THIRD SPACE LEARNING

Improving School-Wide Math State Assessment Scores

An 8-step plan backed by data and expert insights

School and District Leader Guides

THIRD SPACE LEARNING

Contents

Current state of state assessment scores

About Third Space Learning

Since 2013, over 4,000 schools and districts have chosen Third Space Learning to help raise math state assessment scores through personalized online one-on-one math tutoring programs for the students they feel need it most.

In 2024, 9 out of 10 teachers agreed that Third Space Learning's tutoring programs helped their students achieve higher assessment scores.

“Third Space Learning has solved the problem of not having enough time or resources to fill gaps in student understanding. Out of all the students who had the tutoring, **everyone's scores increased.** The kids really enjoy working one-on-one with their tutor and they all said that they felt they got better at math.”

Liz Avery, Math Instructional Coach
Renaissance Academy Charter School of the Arts, New York

Math performance among US students has declined sharply, with 13-year-olds' scores dropping **14 points** over the past decade according to National Assessment of Educational Progress (NAEP) data.

The 2022 NAEP assessment revealed only **36% of 4th graders** achieved math proficiency, marking a significant **5-point decrease from 2019** levels.

The decline is particularly stark among 8th graders, with **38% performing below Basic level** in 2022. Their average mathematics scores **fell by 8 points** between 2019 and 2022 - the largest decrease since NAEP testing began in 1990.

4th grade: change in average scores between 2019 and 2022 in NAEP math

0	10	43
states/jurisdictions had a score increase	states/jurisdictions had no significant change	states/jurisdictions had a score decrease

8th grade: change in average scores between 2019 and 2022 in NAEP math

0	2	51
states/jurisdictions had a score increase	states/jurisdictions had no significant change	states/jurisdictions had a score decrease

Let's dig deeper into NAEP data with three major inequities in US math achievement that might inform your school-wide plan for improving state assessment scores:

1. White students outperform African American students by **29 points** and Hispanic students by **22 points** in 4th grade math.
2. Students without disabilities score **29 points** higher than those with disabilities.
3. The socioeconomic achievement gap widens over time, with students eligible for free/reduced lunch scoring **20 points** lower in 4th grade—a gap that grows to **21 points** by 8th and 12th grade.

8-step plan for schools and districts to improve math scores

1. Use the data

i) What type of data to use and when

ii) Quantitative versus qualitative data

2. Practice tests

3. Test taking strategies

i) Good study habits

ii) Active learning

iii) Review

iv) Exposure to test format

v) Working efficiently

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5. Review sessions

i) Review in action

6. Professional development

i) Data workshops and training

ii) Collaborative PLCs

iii) Evidence-based strategies

iv) Integrating technology

v) Personalized coaching and feedback

7. Connect with families

8. Tutoring

i) Small group instruction

ii) One-on-one tutoring

1. Use the data

Assessment data provides schools and districts with a clear view of students' strengths and areas where additional support is needed.

State assessment scores should not come as a surprise. Schools should frequently carry out diagnostic, formative and summative assessments to monitor progress.

To improve math scores, all stakeholders, at every level, have a responsibility to analyze and apply the assessment data findings.

District leaders should:

- Ensure teachers have the **tools and training** to interpret data;
- Support schools with the resources to **implement evidence-based practices** for consistent growth in math achievement across grade levels.

School leaders should:

- Group students effectively for **targeted interventions;**
- **Track progress** over time;
- Provide **professional development** for teachers so they can align classroom instruction with the standards and skills emphasized on state assessments.

Educators should regularly analyze data to:

- Spot teaching and learning **trends**;
- Identify learning **gaps**;
- Closely **monitor** struggling students;
- Adjust **instructional strategies** accordingly.

What type of data should you use and when?

	Diagnostic	Formative	Summative
When?	At the **beginning** of a unit or topic.	**Throughout** a unit of work or topic. In every lesson.	At the **end** of a lesson, unit or topic.
Why?	Identifies specific areas where students are struggling and offers insights into foundational **gaps that need addressing.**	Provides **immediate feedback** on student understanding and helps teachers: • **Adjust instruction** in real time; • **Track progress;** • Predict state assessment performance.	At the **end** of a lesson, unit or topic.
Example	Prior learning questions.	Quick quizzes or exit tickets.	End of unit assessment.

Quantitative versus qualitative data

A combination of quantitative and qualitative data provides schools and districts with a comprehensive picture of student performance and guides targeted strategies for improvement.

	Quantitive data	Qualitative data
Example	• Test scores • Student absences • Quizzes	• Observations of students • Focus groups • Interviews
Strengths	• Offers additional insights to the quantitative data • Provides detailed information to explain complex issues • Allows multiple methods for gathering data on sensitive issues	• Involves objective, inarguable facts • Relatively easy to analyze • Data is typically very consistent, accurate and reliable
Limitations	• Findings can't usually be generalized • Can be difficult to analyze • Generality does not offer concrete, objective data pieces	• May not explain the trends in the data • Difficult to understand the context of a program • Data may not explain complex issues

2. Practice tests

Practice tests are a valuable tool for improving state assessment math scores. They familiarize students with the:

- Format;
- Question types;
- Timing allowance of the real assessment.

Administering practice tests under test conditions helps reduce test anxiety and build confidence, boosting student readiness and performance.

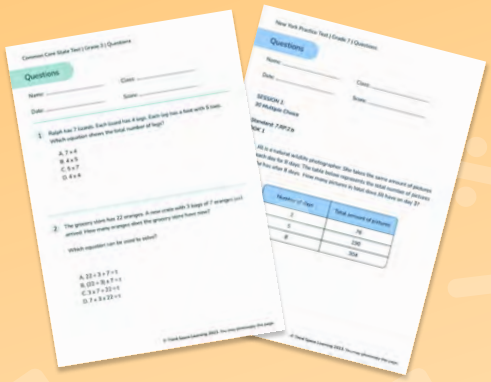
For schools and districts leader, analyzing practice test results at the school and district level can help:

- **Identify patterns** in common errors;
- Highlight areas where students may need **additional instruction** or support;
- **Address misconceptions;**
- **Adapt teaching;**
- Implement targeted **RTI and MTSS.**

FREE

Third Space Learning's math curriculum experts have designed practice state assessments to help familarize students with each state's format and questions.

Choose from Common Core or your individual state standards.



3. Test taking strategies

Between **10–40%** of all students experience some level of test anxiety. This increases to **70% in females**, especially in math and science.

Test taking strategies can better prepare students and ease stress.

Test taking strategy	Example
1. Good study habits	Begin lessons with a quick review and end with a summary to encourage frequent review of math concepts instead of cramming.
2. Active learning	Student engagement increases achievement. Ask students to list 3 concepts they learned in class, or create 5 test questions they might see on the material covered that day.
3. Review	Review can happen in and out of the classroom. For example, ask students how many fractions of the sandwich they ate at lunch. Consistent review helps build a conceptual understanding.
4. Exposure to test format	Familiarity makes the test more approachable. Familiarize students with the: • Test structure and timing; • Answer sheet; • Question types.
5. Working efficiently	Remind students to answer the simplest questions first. This helps time management and eases anxiety. Advise students not to leave answers, instead, make educated guesses.
6. Well-being strategies	Calming techniques during tests help students focus and do their best. This may include: • Breathing exercises; • Visualizations; • Short meditations.

Explicit instruction

4. Explicit instruction

A clear, well-structured, systematic multi-tiered system of support helps improve math state assessment scores. Teachers can use explicit Tier 1 instruction to break down complex math concepts into manageable steps, ensuring students develop a conceptual understanding before moving on.

A mixture of modeling, guided practice, and independent practice help students master foundational skills and build confidence. They engage and prepare for the challenges of state assessments.

When teachers use explicit instruction, it exposes students to the language associated with the state assessments. This is particularly valuable for English Language Learners and disadvantaged students.

Key elements	Explanation
Introduction	A brief introduction informs students of the lesson purpose.
Modeling	Using think-alouds when demonstrating a new concept or skill allows students to experience what a correct approach looks like and sounds like.
Guided practice	Working through examples with students allows you to provide immediate feedback and correct misconceptions during learning.
Independent practice	Allow students time to work through concepts and skills independently. Monitor students' work and provide feedback as needed.
Closure and assessment	Formative assessments allow students time to synthesize their learning and provide you information to help adjust instruction.

Explicit instruction

Explicit instruction in action: solving one-step equations using addition or subtraction

Introduction

- Activate prior knowledge
  - "What happens when you add or subtract the same number from both sides of the equation?"
- State learning objective
  - Solving one-step equations using addition or subtraction

Modeling

- Provide an example: $y + 7 = 15$
- Think aloud while demonstrating
  - To isolate the exponent, y, on one side of the equation, we need to remove the +7. What is the opposite of adding 7?
  - If I subtract 7 from the left, I must subtract 7 from the right to balance the equation
  - Write: $y + 7 - 7 = 15 - 7$ so $y = 8$
  - Let's check to see if this is correct by plugging it into the original equation
  - Write: $8 + 7 = 15$
  - This is correct, so I have solved for y correctly

Guided practice

- Provide students with similar problems
  - $x - 4 = 9$
  - $y + 6 = 11$
- Solve problems together and have students assist
- Write responses on the board and stop to clarify any misconceptions

Independent practice

- Provide 1-3 practice problems to solve
  - $x + 4 = 12$; $y - 8 = 21$; $x - 9 = 17$

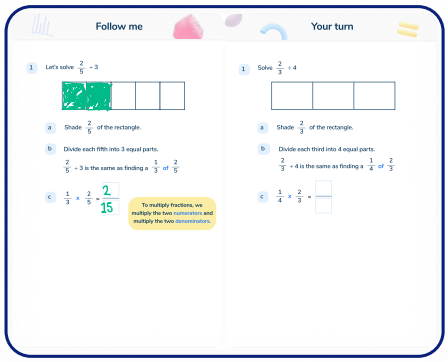
Closure and assessment

- Review 1-2 independent problems as a class
- Have students complete an exit ticket: $x + 7 = 20$

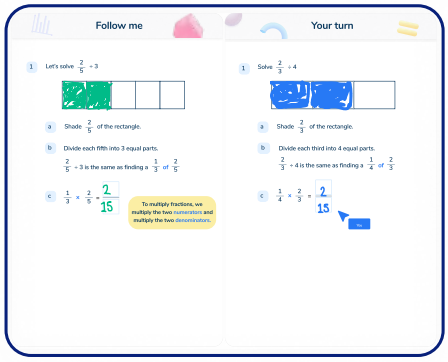
Explicit instruction

Third Space Learning's highly qualified math tutors use an I do, we do, you do pedagogy in every one-on-one math tutoring session.

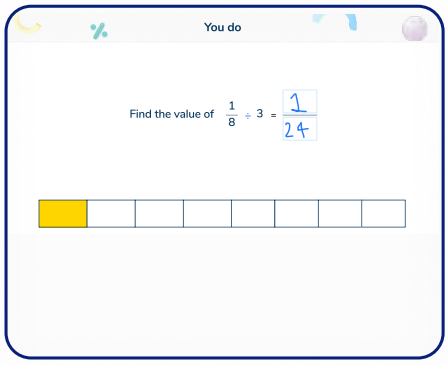
First, tutors model the mathematical process, thinking aloud, writing and drawing in the interactive classroom.



Then, the student and tutor try the next problem together, talking through each step as they go using mathematical language.



Finally, when students are ready, they complete a similar question independently before reviewing with the tutor to identify what they did right and address any misconceptions they may still have.



5. Review sessions

Review sessions help **consolidate learning** and prepare students for state math assessments. They give students opportunities to ask questions, ensuring they feel prepared and capable on test day.

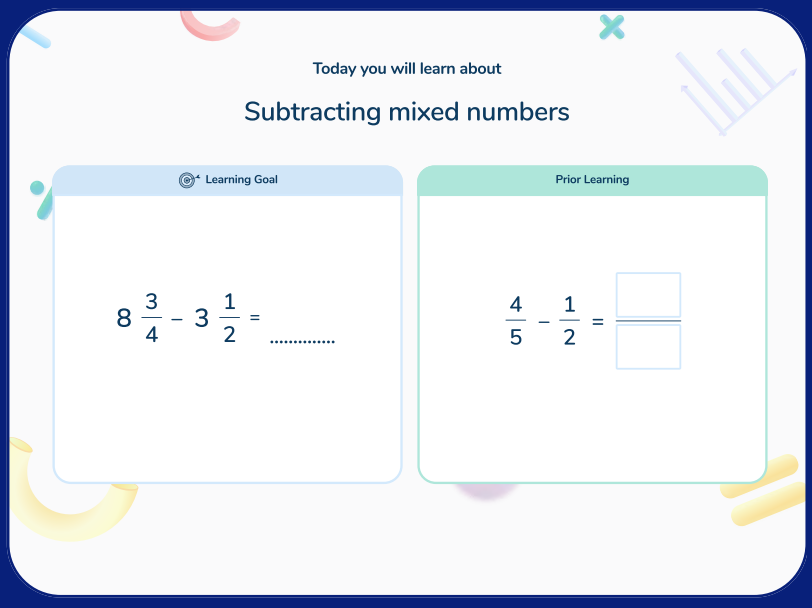
Schools and districts that implement review sessions as a cohesive curriculum and testing strategy allow educators to:

- **Revisit** key concepts;
- **Clarify** misunderstandings;
- **Reinforce** problem-solving strategies that students may find challenging.

Analyze data to identify the most commonly tested topics and areas where students struggle.

How to maximize your review sessions

- Use a variety of instructional strategies;
- Highlight areas where students may need additional instruction or support;
- Encourage active participation.



Third Space Learning starts every lesson with a review of prior knowledge.

Review in action: multiplication fact or fiction

“Fact or Fiction” is an easy instructional strategy that encourages students to interact with one another.

Students need access to a small whiteboard to write “fact” and “fiction”.

Start with 5 statements, completed equations, or visuals. Some correct and some incorrect.

For example:

- 234 x 3 = 702
- 156 x 4 = 623
- 482 x 7 = 3,474
- 309 x 5 = 1,545
- 821 x 6 = 4,926

Display the equations one at a time, asking students, “Fact or Fiction?” After suffiicient time, have students present whether they think the equation is true or not.

Extension idea:

Assign students with thinking partners to allow them to discuss and to justify their thinking. Provide sentence starters such as “I think this is fact/fiction because____.” Students can change their answers after the discussion if warranted.

Students can work with the same thinking partner, or have them switch, repeating the same process for all of the equations.

Allowing students to discuss and learn from one another creates impactful review and can increase student learning and understanding.

6. Professional development

Professional development (PD) is one of the most powerful tools schools and districts can use to improve students' math state assessment scores. Teachers need the most recent and up-to-date instructional strategies to help students succeed and accelerate math achievement.

> "Highly qualified and effective teachers are necessary to improve student performance."
>
> **A Practical Guide To Evaluating Teacher Effectiveness, Little et al.**

Strategy	Benefit
Workshops and training sessions on analyzing and using assessment data	Helps tailor instruction to address individual student needs.
Collaborative professional learning communities (PLCs)	Offers opportunities for educators to support each other, share best practices, and refine their teaching methods.
Continuous training on evidence-based instructional strategies	Ensures teachers can reach diverse learners effectively using the most current teaching strategies and pedagogies.
Integrating technology	Understanding math-specific software and adaptive learning platforms can help teachers provide engaging, personalized learning experiences.
Personalized coaching, support and feedback	Providing personalized feedback and celebrating achievements helps teachers feel confident.

7. Connect with families

Consistent teacher-family communication positively influences student engagement and academic success.

Kraft & Dougherty, 2013.

Building strong family-school partnerships drives better math assessment outcomes. Schools can establish these connections through:

Strategy	Benefit
Regular updates	Newsletters or parent portals can keep families informed about curriculum goals, assessment dates, and how they can support their child's learning at home.
Workshops or webinars	Sessions on math strategies and tools help demystify challenging concepts and equip them to provide effective homework support.
Sharing resources	Sharing practice problems and online tutorials helps parents build math skills into everyday life.
Personalized communication	Parent-teacher conferences or progress reports ensure families understand their child's specific strengths and areas for growth.

8. Tutoring

Tutoring is a **proven strategy for improving math state assessment scores**. Personalized support tailored to students' individual needs helps address and close knowledge gaps.

It provides targeted interventions that complement classroom instruction, reinforce key concepts and build confidence.

Tutoring is most effective when done in small groups and one-on-one.

Small group instruction

In groups of 3-5, students receive targeted instruction focused on the students' collective needs. Small groups create a safe learning environment where students can engage deeply with math concepts while benefiting from peer collaboration.

This setting allows tutors to differentiate instruction, addressing shared challenges while giving personalized feedback to improve students' math growth.

One-on-one tutoring

Research indicates that high-dosage one-on-one tutoring positively affects students' math scores by an additional 3 to 15 months across various grade levels, moving them from the 50th to 66th percentile.

One-on-one tutoring personalizes instruction even further than small group tutoring. It allows for a tailored pace, targeted skill-building, and immediate feedback, ensuring misconceptions are addressed as they arise.

For students who struggle with math or lack confidence, one-on-one tutoring provides a safe, supportive, low-stakes environment to ask questions and practice the math concepts they need help with most.

"We have focused on reading for far too long, and now math is suffering."

Anthony Peddle, Principal,
Devonshire Elementary School, Ohio

One-on-one tutoring with Third Space Learning

Every student should have the opportunities they need to succeed academically.

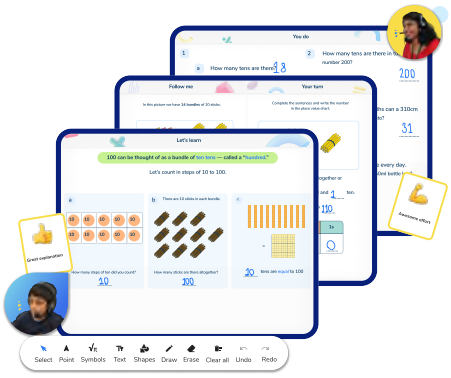
For over a decade, Third Space Learning has provided cost-effective one-on-one online math tutoring in schools to the students who need it most.

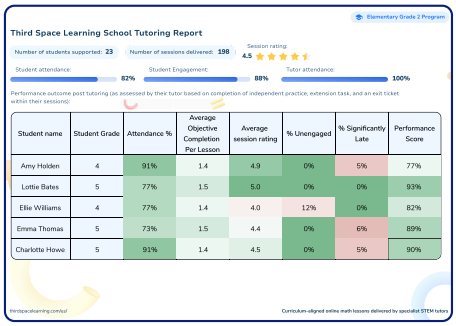
You choose which students receive one-on-one targeted and personalized math instruction from our highly trained STEM specialist tutors at a time to suit their schedules.

Because learning is online, multiple students can receive math instruction simultaneously.

Students follow a learning pathway aligned to the Common Core or specific state standards to help accelerate math achievement.

Schools receive reports after each session to monitor students' progress.





"The progression of lessons aligns with our standards and the way we teach the concepts, and it flows with our curriculum. There's a good balance of pictorial representations and abstract, especially for the students who need a bit more support. When I listen in to the sessions I hear students doing a really good job of explaining their thinking to their tutors which is awesome!"

Liz Avery, Math Instructional Coach,
Renaissance Academy Charter School of The Arts

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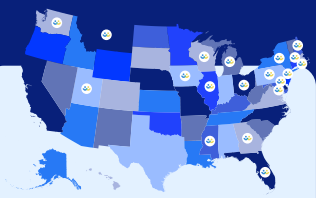

19
states reached

4,000
schools supported

170,000
students taught

2,000,000
hours of tutoring

Do you have a group of students who need a boost in math?

Each student could receive personalized lessons every week from our specialist one-on-one math tutors.

- ✓ Differentiated instruction for each student
- ✓ Aligned to your state's standards
- ✓ Scaffolded learning to close gaps

93% of teachers feel Third Space Learning lessons helped their pupils achieve higher assessment scores!

Speak to us

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