Transition to Algebra: Preparing All Students for Success in Algebra

PIs and project leaders:
Paul Goldenberg (EDC)
June Mark (EDC)
Deborah Spencer (EDC)
Laura O'Dwyer (Boston College)

Education Development Center (EDC)
ttalgebra.edc.org

Description

Transition to Algebra (TTA) is an innovative, research-based curriculum designed to raise the competence and confidence of students who may benefit from additional supports for algebra success. Developed by Education Development Center with funding from the National Science Foundation, TTA is a full-year course for underprepared ninth-grade students that is taken concurrently with first-year algebra. Rather than re-teaching or pre-teaching content covered in Algebra 1, TTA focuses on essential *algebraic habits of mind*, key mathematical ways of thinking that bring meaning and coherence to students' work with mathematics. TTA is generating substantial interest as a novel approach to the difficult problem of preparing all students for success in algebra. Underlying TTA is the hypothesis that students underprepared for Algebra 1 can benefit from a very specific kind of help: building the logic of algebra by connecting arithmetic pattern and algebraic structure.

TTA is a classroom resource that approaches algebra instruction differently. Instead of re-teaching the same algebra curriculum in the same way to struggling students, TTA uses logic puzzles, problems, and explorations to help teachers uniquely build students' mathematical ways of thinking. It invites students to experience the coherence and meaning of mathematics, perhaps for the first time. While designed for use with underprepared ninth graders, schools across the country are also experimenting with incorporating the TTA materials into middle school pre-algebra courses, summer programs, and other settings. The curriculum is published by Heinemann and distributed by Houghton Mifflin Harcourt. Materials include student workbooks, a teacher guide for each unit, classroom resources, and assessments. For sample materials, visit transitiontoalgebra.com.

Impact Study

EDC is leading a four-year study investigating the impact of TTA on student achievement and attitudes towards mathematics. The study, titled *Supporting Success in Algebra*, will involve more than 80 high schools across the country. Participating teachers will implement TTA with ninth graders in the 2018–19 school year in yearlong algebra support courses that are taken concurrently with Algebra 1. High schools that participate in the study will receive free materials, professional development provided by TTA authors at EDC, and stipends for participating teachers.

transition to algebra
make algebra make sense

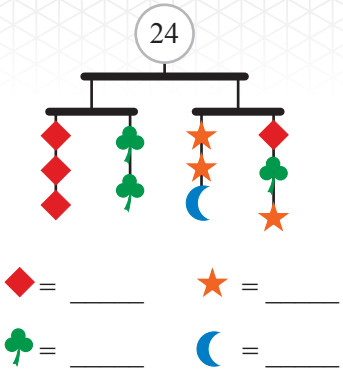
Contact: To learn more about the *Supporting Success in Algebra* study and how your school or district can participate, visit http://ttalgebra.edc.org/study or contact Deborah Spencer, principal investigator at EDC, at dspencer@edc.org or 617-618-2558.

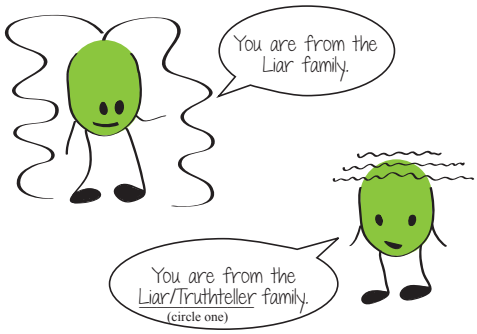
National Science Foundation Grants No. 0917958 and 1621011

Transition to Algebra: Preparing All Students for Success in Algebra

EDC Education Development Center

Logic





Who Am I?

h	t	u

- $2h = t + u + 1$
- $\frac{h+u}{2} = h$
- The sum of my digits is 20.
- $t + u = 13$

MysteryGrid **0, 1, *x*, *x*²**

2, +		$2x^2 + x$, +	
	$2x$, +		
0, •			1, + 1
x X	$x^2 + 1$, +		0

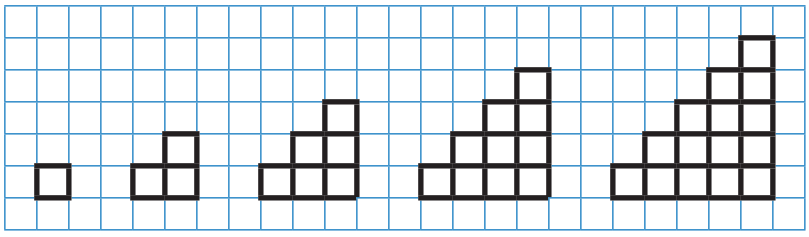
Puzzles

What could ♥, ♣, and ◆ be if all the variables represent *different* whole numbers?

♥ • ♣ = ♣
♣ • ♣ = ◆
♣ + ♣ = ◆

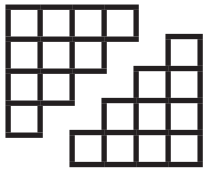
♥ = _____
♣ = _____
◆ = _____

Patterns



Level	Squares
1	1
2	
3	6
4	
5	

$\frac{s(s+1)}{2}$



transition to algebra
make algebra make sense

Contact: To learn more about the *Supporting Success in Algebra* study and how your school or district can participate, visit http://ttalgebra.edc.org/study or contact Deborah Spencer, principal investigator at EDC, at dspencer@edc.org or 617-618-2558.

National Science Foundation Grants No. 0917958 and 1621011