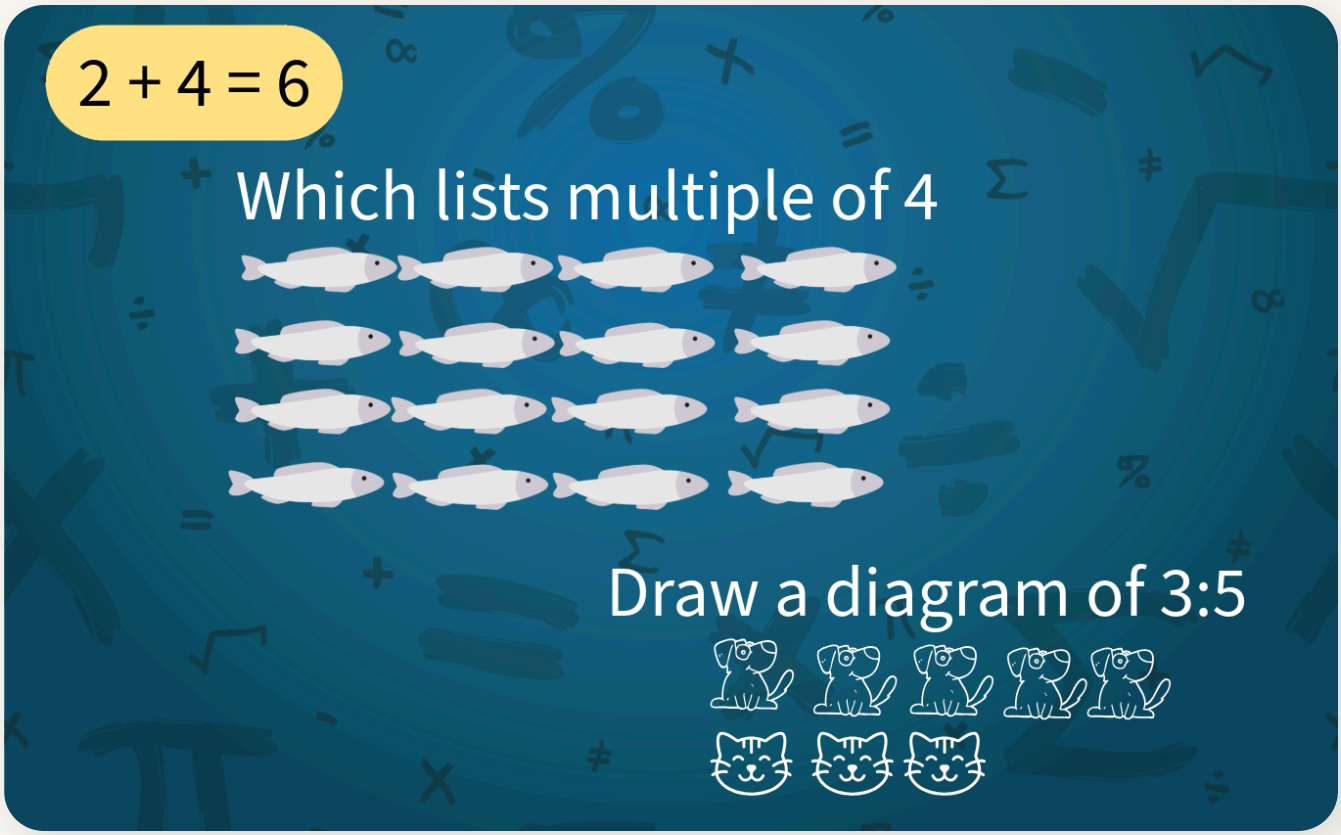
Putting Predecessor Skills to Work

July 22, 2025

By Gabe DeAngelis



The TNTP report demonstrates that students who struggle with grade-level math often falter not because they need wholesale remediation, but because they are missing very specific precursor skills. Traditionally, educators have faced a binary choice: teach this year's 8th-grade algebra content, or pull students back to rehash everything they didn't master in earlier grades. Both approaches can be inefficient—either leaving critical skill needs unaddressed or spending weeks reteaching material some students already know.

Instead, the report shows that a personalized, data-driven approach—one that identifies each student's missing predecessor skills—allows teachers to target instruction more effectively. This affirms what we've seen consistently in our Teach to One data for more than a decade: addressing those bite-sized predecessor skills accelerates learning on grade-level outcomes and even boosts performance on state exams.

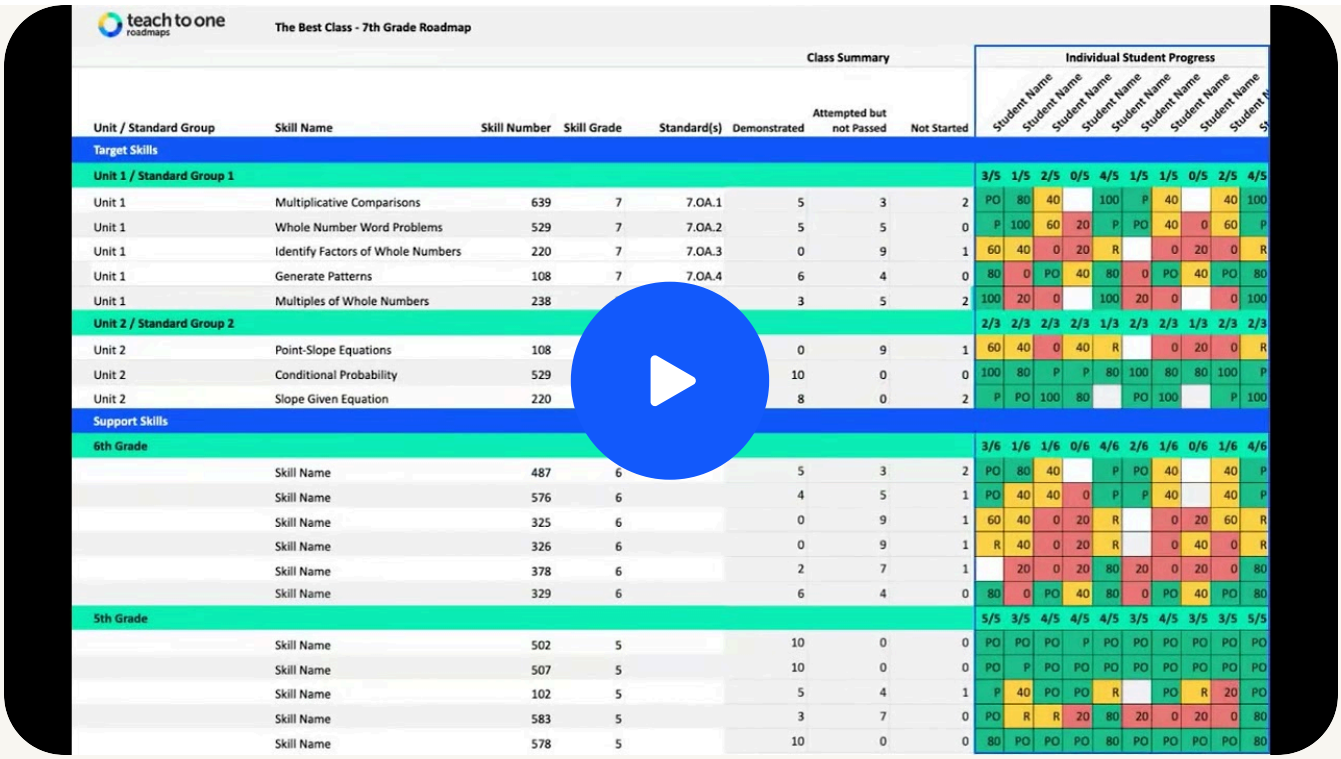
> The TNTP analysis found that students assigned to targeted predecessor-skill interventions—rather than generic remediation—were twice as likely to catch up to grade level by the end of the year.
>
> TNTP/New Classrooms, 2025
> Unlocking Algebra: What the Data Tells Us About Helping Students Catch Up

From Data to Daily Practice: What This Means for Teachers

So how does a teacher translate these insights into everyday instruction? Below are practical guidelines for using *Teach to One Roadmaps* to unpack predecessor skills, make sense of the **Detailed Skills Report**, and plan interventions that keep students moving forward.

Use the Detailed Skills Report to Identify Missing Skills

When you log in to *Roadmaps* and run a **Detailed Skills Report** for a specific class, grade, or unit, the system highlights exactly the skills in which each student has shown proficiency, which skills they're currently working on, and which they're missing.



Key Predecessors

In the “Unlocking Algebra” report, TNTP flags: “For students who start behind, knowing a few key predecessors sets them up for the most success.” These key predecessor skills are highlighted in *Roadmaps* as “Essential Skills”. Think of “essential skills” as those precursor skills shown by our data to be most closely correlated with success on a target (grade-level) skill. While a target skill like “Operations with Rational Numbers (522)” may have four or five prerequisite skills in the full dependency graph, *Roadmaps* will show you the top two or three “essential” ones to prioritize first.

How to Interpret the Report

For any given student, you’ll see a color-coded chart:

- Green = mastered
- Yellow = in progress
- Red/Unfilled = not yet attempted or below proficiency

Focus first on any red/unfilled essential skills that feed directly into your upcoming target. For instance, if you're about to teach "Add Integers (182)", *Roadmaps* might flag "Add Opposites (618)" as an essential predecessor.

Assign Personalized Paths That Bypass Unnecessary Work

Once you know which predecessor skills are most critical for each student, assign them a personalized Path in *Roadmaps*:

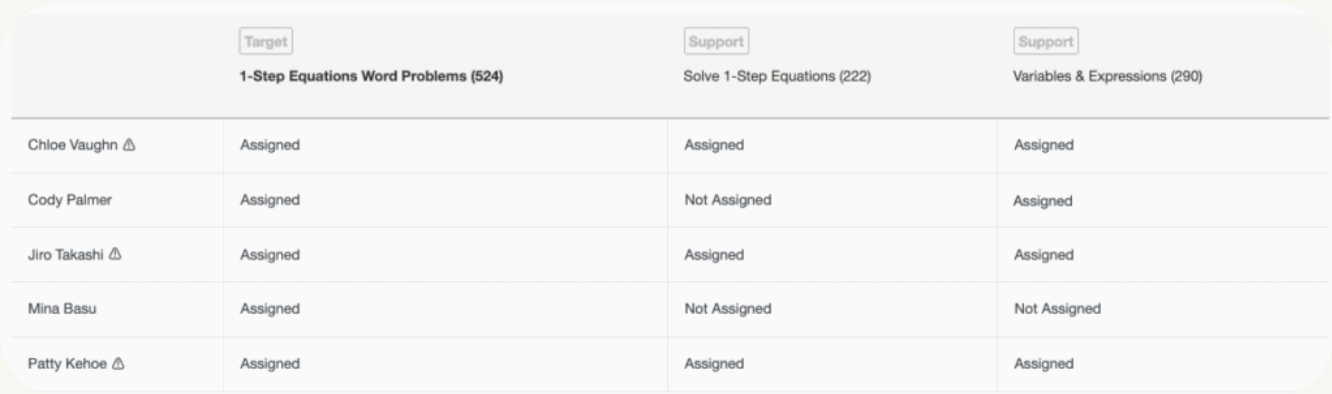
1. Select the Unit-Grade-Class you're teaching.

2. Review the Dashboard for an at-a-glance snapshot of how many students need each essential skill.

3. Click "Assign Path" for any student group that requires the same predecessor skill. *Roadmaps* will generate a sequence of digital and offline learning resources—videos, practice sets, and scaffolded problems—focused on that exact skill.

For example, if five 7th graders all struggle with "Step Equations Word Problems (524)", you can assign them to a path that, for some, begins with a quick support on the predecessor skill "Solve 1-Step Equations (222)", including practice problems, which can be done independently or in pairs, and a short exit ticket. Once students have passed this predecessor skill, they can move on to "Variables & Expressions (290)", unless they have already mastered that skill, in which case they would move on to skill 524. Others struggling with the same skill (524), but already know skill 222, would be assigned "Variables & Expressions (290)". Meanwhile, the rest of your class moves on to 7.RP.2 ("Recognize

and represent proportional relationships between quantities") or another upcoming 7th-grade standard.



	Target **1-Step Equations Word Problems (524)**	Support Solve 1-Step Equations (222)	Support Variables & Expressions (290)
Chloe Vaughn ⚠	Assigned	Assigned	Assigned
Cody Palmer	Assigned	Not Assigned	Assigned
Jiro Takashi ⚠	Assigned	Assigned	Assigned
Mina Basu	Assigned	Not Assigned	Not Assigned
Patty Kehoe ⚠	Assigned	Assigned	Assigned

Pull Small Groups for Targeted Intervention

Roadmaps empowers you to make timely, data-informed decisions. Once you know which students need which skills:

- **Form Micro-Groups**: Pull 3–5 students who all need the same essential skill.
- **Use Blended Modalities**: While your micro-group works with you, other students work independently on digital tasks that *Roadmaps* recommends (e.g., Khan Academy videos, collaborative activities, scaffolded problem sets).**Circulate and Reassess**: After 10–15 minutes, give a quick "exit quiz" to check if each student is ready to move on.

Interpret "Essential" Versus "Helpful" Skills

We categorize predecessor skills into two tiers:

- **Essential Skills**: The few predecessor skills *Roadmaps* has identified (through aggregated data across thousands of students) as most predictive of success on a specific target skill. These are the ones you see on your Detailed Skills Report.
- **Helpful Skills**: Additional predecessor skills in the full dependency graph that support deeper conceptual understanding but are not strictly mandatory to make progress on the target.

For instance, when teaching "Add Integers (182)", *Roadmaps* might label "Understanding Absolute Values (304)" as "helpful" but not "essential." If a student has already mastered the essential predecessors, you can confidently move them toward the target even if they haven't yet encountered all the helpful ones. If a student is struggling with an

> We saw that even if a student didn't ultimately "complete" the grade-level target, making progress on a few predecessor skills yielded measurable gains on their state tests. That's a powerful motivator to keep them engaged in tasks where they can experience success.
>
> ACS Independent Study, 2024

Practical Classroom Example: From Report to Intervention

Scenario: You're teaching "Proportion Graphs (161)" next week.

1. Run Detailed Skills Report

Identify that 10 students have not mastered “Proportion Graphs (161)”.

Among those 10, *Roadmaps* shows 6 have not mastered “Unit Rates (226)”, and 8 have not mastered “Equivalent Ratios(117)”. These are marked as essential predecessors.

2. **Group Students by Common Missing Skills**

Group A (n=4): Missing both 226 and 117.

Group B (n=2): Missing 226 only.

Group C (n=4): Missing 117 only.

3. **Assign Paths**

The teacher can assign a path to skill 161, and it will prompt the student to study, not just that skill, but also any Essential Skills that they don’t yet know. Whether the student still needs to learn skill 226, skill 117, both or neither, the *Roadmaps* platform will be responsive to their needs and prompt them to learn all the necessary skills, in the order that will best position them for success.

4. **Schedule Micro-Interventions**

For example, during a 50-minute block, spend 12 minutes reteaching Group A together, 8 minutes reteaching Group B one-on-one, and 8 minutes reteaching Group C with a clip-chart station. Meanwhile, the rest of the class works independently on the recommended grade-level task for 7.RP.2 (“Recognize and represent proportional relationships between quantities”).

Designing Instruction with Data-Driven Confidence

By integrating TNTP's findings on predecessor skills with our decade of classroom experience, *Roadmaps* helps you:

1. **Diagnose Precisely** which specific skills hold each student back.

2. **Differentiate Efficiently** by grouping students based on common missing skills.

3. **Deliver Just-In-Time Support** that avoids reteaching what students already know.

4. **Track the Impact** of those interventions on both skill-level quizzes and high-stakes state tests (see the ACS Independent Study for more data on mapping *Roadmaps* to end-of-year exams).

When teachers embrace this focused approach, they recover valuable instructional minutes, keep students moving forward, and build a culture where every student experiences success at their own pace.

A Practical Checklist for Teachers

1. **Before Class**:

- Run the Detailed Skills Report.
- Note which essential predecessor skills appear most frequently as "red" across your class.
- Assign Paths tailored to those essential skills.

2. **During Class**:

- Group students by common missing skills.
- Use a station or rotation model to pull micro-groups while others engage in independent or collaborative tasks.

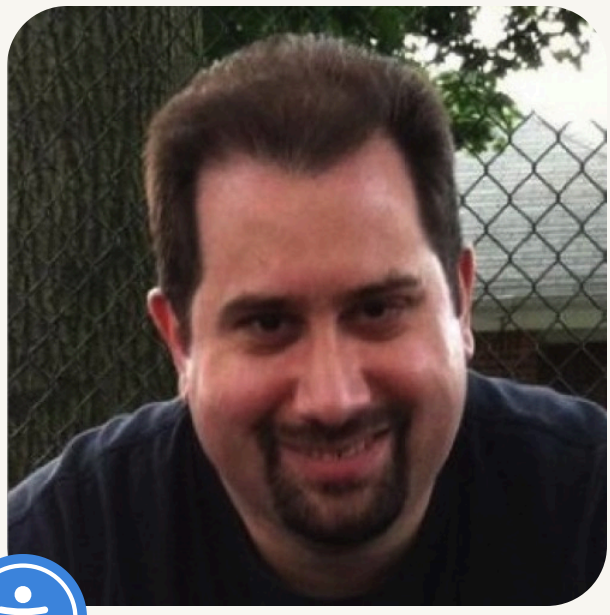
3. **After Class**:

- Check the exit ticket results.
- Reflect: Did these targeted interventions help students advance toward the target skill? If not, try a different modality (hands-on manipulatives, peer instruction, or a digital mini-game).

4. **Ongoing**:

- Celebrate small wins—each newly mastered essential skill is a step closer to grade-level mastery.
- Use *Roadmaps* data frequently to adjust your groupings.
- Lean on "helpful" predecessor skills only once essential ones are mastered, or if students are struggling with the essential predecessor.

About the Author



Gabe DeAngelis is the Director of Academics at New Classrooms, with over eight years of experience designing personalized math instruction in urban and suburban districts. Gabe holds a Master's in Math Education from NYU, and has worked closely with New Classrooms on translating research into classroom practice. You can connect with Gabe on LinkedIn to learn more about his work in data-driven math education.

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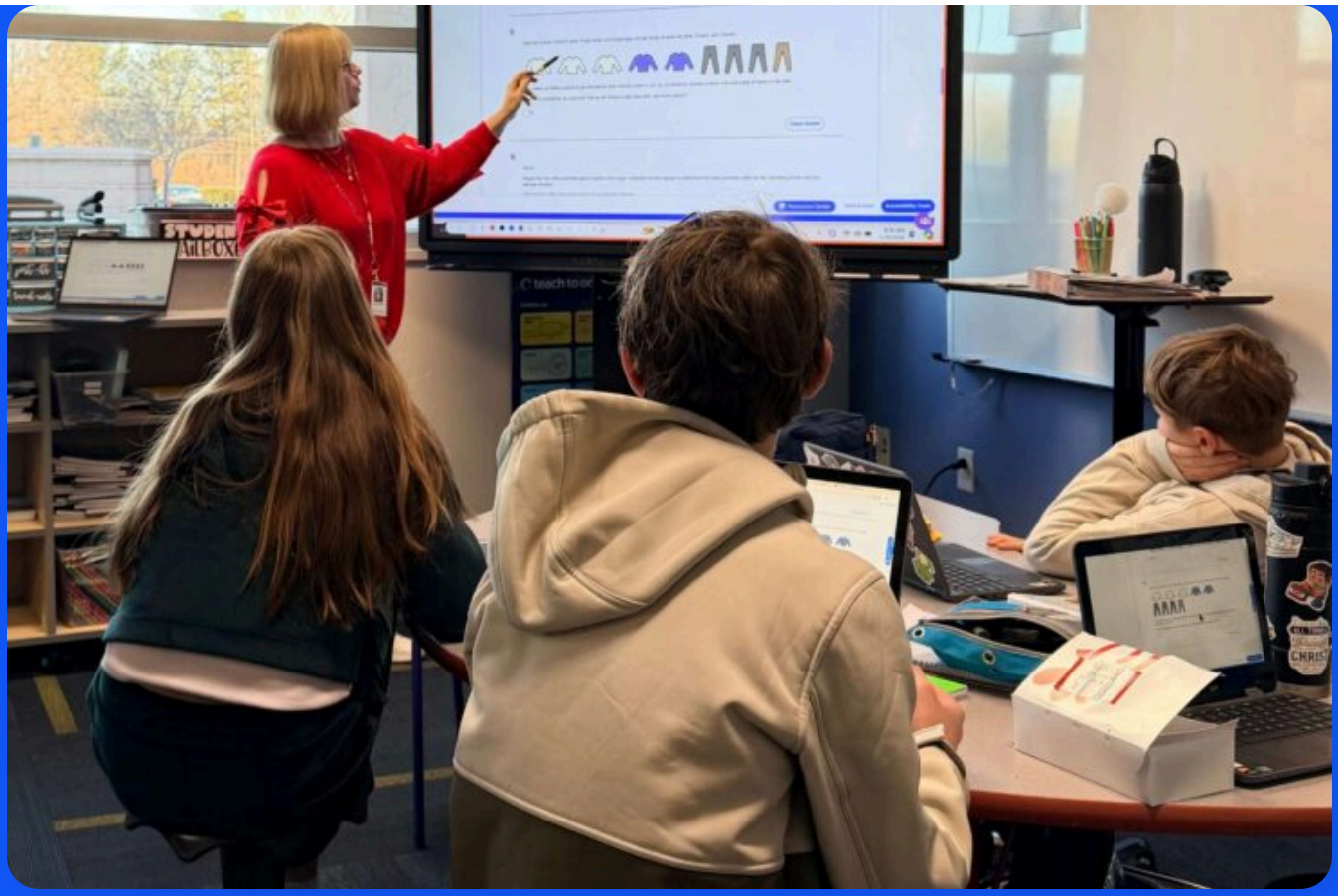

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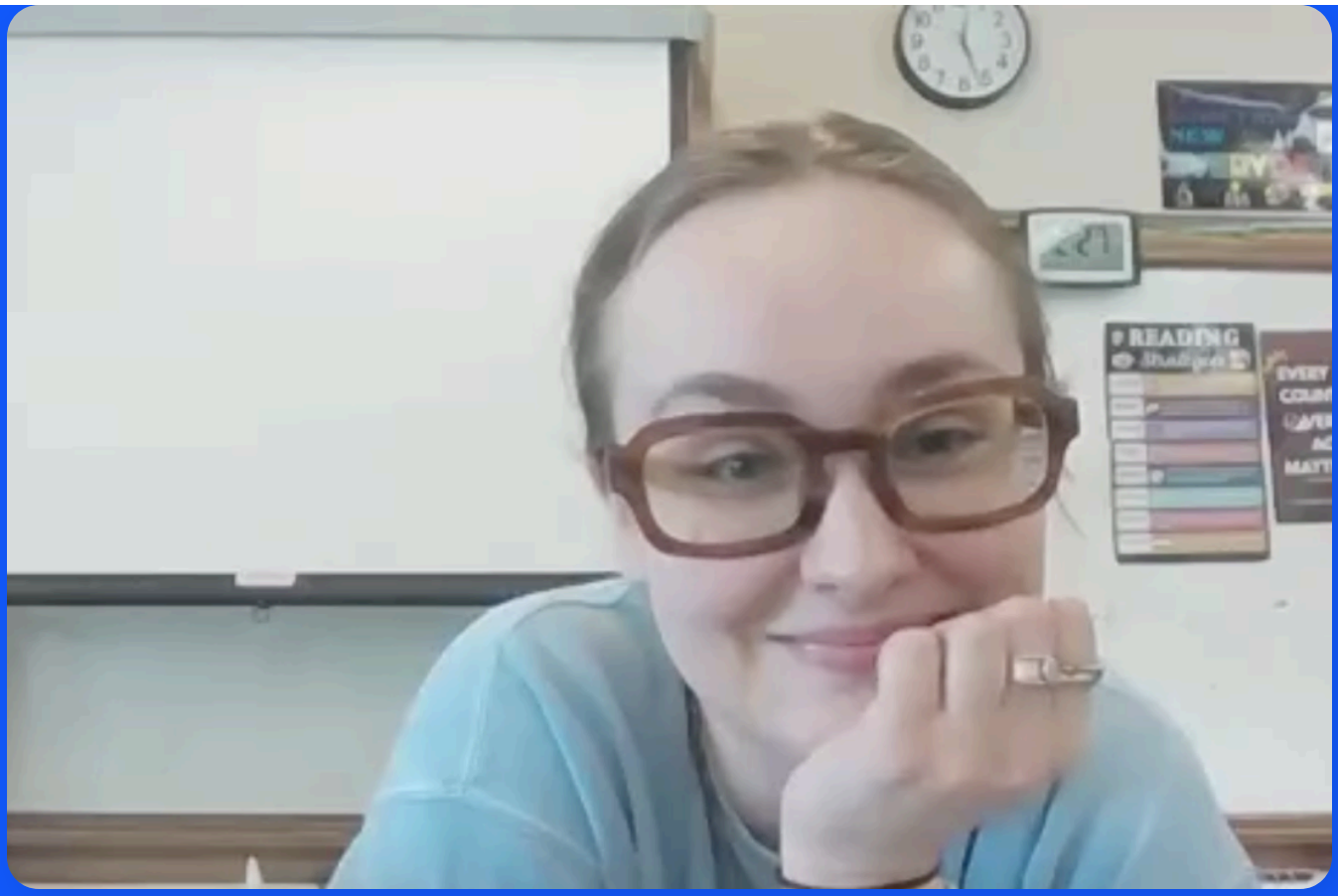

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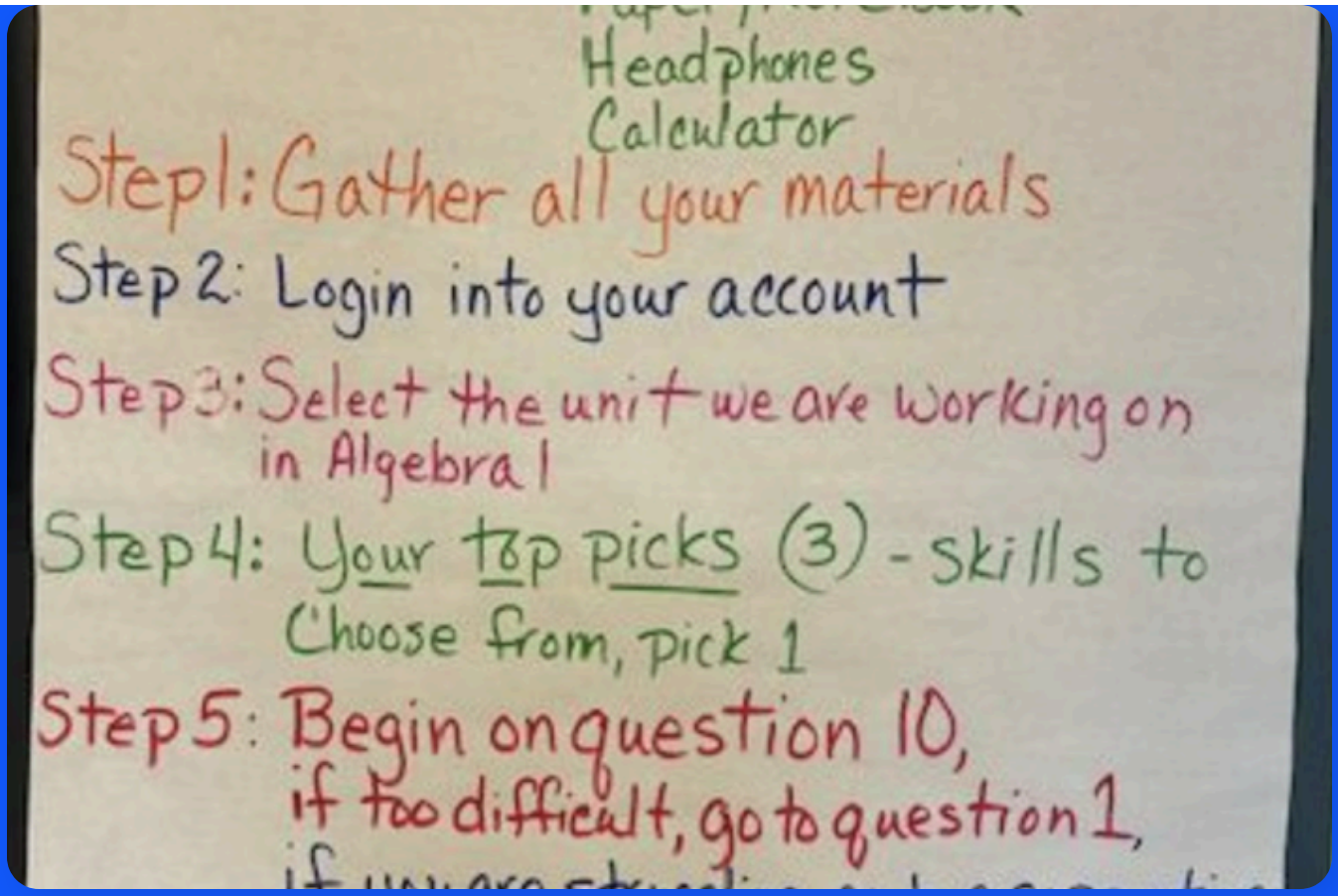

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