



# Rethinking How We Teach Expressions & Equations

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# Presenters



**Tom Dick**  
T<sup>3</sup> National Instructor  
Professor  
Oregon State University

Tom Dick has served on the Editorial Panels for the *Journal for Research in Mathematics Education* and the *Mathematics Teacher Educator*. He remains active in the College Board's Advanced Placement Calculus Program and has previously served as Chair of the AP Calculus Test Development Committee. He has been recognized by the MMA with its Distinguished University Mathematics Teaching Award for the Pacific Northwest, and in 2008 he was inducted by the Oregon Council of Teachers of Mathematics into the Oregon Mathematics Education Hall of Fame.



**Dan Ilaria**  
T<sup>3</sup> National Instructor  
Professor of Mathematics  
Education  
West Chester University of  
Pennsylvania

Dan Ilaria has taught middle and high school mathematics as well as been a supervisor of mathematics for several school districts in New Jersey. Currently, he uses TI technology with pre-service and in-service teachers as part of pedagogy classes at both the undergraduate and graduate level.

# Agenda

- Welcome
- Building Concepts for Mathematics Overview
- Expressions & Equations Lesson Series
- Building Concepts Professional Development
- Q & A
- 2018 T<sup>3</sup> International Conference Drawing – Registration for 2
- Post-Webinar Survey

# Building Concepts: Expressions & Equations

- Central role of equivalence
- Reasoning as a key strategy in solving equations
- Emphasis on structure
- Confront misconceptions
- Focus on conceptual understanding
- Based on coherent learning progression

## Algebra

## Quadratic

### Grade 8

Scientific Notation  
Integer Exponents  
Radicals

Graphs Linear  
Systems of Equations

### Grade 7

Proportions  
Linear multistep

### Grade 6

Exponents  
Operation  
Notation

Linear (simple)  
Solution  
Relationship

Structure/  
Properties  
Equivalence  
Variables

Expressions

Equations

Arithmetic

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# Examples

- What is an Exponent?
- Building Expressions
- Using Structure to Solve Equations



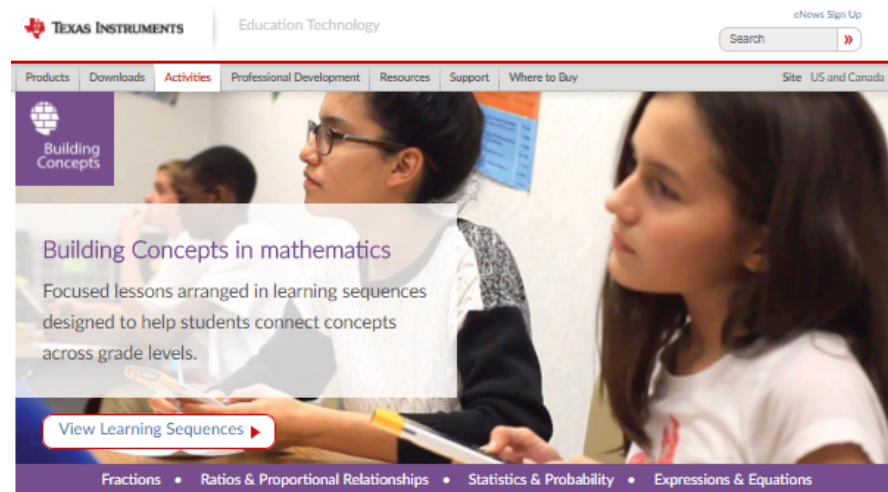
# Building Concepts: Expressions & Equations

- What is an Exponent?
- What is a Variable?
- Building Expressions
- What is an Equation?
- Equations and Operations
- Using Structure to Solve Equations
- Visualizing Equations Using Mobiles
- Linear inequalities in One Variable
- Visualizing Linear Expressions
- Building Expressions in Two Variables
- Extending Exponents Solving Equations
- Proportional Relationships to Linear Equations
- Visualizing Systems of Linear Equations
- What is a Solution to a System of Equations?
- Linear Relationships
- Solving Systems of Equations Algebraically
- Visualizing Quadratic Expressions

# More Information

Learn more about Building Concepts in Mathematics at:

[tibuildingconcepts.com](http://tibuildingconcepts.com)



Target learning in important topics in the middle grades.

Building Concepts uses an approach that gives teachers interactive visuals, questions that push students' thinking and guidance to help their students build a coherent understanding of important mathematical ideas.

[» Learn About Building Concepts](#)

View the Building Concepts topics overview videos



## Building Concepts in Mathematics



### The Program

About Building Concepts  
See the Video



### The Support

Building Concepts webinars  
Building Concepts workshops  
TI-Nspire™ technology



### The Topics

Fractions  
Ratios and Proportions  
Statistics and Probability  
Expressions and Equations

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# Questions





2018 T<sup>3</sup>™ International Conference

March 2—4, 2018, San Antonio, Texas

#T3IC

# Aha!

Ideas shared.  
Educators inspired.  
Students engaged.

## Get students excited about learning math, science and STEM

Explore fresh ideas, spark insights and extend your T<sup>3</sup>™ professional learning by attending the 2018 T<sup>3</sup>™ International Conference, March 2-4 in San Antonio, Texas.

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Learn more and register: [education.ti.com/t3ic](https://education.ti.com/t3ic)

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Generate your Certificate of Attendance at: <http://bit.ly/2tHKj8u>

The screenshot shows the Texas Instruments Education Technology website. The header includes the TI logo and 'Education Technology' text. A search bar is present. The main heading is 'Generate Your Certificate · 获取证书 · Generar Certificado de Asistencia'. Below this, the course title 'Rethinking How We Teach Expressions and Equations' is displayed. The form includes a text input field for 'Attendee Name' with a placeholder 'Please enter the attendee name'. A large red button labeled 'Generate Certificate' is prominent. Below the button, there is a note in English: 'PDF Certificate takes 90 seconds to generate and will open in a new window or tab. You will need the free Adobe Reader to view and print your certificate.' This is followed by the same note in Chinese and Spanish. The footer contains copyright information (1995-2017), links to 'Contact TI' and 'News Center', and a row of social media icons.



The screenshot shows the generated Certificate of Attendance. It features the TI logo and 'Teachers Teaching with Technology' tagline. The main text reads 'Rethinking How We Teach Expressions and Equations' followed by 'CERTIFICATE OF ATTENDANCE'. Below this, it says 'presented to' followed by a large line for 'Your Name Here'. At the bottom, there are three fields: 'Number of Hours' with the value '1', 'Date' with the value 'Aug 10, 2017', and 'Director, Professional Development'. The Texas Instruments logo is in the bottom right corner.

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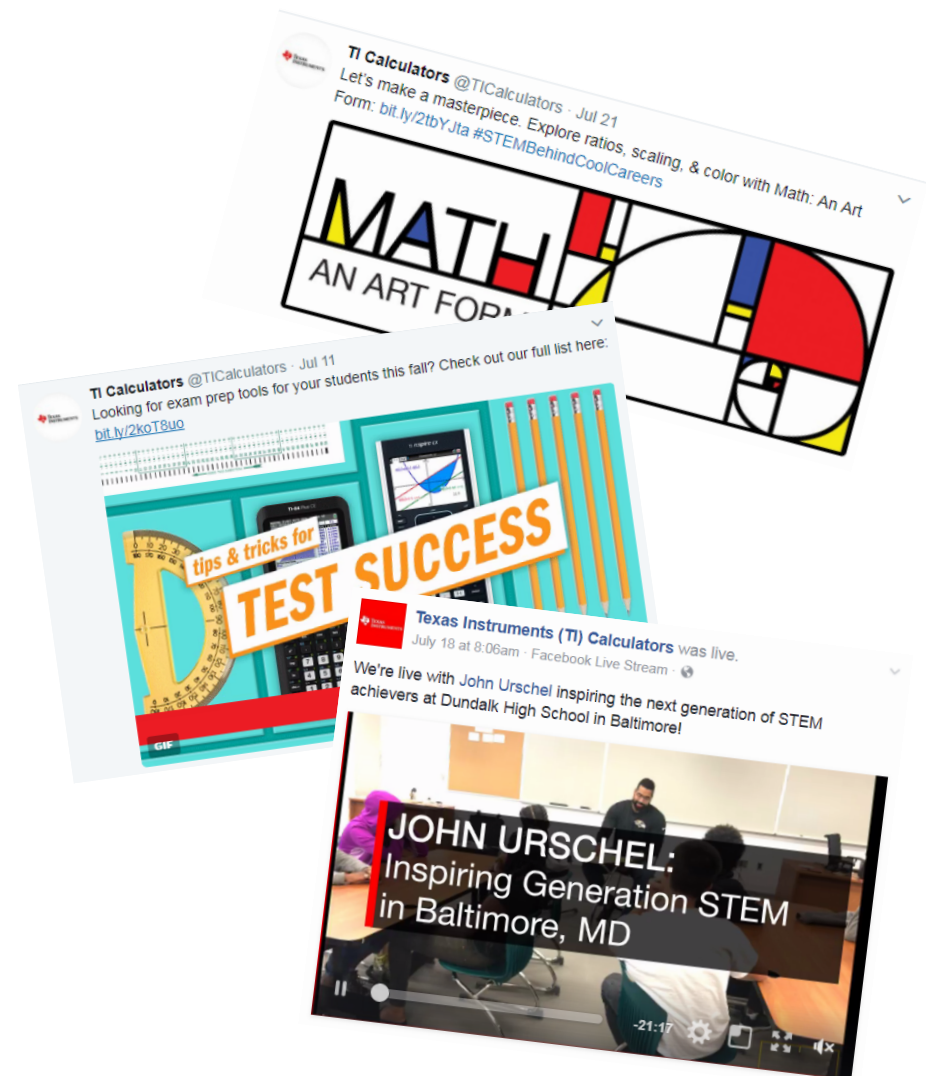
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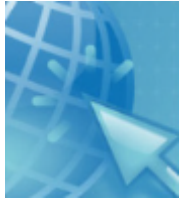


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## Survey

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