq 9.40\%$

    D. $r < 8.60\%$

$2000[1 + r(90/365)] - 800[1 + r(40/365)] - 1240 = 0$; solves for $r = 9.86\%$

89.   Using the Merchant's rule, a debt of $4000 is paid off as follows: $2000 in 50 days and a final payment of $2026.51 in 80 days from today. What simple interest rate, r, was used?

A. $r < 3.0\%$

B. $3.0\% < r < 3.5\%$

C. $3.5\% < r < 4.0\%$

D. $r > 4.0\%$

$4000[1 + r(80/365)] - 2000[1 + r(30/365)] - 2026.51 = 0$; solves for $r = 3.72\%$

90.   A loan of $12,000 is taken out today at a simple interest rate of $r = 15\%$. It is repaid with a payment of $200 in 3-months, $6000 in 6-months (from today) and the balance, X, due in 11 months (from today). What is the value of X using the declining balance method?

A. $7055.00

B. $7131.25

C. $7118.75

D. $7128.71

$12,000(0.15)(3/12) = 450 > 200$; payment gets carried forward

$12,000[1 + 0.15 (6/12)] - (200 + 6000) = 6700$

$X = 6700[1 + 0.15(5/12)] = \$7118.75$

91. Which of the following statements is (are) true with respect to simple interest loans repaid by a series of partial payments?

    (I) Using the Declining Balance Method, a partial payment is not deducted from the outstanding balance at the time the partial payment is made if the partial payment is <u>greater</u> than the interest due at the time.
    (II) The total interest paid over the term of the loan will be the same under the Merchant's Rule and the Declining Balance Method.

    A. Both are true
    B. (I) only
    C. (II) only
    <u>D.</u> None are true

    (I) False: If a partial payment > interest due, it <u>IS</u> applied against the balance
    (II) False: Since the final payment under the declining balance method is always higher, the interest paid will be higher

92. A loan of $10,000 is taken out on October 29, 2010 and is to be paid off with 2 equal installments of X, to be paid on November 18 and December 29. What is the value of X if $r =$ 7% and the Merchant's rule is used?

A. $5038.68
B. $5057.21
C. $5102.45
D. $5171.99

$10000[1 + (0.07)(61/365)] = X[1 + (0.07)(41/365)] + X$, solves for $X = 5038.68

93. A loan of $4000 is paid off over 9-months at a simple interest rate of $r = 8\%$. The borrower makes partial payments of $150 in 3-months and $2500 in 6-months. Using the declining balance method, what is the final balance due at the end of 9-months?

A. $1508.60
B. $1534.00
C. $1538.77
D. $1540.20

Balance in 3 months = 4000[1 + (0.08)(3/12)] - 150 = 3930

Balance in 6 months = 3930[1 + (0.08)(3/12)] - 2500 = 1508.60

Final balance = 1508.60[1 + (0.08)(3/12)] = $1538.77

94.   A debt of $60,000 is to be paid off with partial payments of $20,000 in 20-days (from today), $1500 in 60-days (from today) and a final payment of X in 85-days (from today). If simple interest is charged at 16% and the declining balance method is used, what is X?

A. $40,149.32

B. $40,172.09

C. $40,180.74

D. $41,585.76

Balance in 20-days = 60 000[1 + (0.16)(20/365)] - 20 000 = 40 526.03

Balance in 60 days = 40 526.03[1 + (0.16)(40/365)] - 1500 = 39 736.62

Final balance = 39 736.62 [1 + (0.16)(25/365)] = $40,172.09

95.   A deposit of $25,000 is made on February 28th, 2007. Given a simple discount rate of $d = 8\%$, what is the accumulated value of the $25,000 on May 18th, 2007, assuming the bankers rule for t?

A. $25,446.73

B. $25,440.50

C. $25,438.89

D. $25,432.88

25,000[1 - (0.08)(79/360)]$^{-1}$ = $25,446.73

96.   You owe the bank $2000 in 9 months. Instead you negotiate with the bank to pay $1200 in 3 months and $X in 7 months to fully pay off the loan. Using a simple discount rate of $d = 9\%$ and a focal date of 7 months from now, what is X?

A. $732.89

B. $734.44

C. $866.46

D. $877.08

$2000[1 - (0.09)(2/12)] = 1200[1 - (0.09)(4/12)]^{-1} + X$; Solves for $X = \$732.89$

97.   A bank gives a customer $30,000 on June 5, 2001. What is the amount to be repaid after 3 months if the bank charges $d = 7\%$?

A. $30,525.00

B. $30,529.32

C. $30,534.35

D. $30,538.82

$30,000[1 - (0.07)(92/365)]^{-1} = \$30,538.82$

98. How long will it take $2000 to accumulate to $2119.63 at a simple <u>discount</u> rate of 10%?

    <u>A.</u> 206 days

    B. 215 days

    C. 218 days

    D. 223 days

$t = D/S\ d = 119.63/(2119.63)(0.10) = 0.564390955 \times 365$ days $= 206$ days

99. A bank offers you a 9 month discounted loan, at a simple discount rate of $d = 9.5\%$. In order to receive $5000 today, what size loan should you ask for?

    <u>A.</u> $5383.58

    B. $5356.25

    C. $5000.00

    D. $4643.75

$5000[1 - (0.095)(9/12)]^{-1} = \$5383.58$

100. A man takes out a discounted loan at a simple discount rate of d = 10.5%. If the amount he pays back in 9 months is $5712, how much money does he actually receive today?

A. $5112.24

B. $5262.18

C. $5295.02

D. $5332.00

P = 5712[1 - (0.105)(9/12)] = $5262.18

101. What rate of simple interest, r, is equivalent to a rate of simple discount, d = 9%, over a period of 10 months?

A. 8.25%

B. 8.37%

C. 9.73%

D. 9.89%

r = d/(1 - dt) = 0.09/[1 - 0.09(10/12)] = 0.097297 = 9.73%

102. A man takes out a discounted loan, with face amount $8235, at a simple discount rate of $d =$ 7.5%. If the amount he pays back in 11 months is $8235, how much interest does the man pay on the loan and when does he pay the interest?

A. $529.74, paid today at issue of the loan

B. $529.74, paid at the end of 11 months

C. $566.16, paid today at issue of the loan

D. $566.16, paid at the end of 11 months

$I = D = S d t = 8235(0.075)(11/12) = \$566.16$; Since this is discount, it is paid up front, at the issue of the loan.

103. A merchant issues a promissory note. The note has a term of 90 days and a maturity value of $6122.30. The note is sold after 30 days to a bank that discounts the note at $d =$ 10% simple discount. How much does the bank pay for the note?

A. $6016.63

B. $6018.42

C. $6021.66

D. $6023.29

$P = 6122.30 [1 - (0.10)(63/365)] = \$6016.63$

104. How long will it takes $4000 to accumulate to $4262.77 at a simple <u>discount</u> rate of 9%?

A. 247 days

<u>B.</u> 250 days

C. 263 days

D. 267 days

$4000[1 - 0.09(t/365)]^{-1} = 4262.77$; solves for $t = 250$ days

105. What simple <u>discount</u> rate d is equivalent over a 200-day period to simple interest rate of 8% for the first 100 days and 10% thereafter, if interest from the first 100 days does not earn interest during the last 100 days?

A. 9.11%

B. 9.00%

C. 8.68%

<u>D.</u> 8.58%

$[1 - d(200/365)]^{-1} = 1 + 0.08(100/365) + 0.10(100/365)$; solves for $d = 8.58\%$

106.   A 90-day promissory note with face value $5000, has a maturity value of $5127.40. After 30-days, it is sold to a bank that charges a simple discount rate of d = 10%. What rate of simple interest did the original owner of the note earn?

A. 9.47%

B. 9.83%

C. 10.49%

D. 10.82%

P = 5127.40[1 - 0.10(63/365)] = 5038.90

r = 38.90/5000(30/365) = 9.47%

107.   A man takes out a discounted loan, with face amount $8235, at a simple discount rate of d = 7.5%. If the amount he pays back in 11 months is $8235, how much interest does the man pay on the loan and when does he pay the interest?

A. $529.74, paid today at issue of the loan

B. $529.74, paid at the end of 11 months

C. $566.16, paid today at issue of the loan

D. $566.16, paid at the end of 11 months

D = Sdt = 8235(0.075)(11/12) = $566.16, paid today

108. You go to a bank that offers a 270-day discounted loan at d = 9%. You wish to walk out the door with $5000. What size loan should you ask for?

A. $5360.87

B. $5356.62

C. $5332.88

D. $4667.12

S = 5000[1 - 0.09(270/365)]$^{-1}$ = $5356.62

109. What simple discount rate d is equivalent to a simple interest rate of 8% over a 200-day period?

A. 9.00%

B. 7.66%

C. 8.58%

D. 7.41%

[1 - d(200/365)]$^{-1}$ = 1 + 0.08(200/365); solves for d = 7.66%

110. Mr. A lends $20,000 to Mr. B on May 6, 2010. A promissory note is written by Mr. B at a simple interest rate of 9%, with a due date of October 6, 2010. The maturity value of the note is $20,769.32. The note was sold by Mr. A on June 26, 2010 to Mr. C who discounts the note at a simple discount rate of 8%. What price does Mr. A receive for the note?

A. $20,291.34
B. $20,302.09
C. $20,305.00
D. $20,315.15

Legal due date is Oct 9, which is 105 days after date of sale
$P = 20{,}769.32[1 - 0.08(105/365)] = \$20{,}291.34$

111. A 180-day discounted loan is taken out today from a bank that charges a simple discount rate of $d = 9\%$. The bank also uses ordinary interest in determining the value of t (time). If the amount to be paid back in 180 days is $3000, how much money is actually received today?

A. $2865.00
B. $2866.85
C. $2870.81
D. $2872.5

$P = 3000[1 - 0.09(180/360)] = \$2865.00$

112. A bank lends money using a simple discount rate d = 8%. If John needs $10,000 today and will repay the loan in 8 months, what loan amount should he request?

    A. $10,800.00

    B. $10,533.33

    C. $10,563.38

    D. $9,466.67

$S = 10\ 000[1 - (0.08)(8/12)]^{-1} = \$10\ 563.38$

113. Joanne loans Mark $2500. Mark agrees to repay the loan with simple interest rate $r = 7\%$ in 1 year. Joanne then turns around and immediately sells her loan repayment rights to a bank which uses a simple discount rate of $d = 7\%$. Which of the following statements is (are) true?

(I) Joanne has an immediate net loss of $12.25.

(II) The bank will earn $175 on their investment.

A. Both are true

B. (I) only

C. (II) only

D. None are true

Maturity value of loan = 2500(1.07) = $2675

Proceeds to Joanne = 2675[1 - (0.07)(12/12)] = 2487.75

Thus, Joanne loses 2500 - 2487.75 = $12.25 (I) is true

Bank earns = 2675 - 2487.75 = $187.25 > 175 (II) is false

114. You go to a lending institution that offers a 270-day discounted loan at $d = 9\%$. You wish to walk out the door with $5000. What size loan should you ask for?

    A. $4667.12

    B. $5332.88

    C. $5356.62

    D. $5360.87

$S = 5000[1 - (0.09)(270/365)]^{-1} = \$5356.62$

115. A man takes out a loan at a simple discount rate of $d = 7.5\%$. If the amount he pays back in 11 months is $8235, what is the fee he pays for borrowing the money and when does he pay this fee?

    A. $529.74, paid today at issue of the loan

    B. $529.74, paid at the end of 11 months

    C. $566.16, paid today at issue of the loan

    D. $566.16, paid at the end of 11 months

$D = Sdt = 8235(0.075)(11/12) = 566.16$; and this amount is paid today, at the issue of the loan (interest in advance)

116. You are given that $2000 accumulates to $2032.88 at the end of 120 days at a simple interest rate equal to r. What is the equivalent simple discount rate, d, over the same 120-days period?

A. 5.00%

B. 4.92%

C. 4.53%

D. 1.62%

2000[1 - d (120/365)] $^{-1}$ = 2032.88, which solves for d = 4.92%

117. Which of the following statements is TRUE?

    A. An investment earning simple interest at rate r always earns less interest compared to the same investment using a compound interest rate of $j_1 = r$.

    B. When discounting a promissory note, the larger the simple interest rate used to discount the note, the larger will be the proceeds of the note.

    C. On a loan, interest calculated using ordinary interest is always less than that calculate using exact interest.

    <u>D.</u> If a simple discount rate of d is <u>equivalent</u> to a simple interest rate of r, then $d < r$ as long as time t is positive.

(A) is false - simple interest gives more interest for periods < one compounding period

(B) is false - higher interest rate means lower present values

(C) is false - ordinary interest always leads to more interest since you are dividing by 360 instead of 365

118. A loan of P is taken out at a simple interest rate of $r = 10.4\%$. Two months later a loan payment of $500 is made. Of this payment, $198.66 went to actually paying off the loan while $301.34 went towards interest on the loan. What is the value of P? (Answer to nearest dollar)

A. $2898
B. $3096
C. $11,461
D. $17,385

$P = I/r\,t = 301.34/(0.104)(2/12) = \$17{,}385$

c1 Summary

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