SECTION D: TSIA2 MATH SIMULATIONS

Welcome to the fourth and final simulation section of Part Two. The next five practice exams are built to mirror the TSIA2 — the Texas Success Initiative Assessment 2.0 — which is the mandatory placement test for every incoming student at a Texas public college or university who has not already earned an exemption through SAT, ACT, or high school coursework benchmarks. If you are attending any public institution in the Texas higher education system, the TSIA2 is the test standing between you and your first college math class, and the score you earn will determine whether you enroll in college-credit math immediately or whether you must first complete developmental coursework at your own expense.

About the Official TSIA2 Math Exam

The TSIA2 was introduced by the Texas Higher Education Coordinating Board in January 2021, replacing the original TSIA that had been in use since 2013. It is produced by the College Board — the same organization that creates the ACCUPLACER — and is administered at every public college and university in Texas. The exam covers two main subject areas: Mathematics and English Language Arts and Reading (ELAR). This guide focuses exclusively on the Mathematics portion.

The TSIA2 Math test has a distinctive **two-part structure** that sets it apart from every other placement exam in this guide. Every test taker begins with the **College Readiness Classification (CRC) test**, which contains approximately **20 multiple-choice questions** covering the full range of math content. If you score at or above the state benchmark of **950**, you are placed into college-level math and you are done — no further testing is required. If you score below 950, you automatically continue into the **Diagnostic test**, which contains approximately **48 additional questions** across the four content categories. The diagnostic result is reported as a **level from 1 to 6**, and students who score a diagnostic level of **5 or 6** are placed into specific developmental or co-requisite math pathways depending on the institution.

Both the CRC and Diagnostic portions are adaptive and untimed. The test uses the on-screen calculator provided by the College Board system — personal calculators are not allowed. The TSIA2 Math content is organized into four official content categories: **Quantitative Reasoning** (ratios, proportions, percents, linear equations and expressions), **Algebraic Reasoning** (linear, quadratic, polynomial, exponential, rational, and radical equations and functions), **Geometric and Spatial Reasoning** (unit conversion, perimeter, area, volume, transformations, and right-triangle trigonometry), and **Probabilistic and Statistical Reasoning** (classifying data, data representations, probability, and statistical inference). Each

content category contributes approximately one-fourth of the questions on both the CRC and the Diagnostic tests.

About the Simulations in This Section

This section contains **five simulations** — four full-length CRC simulations of 20 questions each and one full-length Diagnostic simulation of 48 questions. Together, the five simulations deliver **128 practice questions** designed to reflect the official TSIA2 Math content distribution exactly.

Practice Exams 12, 13, 14, and 15 are each **20-question CRC simulations**. Each simulation includes 5 Quantitative Reasoning questions, 5 Algebraic Reasoning questions, 5 Geometric and Spatial Reasoning questions, and 5 Probabilistic and Statistical Reasoning questions, matching the official CRC content distribution. Taking these simulations in order gives you four complete opportunities to practice the exact format and difficulty of the real TSIA2 CRC test before test day.

Practice Exam 16 is a full-length **48-question Diagnostic simulation**, with 12 questions in each of the four content categories. This simulation is intended for students whose CRC practice scores fall below the 950-equivalent threshold — if your CRC simulations consistently show that you will not meet the benchmark on the first pass, Practice Exam 16 prepares you for the diagnostic portion that will follow the CRC on the real exam. Even students who expect to pass the CRC can benefit from completing the Diagnostic simulation as additional comprehensive practice.

Each simulation is followed by a complete answer key with detailed explanations for every question. The explanations identify the correct answer, walk through the reasoning, and point you back to the specific chapter in Part One where the relevant concept was taught. When you miss a question, the explanation becomes a focused review lesson — return to the chapter, rework the example problems, and move on with the weakness addressed.

How to Take These Simulations

Treat each CRC simulation as a 30- to 45-minute session in a quiet, uninterrupted environment. The Diagnostic simulation (Practice Exam 16) will take longer — plan for 60 to 90 minutes. Keep scratch paper and a pencil ready, and limit yourself to a basic on-screen calculator equivalent. The real TSIA2 displays a calculator icon on select questions where computation is expected; for these practice simulations, use a basic four-function calculator only when a problem clearly requires one and work the rest with mental math and paper.

Work each question carefully and honestly. Do not flip to the answer key until the full simulation is complete. After finishing, review every question — correct and incorrect alike. For every wrong answer, return to the relevant chapter in Part One, reread the section, and rework the example problems before moving on to the next simulation.

Scoring Yourself

The real TSIA2 CRC reports scores on a scale from 910 to 990, with 950 as the state benchmark for college-ready placement. On these paper simulations, track your **percent correct** on each CRC simulation. A percent correct of **70% or higher** on a 20-question CRC simulation generally corresponds to a passing CRC score at or above 950. Scores below that threshold suggest you should complete the Diagnostic simulation (Exam 16) as well and plan for the diagnostic portion on the real test.

Record your CRC score on every simulation and watch for improvement across Practice Exams 12, 13, 14, and 15. Consistent scores above the 70% threshold — especially on two or more consecutive simulations — indicate that you are ready to book your test date.

A Final Word Before You Begin

Five TSIA2 simulations lie ahead — four CRC simulations of 20 questions each and one full 48-question Diagnostic simulation, totaling 128 practice questions. Every question is a rehearsal for a question you will answer on test day. Every wrong answer you catch now is one you will not make when your placement is on the line.

Turn the page when you are ready. Practice Exam 12 begins with the first full TSIA2 CRC Math Simulation — 20 questions drawn proportionally from Quantitative Reasoning, Algebraic Reasoning, Geometric and Spatial Reasoning, and Probabilistic and Statistical Reasoning.

PRACTICE EXAM 12: TSIA2 CRC MATH SIMULATION

QUANTITATIVE REASONING (Questions 1–5)

1. A store marks up a pair of jeans by 40% over its cost of $25. What is the selling price?

A. $30.00

B. $35.00

C. $40.00

D. $45.00

2. A truck travels 378 miles on 14 gallons of gas. What is its fuel efficiency?

A. 24 mpg

B. 25 mpg

C. 26 mpg

D. 27 mpg

3. A class of 40 students has a boy-to-girl ratio of 3:5. How many boys are in the class?

A. 15

B. 18

C. 20

D. 24

4. Which value equals 85% of 240?

A. 192

B. 200

C. 204

D. 210

5. A recipe uses 3 cups of flour for every 4 cups of sugar. How much sugar is needed for 9 cups of flour?

A. 8 cups of sugar

B. 10 cups of sugar

C. 11 cups of sugar

D. 12 cups of sugar

ALGEBRAIC REASONING (Questions 6–10)

6. Solve for x: $4(x - 3) = 2x + 6$.

A. 9

B. 7

C. 5

D. 3

7. Factor completely: $x^2 - 7x + 12$.

A. $(x - 2)(x - 6)$

B. $(x - 3)(x - 4)$

C. $(x + 3)(x - 4)$

D. $(x - 12)(x + 1)$

8. If $f(x) = 2x^2 - 3x + 1$, what is $f(2)$?

A. 1

B. 2

C. 3

D. 4

9. Solve: $x^2 + 5x - 6 = 0$.

A. $x = 1$ or $x = -6$

B. $x = -1$ or $x = 6$

C. $x = 2$ or $x = -3$

D. $x = -2$ or $x = 3$

10. Simplify: $(x^2 - 9)/(x + 3)$.

A. $x + 9$

B. $x + 3$

C. $x - 9$

D. $x - 3$

GEOMETRIC AND SPATIAL REASONING (Questions 11–15)

11. A rectangle has length 15 m and width 8 m. What is its area?

A. 120 m²

B. 46 m²

C. 92 m²

D. 23 m²

12. A right triangle has legs of 5 and 12. What is the hypotenuse?

A. 7

B. 10

C. 13

D. 17

13. How many inches are in 4 feet?

A. 16 inches

B. 24 inches

C. 40 inches

D. 48 inches

14. A circle has a radius of 6 cm. Its circumference is:

A. 6π cm

B. 12π cm

C. 36π cm

D. 144π cm

15. A cube has a side length of 5 in. Its volume is:

A. 125 in^3

B. 25 in^3

C. 75 in^3

D. 150 in^3

PROBABILISTIC AND STATISTICAL REASONING (Questions 16–20)

16. A fair die is rolled once. The probability of rolling a 3 is:

A. 1/2

B. 1/3

C. 1/4

D. 1/6

17. The mean of {12, 18, 24, 30} is:

A. 18

B. 20

C. 21

D. 24

18. A bag contains 7 red and 3 blue marbles. The probability of drawing a red marble is:

A. 3/10

B. 7/10

C. 1/2

D. 4/10

19. The median of {4, 8, 12, 16, 20, 24} is:

A. 12

B. 13

C. 16

D. 14

20. A coin is flipped twice. The probability of getting two heads is:

A. 1/4

B. 1/2

C. 1/3

D. 2/3

PRACTICE EXAM 12: ANSWER KEY AND EXPLANATIONS

Quantitative Reasoning

1. B — $35.00. A 40% markup on a $25 cost means adding 40% of the cost to the original, so 0.40 × 25 = $10. Adding the markup to the cost gives $25 + $10 = $35. Markup problems calculate the added amount and then add it to the original cost.

2. D — 27 mpg. Dividing total miles by total gallons gives 378 ÷ 14 = 27 miles per gallon. Fuel efficiency is a unit rate calculated as distance divided by fuel consumed.

3. A — 15. The ratio 3:5 has 8 parts total, and dividing 40 students by 8 gives 5 students per part. Boys correspond to 3 parts, so 3 × 5 = 15 boys in the class.

4. C — 204. Calculating 85% of 240 means multiplying 0.85 × 240 = 204. Percent-of calculations always convert the percent to a decimal before multiplying by the whole.

5. D — 12 cups of sugar. Setting up the proportion 3/4 = 9/x and cross-multiplying gives 3x = 36, so x = 12 cups of sugar. Proportion problems scale the known ratio to match the new quantity through cross-multiplication.

Algebraic Reasoning

6. A — 9. Distributing the 4 gives $4x - 12 = 2x + 6$, then subtracting 2x gives $2x - 12 = 6$. Adding 12 and dividing by 2 gives $x = 9$. Linear equations with variables on both sides are solved by collecting variable terms first.

7. B — $(x - 3)(x - 4)$. Two numbers that multiply to 12 and add to −7 are −3 and −4. The factored form $(x - 3)(x - 4)$ expands back to the original trinomial. Both numbers are negative because the constant is positive and the middle coefficient is negative.

8. C — 3. Substituting $x = 2$ into $f(x) = 2x^2 - 3x + 1$ gives $2(4) - 3(2) + 1 = 8 - 6 + 1 = 3$. Function evaluation replaces the variable with the given input value.

9. A — $x = 1$ or $x = -6$. Factoring $x^2 + 5x - 6$ requires two numbers that multiply to −6 and add to 5, which are 6 and −1. The factored form $(x + 6)(x - 1) = 0$ gives solutions $x = -6$ and $x = 1$.

10. D — $x - 3$. The numerator $x^2 - 9$ factors as $(x + 3)(x - 3)$, and dividing by $(x + 3)$ cancels that factor, leaving $x - 3$. This simplification is valid for all $x \neq -3$.

Geometric and Spatial Reasoning

11. A — 120 m^2. The area of a rectangle is length × width, so A = 15 × 8 = 120 m^2. Area is always measured in squared units.

12. C — 13. Applying the Pythagorean theorem gives $5^2 + 12^2 = 25 + 144 = 169$, and the square root of 169 is 13. This is one of the most common Pythagorean triples (5-12-13) and worth memorizing.

13. D — 48 inches. One foot equals 12 inches, so 4 feet equals 4 × 12 = 48 inches. Length conversions in the U.S. Customary system use the 12-inch-per-foot factor.

14. B — 12π cm. The circumference formula $C = 2\pi r$ gives $C = 2\pi(6) = 12\pi$ cm. Circumference is always twice the radius multiplied by π.

15. A — 125 in^3. The volume of a cube is side cubed: $V = 5^3 = 125$ in^3. Every cube's volume equals the length of one edge raised to the third power.

Probabilistic and Statistical Reasoning

16. D — 1/6. A standard die has six equally likely outcomes, and only one face shows a 3. The probability is 1 favorable outcome out of 6 possible outcomes, or 1/6.

17. C — 21. Adding the four values gives 12 + 18 + 24 + 30 = 84, and dividing by 4 gives 21. The mean is always the sum divided by the count of values.

18. B — 7/10. The bag contains 7 + 3 = 10 marbles, and 7 are red. The probability of drawing red is 7/10, calculated as favorable outcomes over total outcomes.

19. D — 14. For an even number of data values, the median is the average of the two middle values. The middle values are 12 and 16, so the median is (12 + 16)/2 = 14.

20. A — 1/4. Each flip has a probability of 1/2 for heads, and two independent flips multiply: (1/2)(1/2) = 1/4. Independent events combine through multiplication because one outcome does not affect the other.