

TSIA2 MATH TEST

Algebraic Reasoning

Think Algebraically. Solve Confidently. Succeed!



Algebra is about finding patterns, using symbols, and solving real-world problems.

- ✓ Analyze relationships
- ✓ Model situations
- ✓ Solve equations
- ✓ Make connections
- ✓ Build a strong foundation for your future!



You have the power to solve any equation that comes your way! ♥

★ Every equation you solve brings you one step closer to your goals!

KEY TOPICS IN ALGEBRAIC REASONING

1 LINEAR FUNCTIONS



Understand and represent relationships that change at a constant rate.

- Slope and rate of change
- Graph linear functions
- Write equations in slope-intercept form ($y = mx + b$)
- Use functions to solve real-world problems

Example: $y = 2x + 3$
A straight path to solutions!

2 QUADRATIC RELATIONSHIPS



Work with equations and functions that form parabolas.

- Solve quadratic equations
- Find vertex, axis of symmetry and intercepts
- Write equations in standard form ($ax^2 + bx + c$)
- Apply to real-world situations

Example: $y = x^2 - 4x + 3$
Find the path to higher thinking!

3 POLYNOMIAL EXPRESSIONS

Add, subtract, multiply, and divide polynomials.

$$3x^3 + 2x^2 - x + 5$$

- Simplify expressions
- Add and subtract polynomials
- Multiply polynomials
- Divide using long division or synthetic division
- Use the Distributive Property and special products

Example: $(x + 2)(x - 3) = x^2 - x - 6$
Build skills one step at a time!

4 EXPONENTIAL FUNCTIONS



Analyze patterns of growth and decay.

- Evaluate exponential expressions
- Growth and decay models
- Properties of exponents
- Solve exponential equations
- Apply to real-world problems (e.g., population, finance)

Example: $y = 3(2)^x$
Small change, big impact!

5 RATIONAL & RADICAL EXPRESSIONS

Work with fractions and expressions with roots.

$$\frac{x+1}{x-2} \quad \sqrt{x+5}$$

- Simplify rational expressions
- Add, subtract, multiply, divide
- Solve rational equations
- Simplify radicals
- Rationalize denominators

Example: $\sqrt{18} = 3\sqrt{2}$
Simplify today, succeed tomorrow!



Why It Matters! ♥

Strong algebra skills help you succeed in college math, connect ideas, and solve problems with *confidence* in everyday life!

SMART STRATEGIES FOR SUCCESS



Practice Consistently
Small steps every day lead to big results.



Understand Concepts
Focus on why things work, not just how.



Work Problems Actively
Solve, check, review, and learn from mistakes.



Use Resources & Ask for Help
Tutors, teachers, and online tools are here for you!



Stay Focused & Keep Going
Your effort today creates your success tomorrow!

YOU'VE GOT THIS! ♥

- ✓ Believe in yourself.
- ✓ Stay positive.
- ✓ Keep practicing.
- ✓ Reach your goals!

We believe in you! ☆

★ Learn. Practice. Succeed.

Algebra today. Achievement tomorrow.

