# 📘 TEACHER GUIDE

## Equity in Numbers: Pre-Algebra Foundations

***A Teacher Companion for Supporting Students in Real-World, Equity-Centered Mathematics Learning***

**Table of Contents**

**1. Welcome Letter for Teachers**

Dear Educator,

Welcome to **Equity in Numbers: Pre-Algebra Foundations** — a course intentionally designed to help students grow mathematically *and* intellectually while developing a deeper understanding of fairness, community, and real-world problem-solving.

This guide will help you:

- Understand the learning model behind the course,
- Support students effectively as they complete lessons independently,
- Facilitate class-ready discussions about equity using data,
- Connect math instruction to issues that matter to today's students,
- Build confidence and ownership in each learner.

Thank you for being a champion for students and for choosing an approach that acknowledges *both* their academic potential and their lived experiences.

With appreciation,
**Dr. Derrick Campbell**
Founder, Quarantine Racism Educational Services

**2. About the Course**

**Equity in Numbers: Pre-Algebra Foundations** is a **30-lesson, self-paced video curriculum** that helps students learn Pre-Algebra by analyzing issues connected to fairness in society.

Students learn:

- Foundational Pre-Algebra concepts,
- How to interpret authentic real-world data,
- How math influences fairness in education, housing, health, transportation, and community design,
- How to become critical thinkers who ask better questions of the world around them.

Every lesson includes:

- A short instructional video
- Guided modeling
- Coaching-style practice
- Vocabulary and scaffolds
- A reflection prompt
- A real-world “authentic task” rooted in equity

Students move through each lesson at their own pace with teacher support and conversation built around the course materials.

**3. What Makes This Course Different**

Most Pre-Algebra courses teach procedures without context.
**This course teaches meaning first — then procedures.**

Students learn math the same way data analysts, city planners, architects, and community advocates use it:

- To understand the world
- To ask questions
- To interpret information
- To make decisions
- To identify fairness or unfairness

Rather than separating math from lived experiences, this course connects them so students can see:

- *Math as a tool for understanding systems,*
- *Numbers as storytelling,*
- *Data as a form of power,*
- *Equity as a measurable phenomenon*.

**4. The Equity Lens in Mathematics**

Equity is woven into each lesson through:

- Context (housing, transportation, school funding, test scores, park space, health access)
- Comparison across groups, neighborhoods, or schools
- Real data or realistic examples
- Questions that promote fairness-based thinking

This course emphasizes:

- **Opportunity gaps, not ability gaps**
- **Systemic patterns, not individual blame**
- **Data conversations grounded in respect, empathy, and accuracy**

Teachers do not need to be equity experts; this guide provides structures to help navigate discussions confidently and safely.

**5. Understanding the Cognitive Apprenticeship Model**

This course is built on **six research-based phases** of Cognitive Apprenticeship:

**1. Modeling**

Students watch a clear demonstration of the math skill being used in a real-world context.

**2. Coaching**

Students practice with guided prompts, hints, vocabulary, and examples.

**3. Scaffolding**

Supports such as diagrams, step lists, sentence starters, and mini-checklists help students stay on track.

**4. Articulation**

Students explain their thinking (verbally or in writing), making their reasoning visible.

**5. Reflection**

Students compare their approach to teacher models or sample student work.

**6. Exploration**

Students apply the skill to an authentic fairness scenario:

- comparing funding
- analyzing access
- measuring space
- evaluating representation
- studying gaps in outcomes

This process turns math learning into *critical thinking + problem-solving + real-life awareness*.

**6. How to Support Students in a Self-Directed Structure**

Even though the course is self-paced, teachers play a critical role.

**You are the:**

- Encourager
- Discussion facilitator
- Clarifier of misconceptions
- Connector between math and lived experience
- Support structure for pacing and organization

**Recommended Teacher Actions:**

- Create weekly check-ins (5–10 minutes)
- Host short reflection conversations after every 2–3 lessons
- Provide optional problem-solving groups
- Encourage students to use vocabulary sheets
- Offer sentence frames for discussing equity
- Monitor practice attempts for accuracy

**If teaching the course in a class setting:**

Allow 20–30 minutes for video + practice, then 10 minutes for reflection or discussion.

**7. What Students Will Learn**

Students will master the following Pre-Algebra concepts:

**Number & Operations**

- Integers
- Absolute Value
- Fractions
- Decimals
- Percents
- Ratios & Rates

**Algebraic Reasoning**

- Expressions
- Variables
- Evaluating expressions
- One-step and two-step equations

**Geometry & Measurement**

- Perimeter & Area
- Surface Area
- Volume
- Coordinate Plane

**Data & Equity Literacy**

- Graphs
- Graduation rates
- Housing density

- Test-score patterns
- Health access
- Transportation modeling
- Opportunity and fairness analysis

Students leave the course understanding **how to use math to understand their communities and advocate for change.**

**8. Course Structure (30 Lessons)**

The 30 lessons are grouped into six learning units:

**Unit 1 – Number Foundations**

Integers, Absolute Value, Decimals, Comparisons, Rounding, Real-World Data

**Unit 2 – Fraction Operations**

Add, Subtract, Multiply, Divide, Fractions in Real-Life Access Scenarios

**Unit 3 – Ratios & Proportional Reasoning**

Ratios, Rates, Proportions, Percents, Fairness & School Funding

**Unit 4 – Algebra Concepts**

Expressions, Variables, Equations, Budgeting, Scheduling, Real-Life Modeling

**Unit 5 – Geometry for Social Understanding**

Area, Volume, Surface Area, Housing Density, Park Space Access

**Unit 6 – Data, Graphs & Equity**

Coordinate Plane, Graduation Rates, Histograms, Box Plots, Test-Score Patterns, Health & Transportation

Each lesson follows the same structure for predictable learning.

**9. Facilitating Reflection & Discussion**

Each lesson includes one or more reflection questions. Teachers can use:

**Discussion Starters**

- “What surprised you about the data?”
- “What patterns did you notice?”
- “What does the math make you wonder?”
- “Where might fairness fit into this situation?”
- “What would you recommend if you were a leader looking at these numbers?”

**Equity-Safe Phrasing**

- Use: “differences in outcomes,” “variation in access,” “opportunity gaps”
- Avoid: “ability differences,” “strong/weak groups,” “better/worse people”

**Sentence Frames for Students**

- “The math shows that…”
- “One pattern I see is…”
- “This could affect fairness because…”
- “A solution someone might try is…”

**10. Supporting Struggling Students**

**Academic Supports**

- Encourage them to rewatch guided practice
- Provide simplified numbers for practice before full examples
- Use manipulatives for geometric lessons
- Provide vocabulary sheets (already included)
- Allow extended time for authentic tasks

**Equity Discussion Supports**

- Allow think-pair-share before group conversations
- Provide sentence frames
- Invite students to reference the data rather than opinions

**Emotional Supports**

Because equity topics can feel personal, remind students:

- Data describes systems, not individuals
- Math is a tool for understanding, not judging
- Asking questions is a sign of growth

**11. Equity Conversation Guidance**

Teachers may encounter student questions about fairness. Recommended approaches:

**Ground conversations in:**

- Data
- Math concepts
- Opportunities and resources
- Patterns and systems

**Avoid:**

- Conversations about personal blame
- Focusing on individual groups as “better” or “worse”
- Allowing students to make assumptions without evidence

**Encourage:**

- Curiosity
- Respect
- Empathy
- Evidence-based reasoning
- Solution-focused thinking

**12. Classroom Integration Ideas**

Teachers can integrate course lessons into:

**Math Warm-Ups**

- Use reflection questions as discussion prompts.

**Project Days**

- Have students pick one authentic task to expand into a mini project.

**Cross-Curricular Connections**

- Social Studies → Housing, transportation, voting access
- Science → Environmental exposure, pollution, health outcomes
- ELA → Writing equity reflections

**Portfolio Building**

- Students save all reflections, tasks, and models
- Teacher can use portfolio for student-led conferences

**13. Technology & Materials Needed**

- Laptop or tablet
- Internet connection
- Calculator
- Printer (optional for task sheets)
- Notebook or downloadable student journal
- Headphones for quieter learning environments

**14. Teacher FAQs**

**Q: Do I need special training to teach equity?**
No. The course materials guide the conversations. You facilitate, not lecture on equity.

**Q: How long does each lesson take?**
20–30 minutes of learning + optional 10-minute discussion.

**Q: Can I assign the course as independent work?**
Yes. This is the intended design.

**Q: What if a student gets stuck?**
Encourage rewatching videos, using scaffolds, and asking clarifying questions.

**Q: How are lessons assessed?**
Through reflections, practice check-ins, and authentic tasks. Teachers may add quizzes if desired.

**15. Contact & Support**

For assistance, updates, and supplemental teacher materials:
📧 moreinfo**@quarantineracism.com**