



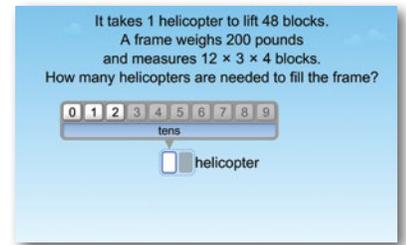
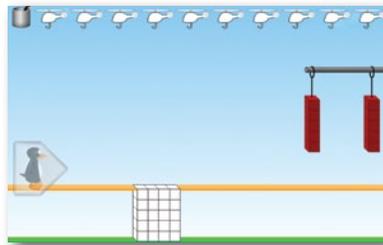
MIND Research Institute created the visually-based Spatial-Temporal (ST) Math[®] program to engage all students in the critical and creative thinking that guide the Texas Essential Knowledge and Skills (TEKS) and are measured on STAAR. Through visual and kinesthetic online manipulative games organized into mastery-based objectives, ST Math provides multiple rich, interactive representations for teachers and students to experience all of the conceptual areas covered by the TEKS. This includes the Process Standards, focused on applying mathematics, communicating about mathematics and using logical reasoning which are integrated into the STAAR grade-level assessments. With ST Math, students develop long-term problem solving skills and a deep conceptual understanding of mathematics with strong connections of the concepts within and across grades.

STAAR PROCESS STANDARD

HOW ST MATH HELPS STUDENTS DEMONSTRATE UNDERSTANDING AND MASTER THE STANDARD

- A** Apply mathematics to problems arising in everyday life, society, and the workplace

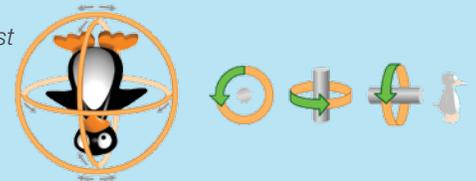
Learning paths guide students' progress from visual to symbolic to contextual problem solving, using mathematics to model and describe complex situations.



- B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution

Unlike any other instructional software, ST Math engages students in learning through problem solving. Students are easily challenged with 50 or more complex problems during a single session, building mastery through the development of strategic thinking, conceptual understanding, perseverance and practice.

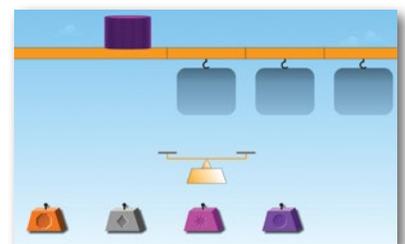
Example: *In the Upright Jiji game, students must manipulate the sphere to get Jiji the penguin into the indicated position.*



- C** Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems

Through touch technology integration, ST Math bridges the gap between visual and physical manipulatives, enabling students to choose real-world tools and strategically use them to solve problems.

Example: *By using the scale in this measurement game students interact with a real-world tool in order to form a strategy for problem solving. Students can compare the weights using the balance scale to determine how to place the weights in order of increasing magnitude.*



D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate

ST Math content objectives are designed around learning paths that begin with basic concepts but end in rigorous applications where students use abstract, quantitative, and creative reasoning to solve non-routine problems. *ST Math takes students to the highest level of thinking and applying math: the ability to creatively problem-solve in non-routine ways.*

With **Teacher Mode**, the ST Math software provides teachers the opportunity to bring the games into the classroom and use them as a vehicle for classroom discussion, asking students to make conjectures, discuss problem solving strategies in groups, and clearly explain and justify their reasoning.

E Create and use representations to organize, record, and communicate mathematical ideas

Each key concept is presented in multiple games with different representations, allowing students to identify ideas and reasoning strategies that enable them to solve problems in different forms.

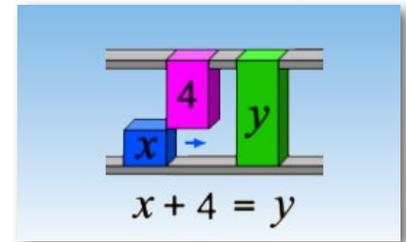
Example: *Games found in the Subtraction Concepts objective engage students in solving subtraction puzzles with a variety of models, including blocks, ten-frames, and number lines.*



F Analyze mathematical relationships to connect and communicate mathematical ideas

Each game in ST Math is based on a visual schema. Students internalize these interactive representations, connecting the structure of the models with the symbols, and using this structure to solve problems.

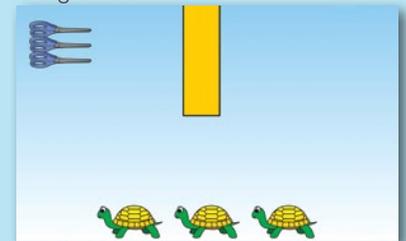
Example: *When solving equation-based problems, students connect visual representations to the symbolic.*



G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication

Students directly experience precision in mathematics, connecting the precision inherent in symbolic representations to precision in measuring and using tools.

Example: *In this beginning fractions game, students must cut the bar precisely into three equal parts each representing one-third.*



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For more information,
please contact:
888.751.5443
info@mindresearch.org

 [facebook.com/JiJiMath](https://www.facebook.com/JiJiMath)
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JiJi is the penguin featured in the ST Math software games. Not only does JiJi motivate and engage children in solving the mathematics in the games, JiJi offers teachers powerful ways to connect math concepts to classroom instruction.

