

Part 1: Math & Logic (40%)

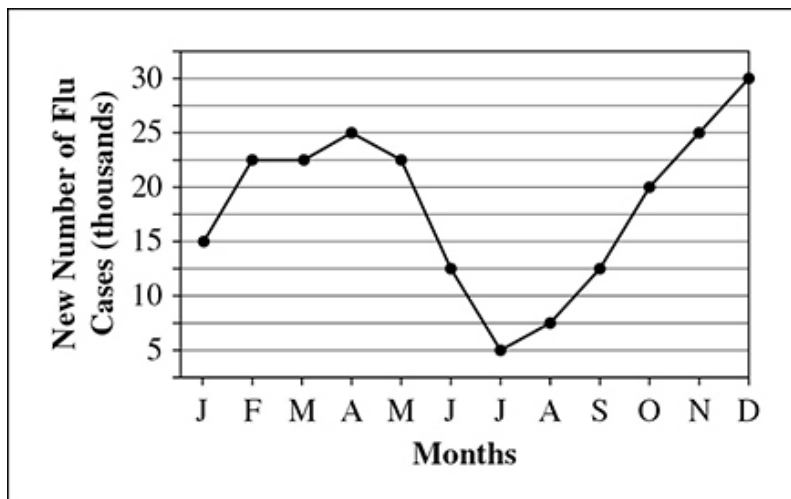
1. $x - 2x + 3 + x - 4 = x + 2x - 6$.
Given that the above equation is true, what is the value of x ?
 - a. $-3/5$
 - b. $3/5$
 - c. $-5/3$
 - d. $5/3$
2. Tselmuun wants to buy tickets for a symphony concert that is sold out. She finds some from a ticket reseller, who will charge her a service fee. The equation $y = 121x + 23$ represents the total amount, y , that Tselmuun will have to pay to buy x tickets. What does 121 mean?
 - a. The price of a single ticket
 - b. The amount of the service fee being charged
 - c. The total amount Tselmuun will pay if she buys just one ticket.
 - d. The total amount Tselmuun will pay for any number of tickets she chooses to buy
3. Baatar walks 25 meters in 12.6 seconds. If he walks at the same pace continually, which of these is approximately his distance covered in 2 minutes?
 - a. 200 meters
 - b. 200 meters
 - c. 240 meters
 - d. 500 meters
4. A steel company uses metric tons and short tons to weigh its products. A short ton weighs approximately 9% less than a metric ton. If one steel shipment weighs 43 short tons, what is the weight of that shipment in metric tons?
 - a. 3.87 metric tons
 - b. 34 metric tons
 - c. 39.13 metric tons
 - d. 40.23 metric tons
5. The manager of a grocery store assigns all part-time hours to various store functions. In one month, 45% of part-time hours were allocated to restocking, 25% of part-time hours were allocated to maintenance, and 20% of part-time hours were assigned to receiving. The manager assigned the remaining 20 hours for general store work. In that month, how many more hours were assigned to restocking than to receiving?
 - a. 20
 - b. 50
 - c. 75
 - d. 80
6. The product of two numbers is 1,452. One of the numbers is 200% larger than the other number. What is the sum of the numbers?
 - a. 22
 - b. 66
 - c. 88
 - d. 363
7. Three coins are tossed at the same time. What is the probability that exactly two heads are face up?
 - a. $3/8$
 - b. $1/4$
 - c. $1/8$
 - d. $1/2$
8. A jar contains 10 blue, 8 green, and 6 red marbles. Every time a marble is removed from the jar, it is not replaced. What is the probability, to the nearest hundredth, that the second marble chosen is green if the first marble chosen is green?
 - a. 0.28
 - b. 0.29
 - c. 0.30
 - d. 0.31
9. $X = \{-4, -2, 1, 3\}$ $Y = \{-1, 4, 5\}$. If x is a number from set X , and y is a number from set Y , the probability that $x + y$ is positive is closest to
 - a. 0.5
 - b. 0.6
 - c. 0.7
 - d. 0.8

Answer	Percent
Strawberry	34.2%
Vanilla	15.1%
Other	40.2%
I don't eat ice cream	10.5%

10. The table above shows the data collected when students at a local school were questioned about their favorite ice cream flavor. Based on this information, what is the approximate probability that a student answered Vanilla, given that he or she did not say "I don't eat ice cream"?

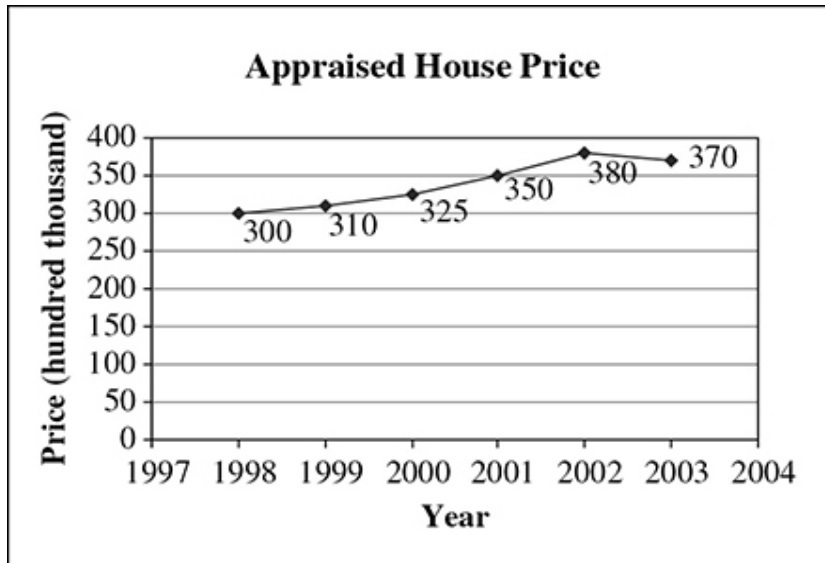
- a. 0.0151
- b. 0.105
- c. 0.151
- d. 0.169

11. According to the graph, between which two months was there the smallest change in the number of new cases of the flu?



- a. February and March
- b. March and April
- c. July and August
- d. August and September

14. The appraised price of a house is shown in the line graph below. What is the average increase in price of houses from 2000 to 2003?



- a. \$5,000
b. \$10,000
c. \$15,000
d. \$25,000
15. A bakery owner decides to increase the bakery's cookie offerings. Starting with 12 types of cookies, the bakery will add 2 new offerings each week for the next 10 weeks. The total number of offerings is represented by c , and the number of weeks is represented by w . If the equation $c = mw + b$ represents the relationship, which variable should be replaced with the number 12?
- a. c
b. w
c. m
d. b
16. $(4X^3 - 6) - (5X^3 - X + 6)$
Which of the following is equivalent to the expression above?
- a. $-9X^3 - X - 12$
b. $-X^3 + X - 12$
c. $-9X^3 + X - 12$
d. $9X^3 + X + 12$
17. The trash haulers charge \$7 for each container of trash and \$1 for each container of recycling. There were a total of 9 containers of trash and recycling. The total charge before taxes for this entire collection was \$45. How many containers of trash were in this collection?
- a. 4.5
b. 6
c. 9
d. 54
18. Construction on a high-rise building doubled the number of floors built each year until after six years there were a total of 192 floors. How many floors were built during the third year?
- a. 3
b. 6
c. 12
d. 96
19. What are the solutions to the quadratic equation seen below?

$$3x^2 - 18x + 24 = 0$$

- a. $x = -4$ and $x = -2$
b. $x = -4$ and $x = 2$
c. $x = 4$ and $x = -2$
d. $x = 4$ and $x = 2$

The Amazon is not just important for its biodiversity; it also supports many indigenous communities who have lived in harmony with the forest for centuries. These communities rely on the forest for food, shelter, medicine, and cultural practices. Despite their deep connection to the land, they now face increasing threats due to deforestation, mining, and agricultural expansion.

Deforestation remains one of the biggest challenges to the Amazon's future. Large sections of the forest are being cleared for cattle ranching and soybean farming, leading to the loss of valuable habitat and contributing to climate change. Conservationists and environmental organizations are working to protect the rainforest through education, sustainable practices, and political action.

Today, the Amazon Rainforest stands as a symbol of nature's richness and resilience. It continues to inspire scientists, activists, and explorers around the world, reminding us of the delicate balance between human progress and environmental preservation.

26. What is the article about?

- A) The history of climate change in South America
- B) A summary of the Amazon Rainforest's importance and challenges
- C) The political impact of indigenous communities in Brazil
- D) The effect of rainforests on tourism

27. Which of the following statements is true?

- A) The Amazon Rainforest is shrinking because of natural causes only.
- B) The Amazon produces less than 10% of the world's oxygen.
- C) Deforestation in the Amazon is caused in part by agriculture.
- D) Scientists have explored every part of the Amazon Rainforest.

28. What is significant about the Amazon's biodiversity as mentioned in the article?

- A) It contains more reptiles than any other forest on Earth.
- B) Many of its species are also found in Africa and Asia.
- C) New species are still being discovered in the region.
- D) Its biodiversity is mainly due to human intervention.

29. What does the word 'resilience' mean in paragraph 5, line 1?

- A) The ability to recover or adapt in difficult situations
- B) A strict resistance to change
- C) The act of disappearing slowly
- D) A soft and fragile condition

30. What is the significance of the Amazon to indigenous communities?

- A) It offers opportunities for modern employment
- B) It is sacred and used only for spiritual rituals
- C) It provides essential resources and supports traditional life
- D) It is used mainly for trading with other countries

31. What evidence supports the idea that the Amazon is not fully explored?

- A) Some regions of the rainforest are too dangerous to enter
- B) Many rivers in the Amazon are still unmapped
- C) Scientists continue to discover new species there
- D) Tourists often get lost while visiting the forest

32. It can be inferred from the article that the major threat to Amazon's future is _____.

- A) overpopulation in cities near the rainforest
- B) limited scientific interest in the region
- C) natural weather events such as floods
- D) human activities like deforestation and mining

33. In modern times, what is the main global importance of the Amazon Rainforest?

- A) It attracts people interested in indigenous languages
- B) It is the main center for South American politics
- C) It helps regulate climate and preserves biodiversity
- D) It provides oil and gas resources to the world

Reading Passage 2

The Life Cycle of Monarch Butterflies

The monarch butterfly is one of the most recognized and admired insects in North America, not only for its striking orange and black wings but also for its extraordinary migration journey and complex life cycle. From a tiny egg to a magnificent adult, the transformation of the monarch is a remarkable example of nature's precision and beauty.

The life cycle of a monarch butterfly consists of four stages: egg, larva (caterpillar), pupa (chrysalis), and adult. A female monarch lays her eggs—often singly—on the underside of milkweed leaves. Within a few days, the eggs hatch into caterpillars that feed exclusively on milkweed, a plant that provides all the nutrients the larvae need and offers a natural defense mechanism. The toxic compounds in milkweed make monarchs distasteful to predators, serving as a built-in protection system.

After about two weeks of feeding and growing, the caterpillar forms a chrysalis. Inside this protective casing, an incredible transformation occurs. Over the course of 10 to 14 days, the caterpillar's body undergoes metamorphosis, emerging as a fully formed butterfly. The monarch then begins its short adult life, focused primarily on mating and reproduction.

Perhaps the most astonishing aspect of monarch biology is their long-distance migration. Monarchs born in late summer or early fall undertake an epic journey spanning thousands of kilometers to reach warmer climates in central Mexico. Unlike most insects, these butterflies do not live long enough to complete the entire migration cycle. Instead, it takes multiple generations to make the round trip, with each generation instinctively continuing the path of its ancestors.

Scientists continue to study monarchs to understand how they navigate such vast distances and how environmental changes, such as habitat loss and climate shifts, impact their survival. Conservation efforts aim to protect milkweed habitats and raise awareness of the importance of this iconic species in maintaining ecological balance.

The monarch butterfly's life cycle is more than a biological process—it is a story of transformation, endurance, and the intricate interconnection between organisms and their environment.

34. According to the passage, monarch caterpillars gain protection from predators by:

- A) hiding underground during the pupal stage
- B) developing camouflage as butterflies
- C) feeding on milkweed, which makes them unappealing to predators
- D) flying in large swarms to scare off predators

35. What stage comes immediately after the monarch caterpillar stops feeding?

- A) Egg
- B) Chrysalis (pupa)
- C) Adult butterfly
- D) Second larval phase

36. Which of the following is true about the monarch butterfly migration?

- A) The migration is completed over several generations.
- B) One butterfly completes the entire journey from Canada to Mexico and back.
- C) Monarchs migrate to Mexico to avoid predators in the north.
- D) Monarchs rely on human assistance for their migration journey.

37. What does the word “metamorphosis” most likely mean in paragraph 3?

- A) A minor adjustment
- B) A chemical reaction
- C) A complete transformation in form and structure
- D) A temporary rest period

38. What is the main purpose of the passage?

- A) To describe the diet of monarch butterflies in detail
- B) To inform readers about the stages and significance of the monarch’s life cycle
- C) To explain how monarch butterflies compete with other insect species
- D) To argue that butterfly migration patterns are no longer necessary

39. The monarch butterfly’s use of milkweed plants demonstrates:

- A) how certain plants produce food for humans
- B) the butterfly’s dependence on a specific plant for nutrition and defense
- C) how butterflies prefer nectar over leaves
- D) how insects use flowers to camouflage

Reading Passage 3

The Science of Sleep

Sleep is a vital biological process that allows the body and mind to rest, recover, and function properly. While we sleep, our bodies undergo important maintenance work, such as repairing tissues, producing hormones, and organizing memories. Without enough sleep, our cognitive abilities, mood, and physical health can all be negatively affected.

The sleep cycle is divided into several stages, including rapid eye movement (REM) and non-REM sleep. Non-REM sleep occurs first and includes the deep, restorative stages where the body repairs itself. REM sleep, on the other hand, is associated with dreaming and plays a critical role in memory consolidation and emotional regulation. A full sleep cycle usually lasts about 90 minutes, and adults typically need 7 to 9 hours of sleep per night for optimal health.

Lack of sleep can lead to a range of problems, including decreased concentration, irritability, weakened immunity, and increased risk of chronic illnesses such as heart disease and diabetes. In today’s fast-paced society, many people prioritize productivity over rest, often at the expense of their health. Factors such as screen time, stress, and irregular schedules can disrupt the natural sleep-wake rhythm, known as the circadian rhythm.

Fortunately, good sleep hygiene—practices that promote consistent, quality sleep—can help improve rest. This includes going to bed and waking up at the same time each day, avoiding caffeine and heavy meals before bedtime, and limiting screen exposure in the evening. Creating a calm, dark, and quiet sleeping environment also supports better sleep.

As researchers continue to explore the complex science of sleep, one thing remains clear: sleep is not a luxury, but a necessity for overall well-being.

40. What does the phrase “sleep is not a luxury, but a necessity” in the final paragraph most likely mean?

- A) People should enjoy sleep as a special treat
- B) Sleep should be reserved for weekends only
- C) Sleep is essential for good health and should not be neglected
- D) Luxury mattresses improve the quality of sleep

41. REM sleep is especially important for:

- A) Memory consolidation and emotional health
- B) Producing hormones that control digestion
- C) Physical recovery from injuries
- D) Building muscle strength

42. According to the passage, what can disrupt the circadian rhythm?

- A) Eating only vegetables
- B) Exposure to screen light and irregular sleep schedules
- C) Daily exercise routines
- D) A high-protein diet

43. What is the main idea of the passage?

- A) How dreams are formed and interpreted
- B) People are sleeping more now than ever before
- C) The different types of sleeping positions and their benefits
- D) Sleep is crucial for mental and physical health, and good habits can improve its quality

44. Which of the following best defines the term "sleep hygiene" as used in the passage?

- A) Cleaning your bed and sheets regularly
- B) Maintaining habits that support restful and consistent sleep
- C) Taking sleep medicine to fall asleep faster
- D) Avoiding dreams and nighttime waking

45. Which of the following is an effect of not getting enough sleep, according to the passage?

- A) Improved creativity and emotional awareness
- B) Increased resistance to chronic illness
- C) Decreased concentration and a weakened immune system
- D) Enhanced ability to multitask

Practical application

For the following exercise, choose the most appropriate option to complete the passage.

46. The new space telescope promises to provide insights into distant galaxies, but scientists remain cautious. They _____ that it will revolutionize our understanding of the universe, but only time will tell.

Which choice completes the text with the most logical and precise word or phrase?

- A) doubt
- B) demand
- C) speculate
- D) establish

47. The global rise in sea levels due to climate change is well documented, and the recent storm surge in Miami _____ the urgency of addressing this issue.

Which choice completes the text with the most logical and precise word or phrase?

- A) circumvents
- B) exemplifies
- C) eclipses
- D) fabricates

48. Many species of birds have been declining in numbers due to habitat loss, and studies on migratory patterns have provided _____ evidence that this is linked to human activities such as deforestation.

Which choice completes the text with the most logical and precise word or phrase?

- A) a definitive
- B) a complicated
- C) an inconclusive
- D) a comprehensive

49. In the past decade, many cities have successfully implemented car-sharing programs to reduce traffic congestion, demonstrating that _____ of these programs leads to a decrease in urban pollution.

Which choice completes the text with the most logical and precise word or phrase?

- A) the introduction
- B) the removal
- C) the withdrawal
- D) the rejection

50. Researchers suggest that people with positive attitudes toward technology are more likely to adopt new tools and devices, especially if they feel that _____ is easy to use and beneficial.

Which choice completes the text best, so that it conforms to the norms of Standard English?

- A) it
- B) you
- C) one
- D) they

51. Historians studying ancient civilizations believe that the development of writing systems in Mesopotamia _____ one of the most important achievements of the early human era.

Which choice completes the text so that it conforms to the conventions of Standard English?

- A) is
- B) have
- C) has
- D) has claimed

52. The committee has been reviewing proposals for a new public park in the city center, which _____ for its blend of open green spaces and modern architecture, creating an urban retreat for residents.

Which choice completes the text with the most logical transition?

- A) for example
- B) by contrast
- C) therefore
- D) is praised

For the following exercises choose the correct word to fill in the blank.

53. The _____ of the new movie left the audience captivated from start to finish.

- A) title
- B) credits
- C) theatre
- D) plot

54. The scientist's groundbreaking discovery was a result of years of hard work and _____.

- A) disinterest
- B) indifference
- C) diligence
- D) reluctance

55. After a year of research, the team presented their new _____ for tackling global poverty.

- A) desire
- B) excuse
- C) strategy
- D) reaction

56. The artist's _____ use of colors and shapes created a masterpiece that was admired by all.

- A) skillful
- B) poor
- C) fast
- D) dishonest

57. She showed great _____ when faced with the difficult decision, analyzing all possible outcomes.

- A) recklessness
- B) judgment
- C) hastiness
- D) ignorance

58. His _____ nature and enthusiasm for life made him a favorite among his friends.

- A) grumpy
- B) jovial
- C) melancholy
- D) irritable

59. The scientist's theory was initially met with skepticism, but over time it gained widespread _____ among experts.

- A) rejection
- B) indifference
- C) acclaim
- D) ignorance

60. After the meeting, the team agreed on a _____ approach to improve sales next quarter.

- A) conflicting
- B) unified
- C) divided
- D) contradictory

Part 3: Essay Question (30%)

Answer the following question in 250-500 words:

If you had unlimited power how would you change the world and/or yourself?