

Name: _____

Class: _____

Date: _____

ID: A

Midterm Review Chapters 1 to 4

Multiple Choice

Identify the choice that best completes the statement or answers the question.

1. Determine the future value of a simple interest investment with a 6-year term on a principal of \$150 at 2.8%.
 - A. \$180.50
 - B. \$175.20
 - C. \$402.00
 - D. \$154.30

2. Determine the future value of a simple interest investment where 3% interest paid quarterly for 3 years on \$700.
 - A. \$763.00
 - B. \$728.00
 - C. \$742.00
 - D. \$805.00

3. Patrick invested \$4000 for 9 years. At the investment's maturity, its value was \$5476. What was the annual simple interest rate?
 - A. 3.8%
 - B. 4.1%
 - C. 6.2%
 - D. 5.3%

4. Rosa invested \$600 at 3.9% simple interest. At the investment's maturity, its value was \$1302. How long was the money invested?
 - A. 25 years
 - B. 30 years
 - C. 35 years
 - D. 40 years

5. Jacob has \$30 000 to invest for 5 years. Which investment option will earn him more interest? How much more interest?
- A. 6.2% simple interest, paid monthly
 - B. 4.2% compound interest, paid annually
- A. Option B: \$488.30
B. Option A: \$2448.10
C. Option B: \$230.10
D. Option A: \$2303.23
6. How many compounding periods are there for \$1000 invested for 6 years at 4.2% compounded semi-annually?
- A. 6
 - B. 12
 - C. 42
 - D. 6000
7. Determine the future value and the total interest earned for the investment.

Principal (P) (\$)	Compound Interest Rate per Annum (%)	Compounding Frequency	Term
35 000	3.7	quarterly	7 years

- A. \$45 239.99; 10 239.99
 - B. \$46 245.18; \$11 245.18
 - C. \$45 293.23; \$10 293.23
 - D. \$44 669.12; \$9669.12
8. Use the Rule of 72 to estimate the investment's doubling time.

Principal (P) (\$)	Compound Interest Rate per Annum (%)	Compounding Frequency	Term
700	1.7	weekly	3.5 years

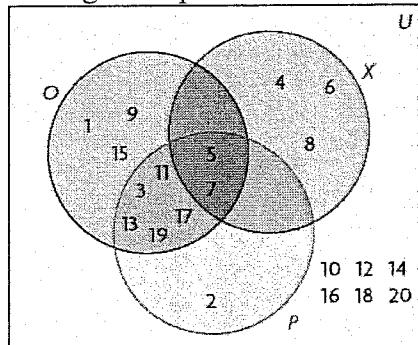
- A. 200 years
- B. 2 years
- C. 42 years
- D. 412 years

9. Determine the present value of a 3-year CSB with an interest rate of 3.9%, compounded semi-annually, if the future value is \$2000.
- A. \$1786.43
 - B. \$1814.49
 - C. \$1779.51
 - D. \$1781.18
10. A \$6000 investment grows to \$7351.81 in 5.5 years. If the investment has interest compounded monthly, determine the interest rate.
- A. 3.7%
 - B. 3.5%
 - C. 3.3%
 - D. 3.2%
11. Determine the term of a \$39 000 investment with an interest rate of 2.06%, compounded quarterly, if the future value is \$52 000.
- A. 14 years
 - B. 15 years
 - C. 16 years
 - D. 17 years
12. This portfolio was started 5 years ago. What is the portfolio's current rate of return?
- Semi-annual deposits of \$4000 into an account averaging 5.85%, compounded semi-annually
 - A 5-year \$19 000 bond earning 6.55%, compounded monthly
- A. 22.38%
 - B. 22.10%
 - C. 21.90%
 - D. 22.54%
13. What is the meaning of *complement* in set theory?
- A. all the elements in the universal set that are not identical
 - B. a set of elements that work well with a given set
 - C. all the elements of a universal set that do not belong to a subset of it
 - D. all the elements that are the opposite of the elements in a given set

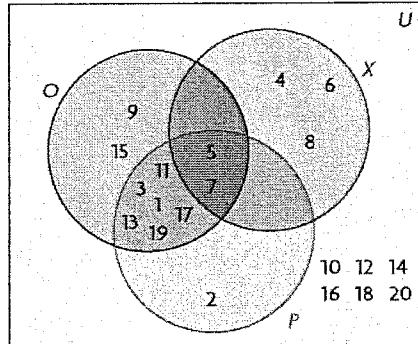
14. Given the following situation:

- the universal set $U = \{\text{positive integers less than } 20\}$
- $X = \{4, 5, 6, 7, 8\}$
- $P = \{\text{prime numbers of } U\}$
- $O = \{\text{odd numbers of } U\}$

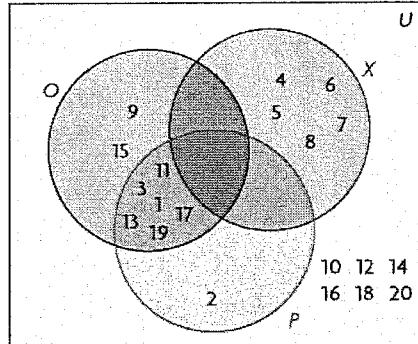
Which diagram represents the situation?



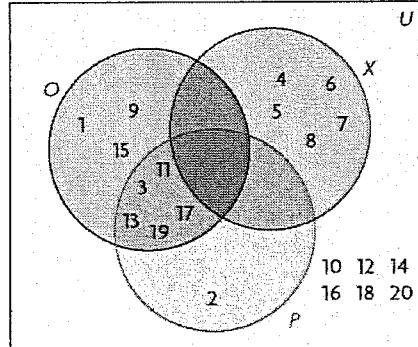
A.



B.

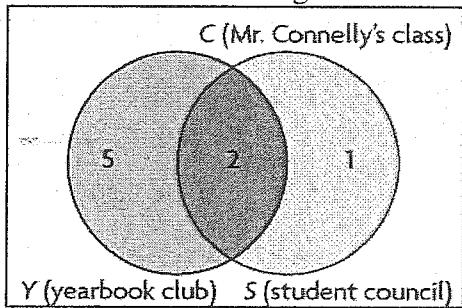


C.



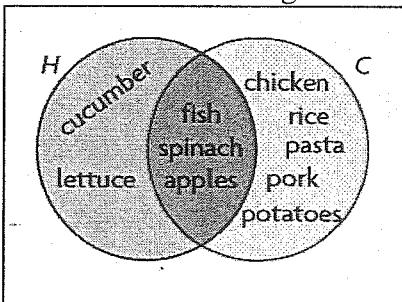
D.

15. There are 28 students in Mr. Connelly's Grade 12 mathematics class. The number of students in the yearbook club and the number of students on student council are shown in the Venn diagram. Use the diagram to answer the following questions.



How many students are in the yearbook club but not on student council?

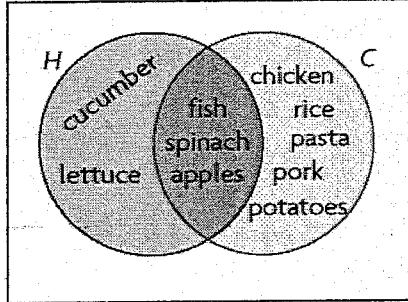
- A. 2
 - B. 5
 - C. 1
 - D. 7
16. Consider the following Venn diagram of foods we eat raw or cooked:



Determine $H \cap C$.

- A. {fish, spinach, apples, cucumber, lettuce, chicken, pork, rice, pasta, potatoes}
- B. {chicken, pork, rice, pasta, potatoes}
- C. {cucumber, lettuce}
- D. {fish, spinach, apples}

17. Consider the following Venn diagram of foods we eat raw or cooked:



Determine $n(H \cup C)$.

- A. 2
- B. 5
- C. 10
- D. 3

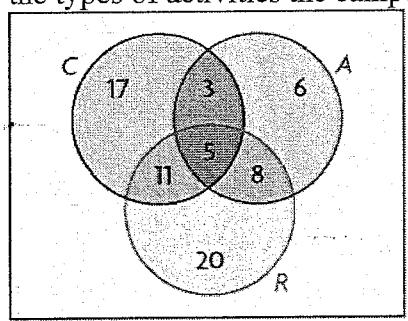
18. Consider the following two sets:

- $C = \{-10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10\}$
- $B = \{-9, -6, -3, 0, 3, 6, 9, 12\}$

Determine $n(C \cap B)$.

- A. 3
- B. 8
- C. 11
- D. 19

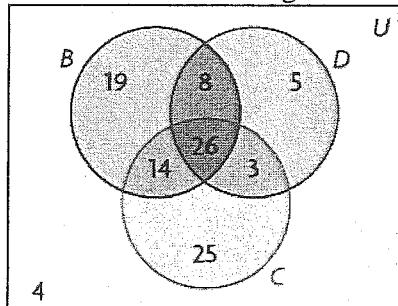
19. A summer camp offers canoeing, rock climbing, and archery. The following Venn diagram shows the types of activities the campers like.



Use the diagram to determine $n((R \cap A) \setminus C)$.

- A. 14
- B. 5
- C. 26
- D. 8

20. Some table games use a board, dice, or cards, or a combination these. The following Venn diagram shows the number of games that use these tools.



Use the diagram to determine $n(C) - n(C \cap B)$.

- A. 39
B. 51
C. 25
D. 28
21. Which sentence is written as a conditional statement?

- A. You can fool some of the people some of the time but you can't fool me.
B. If you are a farmer, then you live in the country.
C. If you can't beat them, join them.
D. You get wet if you stand in the rain.

22. Which sentence is the converse to the conditional statement below?
"If the milk is not refrigerated, then it will spoil."

- A. Unrefrigerated milk will spoil.
B. The milk is spoiled because it was not put in the refrigerator.
C. If the milk is spoiled, then it is not refrigerated.
D. The milk will spoil if it is not put in the refrigerator.

23. Which conditional statement is biconditional?

- A. If you live in PEI, then you live in the smallest province.
B. If you bought a condominium, then you own your home.
C. If you live in Kelowna, then you live in British Columbia.
D. If you live in a house, then you have a backyard.

24. Which statement is the inverse of the conditional statement below?
“If tomorrow is Monday, then today is Sunday.”
- A. If tomorrow is Sunday, then today is not Monday.
B. If today is Sunday, then tomorrow is Monday.
C. If tomorrow is not Monday, then today is not Sunday.
D. If today is not Sunday, then tomorrow is not Monday.
25. What is true about the conditional statement below?
“If a bird has wings, then the bird can fly.”
- A. The converse and inverse are true but the statement and contrapositive are false.
B. The statement and contrapositive are true but the inverse and converse are false.
C. The statement, converse, inverse, and contrapositive are all true.
D. The statement and inverse are true but the converse and contrapositive are false.
26. A combination lock opens with the correct four-letter code. Each wheel rotates through the letters A to L. Suppose each letter can be used only once in a code. How many different codes are possible when repetition is not allowed?
- A. 20 736
B. 11 880
C. 1320
D. 8976
27. The lunch special at a sandwich bar offers you a choice of 6 sandwiches, 4 salads, 6 drinks, and 3 desserts. How many different meals are possible if you choose one item from each category?
- A. 432
B. 576
C. 646
D. 720
28. How many possible ways can you draw a single card from a standard deck and get an even number?
- A. 13
B. 20
C. 21
D. 26

- ____ 29. Evaluate.

$$\frac{1001!}{999!}$$

- A. 1 000 000
- B. 1 001 000
- C. 10 100 100
- D. 999 999

- ____ 30. Identify the expression that is equivalent to the following:

$$n(n-2)!$$

- A. $\frac{n!}{n-2}$
- B. $\frac{n!}{n-1}$
- C. n^2
- D. $n!$

- ____ 31. Solve for n , where $n \in \mathbb{I}$.

$$5 \left(\frac{(n+2)!}{n!} \right) = 100$$

- A. 3
- B. 4
- C. 5
- D. 6

- ____ 32. How many different permutations can be created when Anneliese, Becky, Carlo, Dan, and Esi line up to buy movie tickets, if Esi always stands immediately behind Becky?

- A. 48
- B. 120
- C. 720
- D. 24

- ____ 33. Evaluate.

$$14P_7$$

- A. 17 297 280
- B. 2 162 160
- C. 121 080 960
- D. 105 413 504

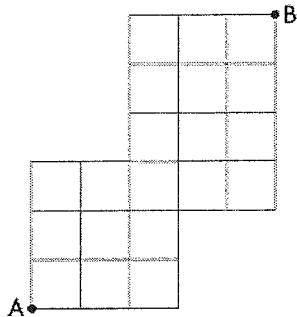
34. Suppose a word is any string of letters. How many five-letter words can you make from the letters in KELOWNA if you do not repeat any letters in the word?

- A. 78 125
- B. 16 807
- C. 2520
- D. 1250

35. How many different arrangements can be made using all the letters in NUNAVUT?

- A. 630
- B. 1260
- C. 2520
- D. 5040

36. How many different routes are there from A to B, if you only travel north or east?



- A. 100
- B. 250
- C. 400
- D. 350

37. There are 14 members of a student council. How many ways can 7 of the members be chosen to serve on the dance committee?

- A. 1144
- B. 1716
- C. 3432
- D. 17 297 280

38. Evaluate. $\binom{9}{4}$

- A. 130
- B. 126
- C. 122
- D. 118

39. Evaluate. ${}_6C_2$
- A. 15
B. 18
C. 30
D. 36
40. Suppose that 10 teachers and 8 students volunteered to be on an environmental action committee. The committee must consist of 2 teachers and 2 students. How many different environmental action committees does the principal have to choose from?
- A. 45
B. 73
C. 1260
D. 5040
41. Identify the term that best describes the following situation:
Determine the number of codes for a lock with three dials numbered 0 to 9.
- A. permutations
B. combinations
C. factorial
D. none of the above
42. How many ways can the 6 starting positions on a hockey team (1 goalie, 2 defense, 3 forwards) be filled from a team of 2 goalies, 5 defense, and 10 forwards?
- A. 1200
B. 2400
C. 4800
D. 9600
43. Euchre is played with a deck of 24 cards that is similar to a standard deck of 52 playing cards, but with only the ace, 9, 10, jack, queen, and king for all four suits.
How many different five-card hands are there with at least three clubs?
- A. 375
B. 926
C. 3336
D. 10 626

Review Answers

Ch1

1. B

2. A

3. B

4. B

5. B

6. B

7. C

8. C

9. D

10. A

11. A

12. B

Ch3 13. C

14. A

15. B

16. D

17. C

18. A

19. D

20. D

21. B

22. C

23. A

24. C

25. A

Ch4

26. B

27. A

28. B

29. B

30. B

31. A

32. D

33. A

34. C

35. B

36. D

37. C

38. B

39. A

40. C

41. A

42. B

43. C