

TSI A2 MATHEMATICS PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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. Which of the following is a divisibility rule for 9?
 - A. The sum of digits is divisible by 9
 - B. The last digit is 9
 - C. The product of digits is divisible by 9
 - D. The number ends with 0
2. Find the common denominator for $\frac{2}{3}$ and $\frac{5}{6}$.
 - A. 3
 - B. 6
 - C. 9
 - D. 12
3. In a right triangle with legs 5 and 12, what is the hypotenuse?
 - A. 5
 - B. 12
 - C. 15
 - D. 13
4. Simplify the product by canceling common factors: $(\frac{6}{25}) \times (\frac{25}{8})$.
 - A. $\frac{3}{4}$
 - B. $\frac{6}{8}$
 - C. $\frac{150}{200}$
 - D. $\frac{1}{2}$
5. What is the probability of getting two heads when flipping a fair coin twice?
 - A. $\frac{1}{2}$
 - B. $\frac{1}{8}$
 - C. $\frac{3}{4}$
 - D. $\frac{1}{4}$
6. A price increases from 40 to 50. What is the percent increase?
 - A. 25%
 - B. 20%
 - C. 12.5%
 - D. 50%

7. With principal 200, rate 5% per year, time 2 years, what is the interest earned and total amount?

- A. $I = 40$, total = 240
- B. $I = 20$, total = 220
- C. $I = 10$, total = 210
- D. $I = 50$, total = 250

8. Factor by grouping: $x^3 - 3x^2 + 2x - 6$.

- A. $(x + 3)(x^2 - 2)$
- B. $(x - 1)(x^2 - 6)$
- C. $(x - 4)(x^2 + 2)$
- D. $(x - 3)(x^2 + 2)$

9. If a line $y = 2x + 2$ has $x = 0$, what is y ?

- A. 0
- B. 2
- C. 4
- D. 6

10. For the line $y = 2x + 3$, the x -intercept is which value?

- A. $-3/2$
- B. $3/2$
- C. -3
- D. 0

Answers

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

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Explanations

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1. Which of the following is a divisibility rule for 9?

- A. The sum of digits is divisible by 9
- B. The last digit is 9
- C. The product of digits is divisible by 9
- D. The number ends with 0

Divisibility by 9 is tested by the sum-of-digits rule. Because $10 \equiv 1 \pmod{9}$, a number written in base 10 is congruent to the sum of its digits modulo 9. So the number is divisible by 9 exactly when that digit sum is divisible by 9. For example, a number like 981 has digits 9, 8, and 1; their sum is 18, which is divisible by 9, so 981 is divisible by 9 (indeed $109 \times 9 = 981$). Other statements don't hold as universal tests: ending with 9 isn't enough to ensure divisibility by 9 (e.g., 19 isn't divisible by 9), the product of digits isn't a reliable indicator, and ending with 0 tests divisibility by 10, not by 9.

2. Find the common denominator for $\frac{2}{3}$ and $\frac{5}{6}$.

- A. 3
- B. 6
- C. 9
- D. 12

A common denominator is a number that both denominators can divide into, and when adding or comparing fractions we usually use the smallest such number, called the least common denominator. For $\frac{2}{3}$ and $\frac{5}{6}$, the denominators are 3 and 6. The multiples of 3 are 3, 6, 9, ... and the multiples of 6 are 6, 12, ... The smallest shared multiple is 6, so 6 is the common denominator. Rewriting with this denominator: $\frac{2}{3}$ becomes $\frac{4}{6}$, and $\frac{5}{6}$ stays $\frac{5}{6}$. This makes it easy to combine or compare them ($\frac{4}{6}$ and $\frac{5}{6}$ share the same bottom). While 12 would also work as a common denominator, 6 is the smallest one, which is why it's preferred.

3. In a right triangle with legs 5 and 12, what is the hypotenuse?

- A. 5
- B. 12
- C. 15
- D. 13

In a right triangle, the hypotenuse is found using the Pythagorean relation $c^2 = a^2 + b^2$, where a and b are the legs. With legs 5 and 12, the hypotenuse is $c = \sqrt{5^2 + 12^2} = \sqrt{25 + 144} = \sqrt{169} = 13$. The hypotenuse must be the longest side, and 13 is longer than both 5 and 12, which fits this role. This is a well-known 5-12-13 right triangle. So the hypotenuse is 13.

4. Simplify the product by canceling common factors: $(6/25) \times (25/8)$.

- A. $3/4$
- B. $6/8$
- C. $150/200$
- D. $1/2$

Canceling common factors across fractions lets you simplify a product. In $(6/25) \times (25/8)$, the 25 in the denominator of the first fraction cancels with the 25 in the numerator of the second, leaving $(6/1) \times (1/8) = 6/8$, which reduces by 2 to $3/4$. You'd get the same result if you multiplied first and then reduced: $6 \times 25 = 150$ and $25 \times 8 = 200$, and $150/200$ reduces to $3/4$. The other forms shown represent the same value in non-simplified terms ($6/8$ and $150/200$) or are not equal ($1/2$). The simplest form is $3/4$.

5. What is the probability of getting two heads when flipping a fair coin twice?

- A. $1/2$
- B. $1/8$
- C. $3/4$
- D. $1/4$

Flipping a fair coin twice involves two independent trials, each with two equally likely outcomes: heads or tails. To get two heads, both flips must be heads. The probability of the first flip being heads is $1/2$, and the probability of the second being heads is also $1/2$; since the flips are independent, multiply them: $1/2 \times 1/2 = 1/4$. Another way to see it is that there are four equally likely outcomes (HH, HT, TH, TT), and only one of them is two heads, so the probability is 1 out of 4, which is $1/4$. The other numbers don't match the event of two heads in two flips: $1/2$ is a single-flip probability, $3/4$ is the complement of not getting two heads, and $1/8$ corresponds to something involving three flips. So the probability is $1/4$.

6. A price increases from 40 to 50. What is the percent increase?

- A. 25%
- B. 20%
- C. 12.5%
- D. 50%

Percent change measures how much something grows compared to its original amount. Here, the price rises from 40 to 50, so the increase is $50 - 40 = 10$. Compare that to the original price: $10 \div 40 = 0.25$, which is 25%. So the price increase is 25%. The other percentages would come from different increases (for example an increase of 8 is 20%, an increase of 5 is 12.5%, and an increase of 20 is 50%), which don't match the actual increase of 10.

7. With principal 200, rate 5% per year, time 2 years, what is the interest earned and total amount?

- A. $I = 40$, total = 240
- B. $I = 20$, total = 220**
- C. $I = 10$, total = 210
- D. $I = 50$, total = 250

This tests understanding of simple interest. The interest earned is calculated as $\text{principal} \times \text{rate} \times \text{time}$. Convert the rate to a decimal: $5\% = 0.05$. With a principal of 200 and time of 2 years, $\text{interest} = 200 \times 0.05 \times 2 = 20$. The total amount after 2 years is the principal plus interest: $200 + 20 = 220$. So the correct pairing is $I = 20$ and total = 220. The other values would require a different rate or time, which isn't the case here.

8. Factor by grouping: $x^3 - 3x^2 + 2x - 6$.

- A. $(x + 3)(x^2 - 2)$
- B. $(x - 1)(x^2 - 6)$
- C. $(x - 4)(x^2 + 2)$
- D. $(x - 3)(x^2 + 2)$**

Factoring by grouping looks for a common factor in pairs of terms so a common binomial can be pulled out. For $x^3 - 3x^2 + 2x - 6$, group the terms as $(x^3 - 3x^2)$ and $(2x - 6)$. Factor each group: $x^2(x - 3)$ and $2(x - 3)$. Both groups share $(x - 3)$, so factor it out: $(x - 3)(x^2 + 2)$. The quadratic $x^2 + 2$ can't be factored further over the real numbers, so this is the complete factorization.

9. If a line $y = 2x + 2$ has $x = 0$, what is y ?

- A. 0
- B. 2**
- C. 4
- D. 6

Substitute the given x -value into the line's equation $y = 2x + 2$. With $x = 0$, $y = 2(0) + 2 = 2$. This is the y -coordinate when x is 0, i.e., the line's y -intercept at $(0, 2)$. So the value is 2. The other numbers would come from different x -values—for example, $y = 4$ would require $x = 1$, $y = 0$ would require $x = -1$, and $y = 6$ would require $x = 2$.

10. For the line $y = 2x + 3$, the x -intercept is which value?

- A. $-3/2$**
- B. $3/2$
- C. -3
- D. 0

To find the x -intercept of a line, set y to zero and solve for x . For $y = 2x + 3$, we have $0 = 2x + 3$. Subtract 3 from both sides to get $-3 = 2x$, then divide by 2 to get $x = -3/2$. So the x -intercept is the point $(-3/2, 0)$. This makes the y -coordinate zero when substituted into the equation, which is what defines the x -intercept. The other values don't work because plugging them into the equation does not yield $y = 0$ (for example, $x = 3/2$ gives $y = 6$, $x = -3$ gives $y = -3$, and $x = 0$ would give $y = 3$).

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.

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

<https://tsia2math.examzify.com>

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

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