

# HSC STANDARD MATH PRACTICE EXAM (SAMPLE)

## STUDY GUIDE



## SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

<https://hscstandardmath.examzify.com>



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# Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

# How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

## 1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

## 2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

## 3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

## 4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

## 5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

## 6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

## Questions

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- 1. What is the purpose of cross-ventilation in energy-efficient housing?**
  - A. To reduce noise from the outside
  - B. To improve natural lighting in rooms
  - C. To allow airflow for cooling
  - D. To insulate against cold temperatures
- 2. In a linear function, what is the term for the number in front of  $x$ ?**
  - A. Constant term
  - B. Coefficient of  $x$
  - C. Indeterminate term
  - D. Variable term
- 3. What does the capacity of a cut in a flow network represent?**
  - A. Maximum flow possible through the network
  - B. Amount of flow blocked by the cut
  - C. Total capacity of all edges
  - D. Distance from source to sink
- 4. What is inflation primarily characterized by?**
  - A. A decrease in unemployment rates
  - B. An increase in prices and a fall in purchasing value
  - C. Reduction in currency value
  - D. A stable economy without price changes
- 5. Which type of roofing color is recommended for energy-efficient homes?**
  - A. Dark-colored roofing materials
  - B. Light-colored roofing materials
  - C. Transparent roofing
  - D. Metal roofing only
- 6. What is a key characteristic of a normal distribution?**
  - A. The mean is greater than the median
  - B. The distribution is skewed to the right
  - C. The mean, median, and mode are equal
  - D. The distribution has multiple peaks

**7. According to the maximum flow - minimum cut theorem, what is true?**

- A. Maximum flow is always greater than minimum cut
- B. Maximum flow equals the sum of all edges
- C. The value of maximum flow equals the value of minimum cut
- D. Minimum cut depends on the vertex capacity

**8. What is a closed walk?**

- A. A walk that uses all edges
- B. A walk without repeated edges
- C. A walk that starts and ends at the same vertex
- D. A walk that does not revisit any vertices

**9. Which formula is used to calculate the maximum heart rate for males?**

- A.  $226 - \text{age}$
- B.  $220 - \text{age}$
- C.  $200 - \text{age}$
- D.  $240 - \text{age}$

**10. How is the dividend yield calculated?**

- A. Dividends per share multiplied by the current price
- B. A stock's expected cash dividend divided by its current price
- C. Total dividends paid out divided by total shares outstanding
- D. The market price divided by earnings per share



## **Answers**

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1. C
2. B
3. B
4. B
5. B
6. C
7. C
8. C
9. B
10. B

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## **Explanations**

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## 1. What is the purpose of cross-ventilation in energy-efficient housing?

- A. To reduce noise from the outside
- B. To improve natural lighting in rooms
- C. To allow airflow for cooling**
- D. To insulate against cold temperatures

Cross-ventilation in energy-efficient housing is essential for allowing airflow that facilitates cooling. This process involves strategically positioned openings, such as windows and vents, that enable fresh outdoor air to flow through the space while allowing warmer, stale air to exit. By leveraging natural wind patterns, cross-ventilation helps to maintain comfortable indoor temperatures without relying heavily on mechanical cooling systems, thereby promoting energy efficiency. This method is especially beneficial in warmer climates where cooling needs are greater. Through effective design and orientation of the building, homeowners can take advantage of breezes and minimize heat build-up, leading to a more sustainable living environment. This approach not only enhances comfort but also contributes positively to energy savings and reducing reliance on non-renewable energy sources.

## 2. In a linear function, what is the term for the number in front of $x$ ?

- A. Constant term
- B. Coefficient of  $x$**
- C. Indeterminate term
- D. Variable term

In the context of a linear function, the term that refers to the number in front of the variable  $x$  is called the coefficient of  $x$ . This coefficient represents the rate of change or the slope of the function, indicating how much  $y$  changes for a unit change in  $x$ . For example, in the linear function written in the slope-intercept form as  $y = mx + b$ , ' $m$ ' is the coefficient of  $x$ , which dictates the steepness of the line when graphed. The larger the absolute value of this coefficient, the steeper the line will be. Additionally, this coefficient can be positive or negative, reflecting whether the line ascends or descends across the coordinate plane. This understanding is foundational in analyzing and interpreting linear relationships, making it crucial not only for solving algebraic problems but also for applications in real-world contexts, such as predicting trends.

## 3. What does the capacity of a cut in a flow network represent?

- A. Maximum flow possible through the network
- B. Amount of flow blocked by the cut**
- C. Total capacity of all edges
- D. Distance from source to sink

In the context of flow networks, the capacity of a cut represents the maximum amount of flow that can be blocked or prevented from traveling from the source to the sink. A cut divides the set of vertices into two disjoint subsets, effectively separating the source from the sink. The capacity of this cut is calculated by summing the capacities of the edges that cross from the source side to the sink side. This value indicates the greatest total flow that can be eliminated or "cut off" from reaching the sink. Understanding this concept is crucial when analyzing flow networks, especially in relation to the max-flow min-cut theorem, which states that the maximum flow in a network is equal to the minimum capacity of a cut. By knowing this, one can determine the limits of flow within the network based on the constraints created by cuts.

#### 4. What is inflation primarily characterized by?

- A. A decrease in unemployment rates
- B. An increase in prices and a fall in purchasing value**
- C. Reduction in currency value
- D. A stable economy without price changes

*Inflation is primarily characterized by an increase in prices and a fall in purchasing value. This occurs when the overall level of prices for goods and services rises, eroding the purchasing power of currency. As prices rise, consumers are able to buy less for the same amount of money, leading to a decrease in the value of money over time. This concept is crucial in understanding how economies function, as inflation impacts everything from consumer behavior to business planning. The other options reflect concepts that may be related to economic conditions but do not define inflation itself. For example, a decrease in unemployment rates does not inherently indicate inflation, as economic growth could lead to job creation without significant price changes. Similarly, a reduction in currency value may result from inflation but is not the defining characteristic of the concept. A stable economy without price changes represents a lack of inflation, which contrasts the essence of what inflation represents. Therefore, the characterization of inflation by an increase in prices and a fall in purchasing value is accurate and central to understanding this economic phenomenon.*

#### 5. Which type of roofing color is recommended for energy-efficient homes?

- A. Dark-colored roofing materials
- B. Light-colored roofing materials**
- C. Transparent roofing
- D. Metal roofing only

*In the context of energy efficiency in homes, light-colored roofing materials are recommended primarily because they are effective at reflecting sunlight. This reflective property helps to keep the home cooler in the warmer months, reducing the need for air conditioning and thereby lowering energy consumption. Light-colored roofs can significantly reduce heat absorption and mitigate the urban heat island effect, which is particularly beneficial in densely populated areas. By reflecting more solar energy, light-colored roofs help maintain comfortable indoor temperatures and can lead to energy savings. This choice is supported by various studies and guidelines that advocate for lighter-colored surfaces in order to enhance thermal comfort and energy efficiency. In contrast, dark-colored roofing materials tend to absorb more heat, which can lead to higher energy demands for cooling. Transparent roofing, while potentially allowing for natural light, does not provide the same insulation and protective benefits against heat absorption. Metal roofing, although it can be energy-efficient depending on the coating and finish, is not specifically tied to the color recommendation as light-colored materials are.*

## 6. What is a key characteristic of a normal distribution?

- A. The mean is greater than the median
- B. The distribution is skewed to the right
- C. The mean, median, and mode are equal**
- D. The distribution has multiple peaks

A fundamental characteristic of a normal distribution is that it is perfectly symmetrical, which means that the mean, median, and mode all occupy the same central point. This symmetry indicates that half of the data values lie below this central value and half lie above it, resulting in a bell-shaped curve. In a normal distribution, the properties ensure that the averages used to describe the data—whether it's the mean, median, or mode—are the same, providing a consistent measure of central tendency. This equality is crucial for statistical analysis and the application of various mathematical techniques that rely on the assumptions of normality. The other choices reflect characteristics that are not present in a normal distribution, such as skewness or the presence of multiple peaks, which suggest that the data distribution is not symmetrical or that it has a different shape entirely. Understanding this behavior is essential for recognizing how various distributions behave in statistics.

## 7. According to the maximum flow - minimum cut theorem, what is true?

- A. Maximum flow is always greater than minimum cut
- B. Maximum flow equals the sum of all edges
- C. The value of maximum flow equals the value of minimum cut**
- D. Minimum cut depends on the vertex capacity

The maximum flow - minimum cut theorem is a fundamental principle in network flow theory which states that in a flow network, the maximum amount of flow that can be sent from a source to a sink is equal to the capacity of the minimum cut that separates the source from the sink. This means that when you identify the maximum flow achievable in a network, it directly corresponds to the capacity of the smallest set of edges that, if removed, would completely disconnect the source from the sink. This duality between flow and cut is what makes option C the correct choice. In a flow network, the maximum flow represents the most efficient way to transmit data or resources from one point to another, while the minimum cut reflects the least capacity needed to sever that connection. Thus, the equality established in the theorem highlights a critical balance in understanding network flows.

## 8. What is a closed walk?

- A. A walk that uses all edges
- B. A walk without repeated edges
- C. A walk that starts and ends at the same vertex**
- D. A walk that does not revisit any vertices

A closed walk specifically refers to a sequence of edges in a graph that begins and ends at the same vertex. This means that you can traverse around the graph, following the edges, and return to the starting point, forming a loop. The concept of a closed walk is essential in various areas of graph theory, as it helps in understanding cycles and connectivity within graphs. In contrast to this definition, other types of walks could allow for the use of all edges, restrict the use of repeated edges or vertices, or involve paths that do not return to the initial vertex. Hence, the characteristic of starting and concluding at the same vertex is central to defining a closed walk.

## 9. Which formula is used to calculate the maximum heart rate for males?

- A.  $226 - \text{age}$
- B.  $220 - \text{age}$**
- C.  $200 - \text{age}$
- D.  $240 - \text{age}$

To calculate the maximum heart rate for males, the commonly used formula is 220 minus the individual's age. This formula helps estimate the highest number of beats per minute (bpm) that a person can achieve during intense physical exertion. For example, if a male is 30 years old, his estimated maximum heart rate would be  $220 - 30$ , which equals 190 bpm. The formula is based on research that identifies a general trend between age and maximum heart rate, reflecting how heart efficiency and capacity typically decrease with age. Using this formula provides a useful guideline for individuals to determine safe and effective exercise intensities based on their heart rate. The other options, while they may seem reasonable, do not align with the established formula for calculating maximum heart rate that is widely accepted in fitness and health contexts.

## 10. How is the dividend yield calculated?

- A. Dividends per share multiplied by the current price
- B. A stock's expected cash dividend divided by its current price**
- C. Total dividends paid out divided by total shares outstanding
- D. The market price divided by earnings per share

The dividend yield is a key financial metric used by investors to assess the return on investment from owning shares of a stock, specifically in terms of cash dividends received. It is calculated by taking the expected cash dividend per share and dividing it by the current market price per share of the stock. This formula expresses the dividend yield as a percentage, providing a clear picture of the income generated relative to the price paid for the stock. By using the expected cash dividend in the numerator, this approach focuses on the real cash flow an investor anticipates receiving from the investment. Dividing by the stock's current price allows investors to see how much yield they can expect compared to what they pay for the security. Higher dividend yields can indicate a potentially income-generating investment, making it a valuable metric for those looking for passive income. Other methods for calculating dividend-related figures, while useful in different contexts, do not give the direct dividend yield related to the stock's price. Understanding this relationship can help investors make more informed decisions based on their income objectives.

## Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at [hello@examzify.com](mailto:hello@examzify.com).

Or visit your dedicated course page for more study tools and resources:

<https://hscstandardmath.examzify.com>

We wish you the very best on your exam journey. You've got this!

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