***Personal Finance Canadian Edition, 2e* (Madura/Gill)**
Chapter 2   Part 1 Tools for Financial Planning - Applying Time Value Concepts

2.1   True/False

1) Time value of money is based on the belief that a dollar that will be received at some future
date is worth more than a dollar today.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

2) Future value is regarded as the value of a future amount at the present time, calculated by the
compounded interest.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

3) Money accumulates when it is invested and earns interest, because of the time value of
money.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

4) The present value of an annuity can be obtained by discounting the individual cash flows of an
annuity and totalling them.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

5) To convert the table from ordinary annuity to annuity due is to multiple the annuity payment
by (1+ i).
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

6) Ten percent compounded quarterly with 10 years' investment means 40 compounding periods.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

7) Ten percent compounded quarterly means 5 percent per compounding period.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

8) $PVA = PMT \times PVIFA$
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

9) $FVA = PMT \times FVIFA$
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

10) The shorter the time period, the lower the future value interest factor, other things being equal.
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

11) The longer the time period, the lower the present value interest factor, other things being equal.
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

12) The higher the interest rate, the higher the future value interest factor, other things being equal.
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

13) The higher the interest rate, the lower the present value interest factor, other things being equal.
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

14) You can use either a financial calculator or a future value interest factor table to calculate future value.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

15) Dividend is the rent charged for the use of money.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

16) For a deposit of $1000 to earn 4 percent interest annually, the interest earned is $40 per year.
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

17) Compound interest is the process used to earn interest on interest.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

18) The concept of time value of money will not be applied to many types of financial planning problems.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

19) The process of obtaining a present value is called discounting.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

20) Present value of the first year is determined by the future value divided by $(1 + i)$.
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

21) A nominal interest rate is also called an annual percentage rate (APR).
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

22) Annual percentage rate (APR) is also called effective interest rate.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

23) The effective interest rate is the stated or quoted interest rate by the financial institutions.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

24) The nominal interest rate is the actual rate of interest you earn or pay.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

25) An investment of $2500 grows to $108 945 at 10 percent per annum.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

26) The effective rate of interest and compounding frequency have an inverse relation.
Answer: FALSE
Diff: 3   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

27) The best way to understand the time value of money is to use timelines to capture all information.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

28) Your rental payment per month within the contract is an annuity due.
Answer: TRUE
Diff: 3   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

29) Ordinary annuity is a series of equal amounts of cash flow happening at equal intervals at the end of a period.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

30) Annuity due assumes a series of cash flows happening at the end of a period.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

31) The two types of annuity are ordinary annuity and annuity due.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

32) To calculate the present value, all you need is the amount of money in the future, the interest rate, and the number of years the money will be compounded.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

33) John wants to have a $10 000 down payment for his car in three years and he wants to know how much money must be saved today with a given interest rate to achieve this goal. John has to calculate the present value.
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

34) Future value interest factor (FVIF) bases $1.00 to calculate the $1.00 over time with a given interest rate and the number of periods the $1.00 is compounded.
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

35) Mary deposits $4000 at the beginning of each year and the money will grow to $1 081 170 in 30 years with 12 percent compounded annually.
Answer: TRUE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

36) Mary deposits $4000 at the beginning of each year and the money will grow to $1 081 170 in 30 years with 12 percent compounded quarterly.
Answer: FALSE
Diff: 2   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

37) The annual percentage rate (APR) is the nominal interest rate calculated by multiplying the periodic rate by the number of periods in a year.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

38) ABC Bank offers term deposits with 8 percent compounded quarterly, while XYZ Bank offers term deposits with 7.8 percent compounded annually. We know that ABC Bank offers a higher annualized rate of return.
Answer: TRUE
Diff: 3   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

39) ABC Bank offers term deposits with 8 percent compounded semi-annually, while XYZ Bank offers term deposits with 7.9 percent compounded monthly. We are sure that ABC Bank offers a higher annualized rate of return.
Answer: FALSE
Diff: 3   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Applied

40) A series of future payments with equal cash flow means future value of annuity.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

41) An annuity refers to the payment of a series of equal cash flow payments at equal intervals of time.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

42) Discount refers to the process of earning interest on interest.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

43) Interest = P × r × t × i
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

44) If you borrow money, you will receive interest.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

45) John recently sold an antique for $29 311; the antique was purchased by John at nine years of age for
$17 800. John's annual rate of return on this antique is 7.2 percent.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

46) The higher the interest rate, the higher the future value, other things being equal.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

47) The higher the interest rate, the higher the present value, other things being equal.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Qualitative
Skill Type: Recall

48) The present value of $100 will decrease with a particular discount rate, but the longer the period of time, the smaller the present value.
Answer: TRUE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

49) The future value of $100 will increase with a particular interest rate, but the longer the period of time, the smaller the future value.
Answer: FALSE
Diff: 1   Type: TF
Categories: Applying Time Value Concepts
Financial Type: Quantitative
Skill Type: Applied

2.2   Multiple Choice

1) Approximately what is the present value needed to receive $200 ten years from today, with an annual interest rate of ten percent?
A) $65
B) $77
C) $87
D) $97
Answer: B
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

2) The present value interest factor is
A) always less than 1.0.
B) always more than 1.0.
C) always equal to 1.0.
D) always between 1.0 to 2.0.
Answer: A
Diff: 1   Type: MC
Categories: Components of a Financial Plan
Financial Type: Qualitative
Skill Type: Recall

3) Financial institutions quote rates with different compounding periods. What is the term for the actual interest rate paid or earned?
A) Effective
B) Nominal
C) Real
D) Absolute
Answer: A
Diff: 1   Type: MC
Categories: Components of a Financial Plan
Financial Type: Qualitative
Skill Type: Recall

4) What is the term for the interest rate financial institutions quote?
A) Nominal
B) Effective
C) Annual
D) Absolute
Answer: A
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Qualitative
Skill Type: Recall

5) If you have an investment that will receive $100 at the end of year one, $200 at the end of year two, and $300 at the end of year three, what is the market value of this investment today if the discount rate is 13 percent annually?
A) $553
B) $453
C) $753
D) $653
Answer: B
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

6) Mary wants to have $150 after four years by depositing $100 today and earning six percent interest compounded annually for the next six years. Can Mary attain her financial goal of having $150 lump sum six years later?
A) Yes, future value is more than $150.
B) Yes, present value is more than $150.
C) No, present value is less than $150.
D) No, future value is less than $150.
Answer: D
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

7) What is the future value of $200 received today and deposited at eight percent compounded annually for three years ?
A) $252
B) $250
C) $248
D) $249
Answer: A
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

8) What is the highest effective rate attainable with a 12 percent nominal rate?
A) 12.85 percent
B) 12.75 percent
C) 12.65 percent
D) 12.55 percent
Answer: B
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

9) If John makes annual year-end payments of $8337.83 on a 20-year loan with an annual interest rate of 7.5 percent., what is the original principal amount for John's loan?
A) $82 000
B) $83 325
C) $85 700
D) $85 000
Answer: D
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

10) An antique was originally purchased 50 years ago for $2 and today is worth $600. What is the approximate rate of return realized on the sale of this antique?
A) 23 percent
B) 12. percent
C) 21. percent
D) 13 percent
Answer: B
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

11) Nick invests $50 000 today and the fund guarantees an annuity of $12 345 for six years. What is the approximate rate of return?
A) 13.5 percent
B) 11.6 percent
C) 12.5 percent
D) Insufficient information to calculate
Answer: C
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

12) Danny invests $124 090 in a fund and expects to receive $10 000 per year for the next 30 years. What is the approximate rate of return?
A) 8 percent
B) 6 percent
C) 9 percent
D) 7 percent
Answer: D
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

13) What is the present value of an ordinary annuity of $1550 each year for 15 years, with an interest rate of 6.6 percent per annum?
A) $17 589
B) $16 500
C) $14 481
D) $10 500
Answer: C
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

14) The future value of $676 received today and deposited at 5.85 percent compounded annually for five years is closest to
A) $693.
B) $962.
C) $907.
D) $898.
Answer: D
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

15) If the interest rate is zero, the future value interest factor equals
A) 0.0.
B) -1.0.
C) 1.0.
D) Undefined
Answer: C
Diff: 1   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

16) How long will it take Ivy's money to triple in value at 12 percent compounded quarterly?
A) 9.2 years
B) 9.7 years
C) 9.3 years
D) It depends on the amount
Answer: C
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

17) If you borrow $20 000 as a five-year loan from the bank and the bank requires you to make end-of-year payments of $4878.05, what is the annual interest rate on this loan?
A) 8 percent
B) 6 percent
C) 7 percent
D) 9 percent
Answer: C
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

18) Betty wants to accumulate $1 million by the end of 20 years by making equal annual year-end deposits over the next 20 years. Assuming Betty can earn 10 percent over this period, how much must she deposit at the end of each year?
A) $18 560
B) $22 000
C) $14 760
D) $17 460
Answer: D
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

19) In a recessionary economy, interest rate on deposits can be 0 percent. However, Raymond has an investment of $25 000 now, and in three years it will mature and pay Raymond $32 000. What is the approximate rate of return on his investment?
A) 8.3 percent
B) 8.6 percent
C) 8.9 percent
D) Insufficient information to calculate this question
Answer: B
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

20) The future value interest factor is
A) always equal to 1.0.
B) always less than 1.0.
C) always greater than 1.0.
D) always uncertain.
Answer: C
Diff: 1   Type: MC
Categories: Components of a Financial Plan
Financial Type: Qualitative
Skill Type: Recall

21) The future value of $810 received today and deposited at 7.71 percent compounded annually for four years is closest to
A) $1620.
B) $1090.
C) $1051.
D) $21 435.
Answer: B
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

22) What is the present value of $1000 to be received ten years from today, assuming an interest rate of nine percent per annum?
A) $402.
B) $488.
C) $470.
D) $422.
Answer: D
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

23) The amount to be invested today at a given interest rate over a specified period in order to equal a future amount is called
A) present value interest factor.
B) future value.
C) present value.
D) future value interest factor.
Answer: C
Diff: 1   Type: MC
Categories: Components of a Financial Plan
Financial Type: Qualitative
Skill Type: Recall

24) The future value of today's $200 to be received 10 years later with an interest rate of 10 percent per annum is
A) $424.
B) $484.
C) $542.
D) $519.
Answer: D
Diff: 2   Type: MC
Categories: Components of a Financial Plan
Financial Type: Qualitative
Skill Type: Recall

25) If you want to have $10 000 for a down payment on a new car in three years, assuming an interest rate of 4.5 percent compounded annually, how much money do you need to deposit as a lump sum today?
A) $8412
B) $8712
C) $8112
D) $8763
Answer: D
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

26) Raymond wants to save the college tuition fees he will need in ten years by starting with a deposit of $6500 today and depositing another $500 at the end of each year. How much will Raymond have in ten years if he gets a rate of return of four percent?
A) $15 625
B) $11 960
C) $15 865
D) $17 023
Answer: A
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

27) If you want to save $40 000 for a down payment on a home in five years, assuming an interest rate of 4.5 percent compounded annually, how much money do you need to save each month?
A) $666
B) $697
C) $662
D) $597
Answer: D
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

28) Hazel needs to plan how large a mortgage she can afford. How much would she need to pay monthly on a mortgage of $200 000 at six percent interest, calculated semi-annually and amortized over 30 years?
A) $555
B) $1111
C) $1199
D) $1190
Answer: D
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

29) Aleem needs to figure out how much interest he would save if he paid off his mortgage over 15 years instead of 30 years? His mortgage is $100 000 at six percent interest calculated semi-annually.
A) $44 111
B) $107 069
C) $58 297
D) $62 959.
Answer: D
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

30) Julian wants to figure out how more it will cost monthly to pay off his student loans if he borrows an extra $4000 a year for four years. This will allow him to rent a nicer place and take a holiday each year. Assume that no interest accrues until he completes his education and begins paying off the loan. The interest rate for the loan amount will be seven percent per year compounded monthly and he will pay it off over five years. What would his additional monthly payment be?
A) $374
B) $267
C) $271
D) $317
Answer: D
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

31) Rebeccah is 65 and planing to retire next month. She can select a pension of $1745 monthly guaranteed for the rest of her life, but not indexed for inflation, or take a lump sum of $312 000. Assume she can invest the lump sum at five percent annually and draw the same income as the pension. How long does she need to live in order for the monthly pension to be the better choice?
A) 89
B) 90
C) 92
D) 93
Answer: C
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied

2.3 Short Answer

1) Assuming a discount rate of 14 percent per year, Peter wants to know the market value of his investment today based on the following cash flows:

Year	Cash flows
1 to 5	$20 000 per year
6 to 10	$35 000 per year

A) $120 820
B) $95 650
C) $131 065
D) $19 850
Answer: C
Diff: 3   Type: MC
Categories: Components of a Financial Plan
Financial Type: Quantitative
Skill Type: Applied