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Detection and Exploitation of Structural Relationships by A Group of Four Twelfth Graders Working on The Taxicab Problem

Creator Satyen P. Baldev (Rutgers University)

Published 2021-07-09

Persistent URL <http://dx.doi.org/doi:10.7282/t3-jrpa-3r49>

Guess My Rule and Discovery of the Properties of Linear Equations

Purpose Effective teaching; Professional development activity; Student model building; Reasoning; Representation

Creator Joyce Leslie (Video Mosaic Collaborative)

Published 2021-09-15

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Guess My Rule Creates Common Cognitive Challenges for Yonny and Brandon, Ariel and James

Purpose Professional development activity; Student engagement; Reasoning; Representation

Creator Joyce Leslie (Video Mosaic Collaborative)

Published 2021-07-06

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Guess My Rule Engages Students in Algebra

Purpose Effective teaching; Professional development activity; Student collaboration; Student engagement; Reasoning; Representation

Creator Joyce Leslie (Video Mosaic Collaborative)

Published 2021-06-15

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Guess My Rule for The Ladder Problem Creates an Algebra Adventure

Purpose Effective teaching; Professional development activity; Student engagement; Student model building; Reasoning; Representation

Creator Joyce Leslie (Video Mosaic Collaborative)

Published 2021-09-15

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Nine-Year Old Brandon's Problem Solving For Accounting For All Possible Pizzas Choosing From 4 Toppings and Recognition Of a Connection To The Towers-4 Tall Selecting From 2 Colors.

Creator Rasha G. Abadir (Rutgers University)

Published 2021-02-10

Persistent URL <http://dx.doi.org/doi:10.7282/t3-bv69-dj55>

The Teaching Moves of Robert B. Davis: Empowering Students in Their Problem-Solving Activity by Collaborating and Justifying: The Tower of Hanoi (TOH) Task

Creator Satyen P. Baldev (Rutgers University)
Published 2021-07-09
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James' Recognition of the Isomorphism Between the Museum Problem and the Ladder Problem

Creator Kayla M. Albrethsen (Rutgers University)
Published 2020-07-23
Persistent URL <https://doi.org/doi:10.7282/t3-b6j1-4r22>

Eleventh Graders Explore Solution to the World Series Problem

Creator Sarah Bentivenga (Rutgers University)
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Romina, a College Junior, Revisits the Fundamental Theorem of Calculus

Creator Elizabeth A. Kelly (Rutgers University)
Published 2020-07-23
Persistent URL <https://doi.org/doi:10.7282/t3-bqrd-e409>

Students' Use of Mathematical Language as They Discover Formulas for Surface Area and Volume Using Cuisenaire rods

Creator Juliet Fanik (Rutgers University)
Published 2020-07-23
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Stephanie's argumentation about the expansion of a binomial squared using algebraic and geometric reasoning.

Purpose Student elaboration; Student model building; Reasoning; Representation
Creator Purity Kendi Kendi Muthitu (Rutgers University)
Published 2019-07-22
Persistent URL <http://dx.doi.org/doi:10.7282/t3-za33-j671>

Stephanie's Development of Reasoning by an Inductive Argument to Solve Tower Tasks: Part 1 of 3 (Grades 3 & 4)

Purpose Lesson activity; Student collaboration; Student elaboration; Student engagement; Student model building; Reasoning; Representation
Creators Usufu Nyakoojo (Rutgers University); Victoria Krupnik (Rutgers University)
Published 2020-03-03
Persistent URL <http://dx.doi.org/doi:10.7282/t3-hfzp-8376>

Stephanie's Development of Reasoning by an Inductive Argument to Solve Tower Tasks: Part 2 of 3 (Grade 4)

Purpose Student collaboration; Student elaboration; Student engagement; Reasoning; Representation
Creator Victoria Krupnik (Rutgers University)
Published 2020-03-03

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Stephanie's Development of Reasoning by an Inductive Argument to Solve Tower Tasks: Part 3 of 3 (Grade 5)

Purpose Student model building; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2020-03-03

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Stephanie's Development of Reasoning by Cases to Solve Tower Tasks: Part 1 of 3 (Grades 3 & 4)

Purpose Lesson activity; Student elaboration; Student model building; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2020-03-03

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Stephanie's Development of Reasoning by Cases to Solve Tower Tasks: Part 2 of 3 (Grade 4)

Purpose Lesson activity; Student elaboration; Student model building; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2020-03-03

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Stephanie's Development of Reasoning by Cases to Solve Tower Tasks: Part 3 of 3 (Grade 4)

Purpose Student collaboration; Student elaboration; Student engagement; Student model building; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2020-03-03

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Michelle's Longitudinal Problem Solving and Development of Reasoning About Tower Tasks: Part 1 of 3 (Grade 4)

Creators Purity Kendi Kendi Muthitu (Rutgers University); Victoria Krupnik (Rutgers University)

Published 2020-03-03

Persistent URL <http://dx.doi.org/doi:10.7282/t3-c5ja-qn71>

Michelle's Longitudinal Problem Solving and Development of Reasoning About Tower Tasks: Part 2 of 3 (Grade 4)

Purpose Student collaboration; Student elaboration; Student engagement; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2020-03-03

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Michelle's Longitudinal Problem Solving and Development of Reasoning About Tower Tasks: Part 3 of 3 (Grade 5)

Purpose Student collaboration; Student elaboration; Student engagement; Student model building; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2020-03-03

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Milin’s Learning Progression in Reasoning by an Inductive Argument to Solve Tower Tasks: Part 1 of 2 (Grade 4)

Purpose Student model building; Reasoning; Representation

Creators Purity Kendi Kendi Muthitu (Rutgers University); Victoria Krupnik (Rutgers University)

Published 2019-12-23

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Milin’s Learning Progression in Reasoning by an Inductive Argument to Solve Tower Tasks: Part 2 of 2 (Grades 4 & 5)

Purpose Student model building; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2019-12-23

Persistent URL <http://dx.doi.org/doi:10.7282/t3-dwqy-mg03>

Milin’s Learning Progression in Reasoning by Cases to Solve Tower Tasks: Part 1 of 2 (Grade 4)

Purpose Student model building; Reasoning; Representation

Creators Purity Kendi Kendi Muthitu (Rutgers University); Victoria Krupnik (Rutgers University)

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Milin’s Learning Progression in Reasoning by Cases to Solve Tower Tasks: Part 2 of 2 (Grade 4)

Purpose Student model building; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2019-12-23

Persistent URL <http://dx.doi.org/doi:10.7282/t3-7kyt-1r45>

A Collaborative Learning Environment in a Student Centered Math Classroom: A Focus on the Beneficial Effects Through the Lens of Pirie and Kieren’s Model of the Growth of Mathematical Understanding

Purpose Effective teaching

Creator Jemma B. Schraeder (Rutgers University)

Published 2019-02-04

Persistent URL <http://dx.doi.org/doi:10.7282/t3-zh6h-8y85>

A study of Alan’s & Erik’s Reasoning about fractions through collaboration, argumentation and building Cuisenaire models.

Purpose Effective teaching; Student collaboration; Student model building; Reasoning; Representation

Creator Usufu Nyakoojo (Rutgers University)

Published 2019-05-14

Persistent URL <http://dx.doi.org/doi:10.7282/t3-k1tp-fb53>

Beginning to Understand Linear Functions: Guess My Rule

Purpose Effective teaching; Professional development activity; Student engagement; Reasoning; Representation

Creator Joyce Leslie (Rutgers University)

Published 2019-08-05

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Developing conceptual understanding of instantaneous change while utilizing physical knowledge in the solution of the catwalk problem.

Purpose Lesson activity

Creator Jianene Meola (Rutgers University)

Published 2019-10-28

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Fourth Graders Offer Different Arguments Using Cuisenaire Rods as Models for Fraction Problems.

Purpose Lesson activity

Creator Qianyi Zhu (Rutgers University)

Published 2019-07-29

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Fourth-grade students' (Gang of Four) forms of reasoning and justifications for solutions to Tower Tasks

Purpose Student collaboration; Student elaboration; Student engagement; Reasoning; Representation

Creator Usufu Nykoojo (Rutgers University)

Published 2019-08-13

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Milin's Learning Progression in Reasoning by an Inductive Argument to Solve Tower Tasks: Part 1 of 2 (Grade 4)

Purpose Student model building; Reasoning; Representation

Creators Purity Kendi Kendi Muthitu (Rutgers University); Victoria Krupnik (Rutgers University)

Published 2019-12-23

Persistent URL <http://dx.doi.org/doi:10.7282/t3-hrjs-jq34>

Milin's Learning Progression in Reasoning by an Inductive Argument to Solve Tower Tasks: Part 2 of 2 (Grades 4 & 5)

Purpose Student model building; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2019-12-23

Persistent URL <http://dx.doi.org/doi:10.7282/t3-dwqy-mg03>

Milin's Learning Progression in Reasoning by Cases to Solve Tower Tasks: Part 1 of 2 (Grade 4)

Purpose Student model building; Reasoning; Representation

Creators Purity Kendi Kendi Muthitu (Rutgers University); Victoria Krupnik (Rutgers University)

Published 2019-12-23

Persistent URL <http://dx.doi.org/doi:10.7282/t3-vvfk-d817>

Milin's Learning Progression in Reasoning by Cases to Solve Tower Tasks: Part 2 of 2 (Grade 4)

Purpose Student model building; Reasoning; Representation

Creator Victoria Krupnik (Rutgers University)

Published 2019-12-23

Persistent URL <http://dx.doi.org/doi:10.7282/t3-7kyt-1r45>

Stephanie’s argumentation about the expansion of a binomial squared using algebraic and geometric reasoning.

Purpose Student elaboration; Student model building; Reasoning; Representation

Creator Purity Kendi Kendi Muthitu (Rutgers University)

Published 2019-07-22

Persistent URL <http://dx.doi.org/doi:10.7282/t3-za33-j671>

Stephanie’s use of geometric reasoning to explain binomial expansion.

Purpose Lesson activity; Student elaboration; Reasoning; Representation

Creator Nixon Odari Igunza (Rutgers University)

Published 2019-07-19

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Taxicab via Pascal’s Triangle to Towers: Building Isomorphisms to Justify.

Four high-school seniors – Brian, Jeff, Mike, and Romina are engaged in a challenging problem-

Purpose Student collaboration; Reasoning; Representation

Creator Purity Kendi Kendi Muthitu (Rutgers University)

Published 2019-07-31

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The Teaching Moves of Professor Robert B. Davis with Six- graders Working on the Tower of Hanoi Problem

Purpose Effective teaching

Creators Christian Orr-Woods (Rutgers University); Jianene Meola (Rutgers University)

Published 2019-10-28

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Tracing Stephanie’s Growth in Image Having through the Pirie-Kieren Lense

Creator Kara Teehan (Rutgers University)

Published 2019-01-22

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Tracing Stephanie’s Growth in Image Making through the Pirie-Kieren Lense

Creator Kara Teehan (Rutgers University)

Published 2019-01-22

Persistent URL <http://dx.doi.org/doi:10.7282/t3-jj5a-4z92>

Tracing Stephanie’s Growth in Mathematical Understanding through Researcher Moves

Creator Kara Teehan (Rutgers University)

Published 2019-01-22

Persistent URL <http://dx.doi.org/doi:10.7282/t3-1nww-cm49>

Tracing Stephanie’s Growth in Primitive Knowing through the Pirie-Kieren lense

Creator Kara Teehan (Rutgers University)

Published 2019-01-22

Persistent URL <http://dx.doi.org/doi:10.7282/t3-qd13-pc41>

Tracing Stephanie’s Growth in Property Noticing through the Pirie-Kieren Lense

In this analytic, we look at instances of Stephanie learning in the property noticing layer of the

Creator Kara Teehan (Rutgers University)
Published 2019-01-22
Persistent URL <http://dx.doi.org/doi:10.7282/t3-qsp2-wg48>

Tracing Stephanie's Growth Mathematical Understanding: A learning progression through the Pirie-Kieren lense

This analytic explores Stephanie's growth in mathematical understanding during a 98-minute
Creator Kara Teehan (Rutgers University)
Published 2019-01-22
Persistent URL <http://dx.doi.org/doi:10.7282/t3-ds2c-ve09>

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4th Graders Journey to Division of Fractions

Purpose Reasoning
Creator Alexa Lindenberg (Rutgers University)
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A Longitudinal Case Study of Stephanie's Growth in Mathematical Reasoning through the Lens of Teacher Discourse Moves

Purpose Effective teaching; Lesson activity; Student elaboration; Student engagement; Student model building; Reasoning; Representation
Creator Victoria Krupnik (Rutgers University)
Published 2017-04-28
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Fraction Assessment Analytic 1: Fourth Graders' Argumentation about the Comparison of $\frac{1}{2}$ and $\frac{1}{3}$

Purpose Homework activity; Lesson activity; Professional development activity; Reasoning; Representation
Creator Cheryl Van Ness (Video Mosaic Collaborative)
Published 2017-10-31
Persistent URL <http://dx.doi.org/doi:10.7282/T3RX9G2B>

Researcher Powell Introduces Functions in an Informal Math Learning Environment: The Interplay Between Teacher Questioning and Student Reasoning

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Published 2017-09-25
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Sixth- Graders Exploring Probability Principles through Dice Games

Purpose Effective teaching; Student collaboration; Reasoning; Representation
Creator Emmanuel Nsadha (Rutgers University)
Published 2017-08-07
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The development of students' conceptual knowledge through modelling fractions.

Purpose Lesson activity; Student collaboration; Student engagement; Student model building; Reasoning; Representation
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The interplay between Researcher Carolyn Maher’s questions and fourth grade student reasoning while exploring fraction comparisons

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The Interplay between Researcher Martino’s Questioning and Brandon’s Reasoning: Utilizing Probing Questions to Invite Students to Make Connections

Purpose Effective teaching; Student elaboration; Student engagement; Student model building; Reasoning; Representation
Creator Miriam Gerstein (Video Mosaic Collaborative)
Published 2017-09-25
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The Interplay between Teacher Questioning and Student Reasoning: Utilizing Probing Questions to Provide the Opportunity for Argumentation, Justification, and Reasoning

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Students Compare $\frac{1}{4}$ and $\frac{1}{9}$

Purpose Effective teaching; Student model building; Reasoning; English translation
Creator Elizabeth Uptegrove (Video Mosaic Collaborative)
Published 2016-07-11
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Extending the Doubling Conjecture

Purpose Student model building; Reasoning; Representation
Creator Elizabeth Uptegrove (Video Mosaic Collaborative)
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Fourth Grade Students’ Generic Reasoning while Exploring Fraction Comparison Ideas

Purpose Effective teaching; Lesson activity; Professional development activity; Student model building; Reasoning; Representation
Creator Cheryl Van Ness (Rutgers University)

)Published 2016-02-04
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Brandon's Aha! Fourth grader explains an isomorphism between problem solutions for the Pizza and Tower problems

Creator Jeana Largin (Rutgers University)
Published 2016-08-02
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David, Erik, and Meredith Use Reasoning to Resolve Conjectures

Purpose Student model building; Reasoning; Representation
Creator Elizabeth Uptegrove (Video Mosaic Collaborative)
Published 2016-01-24
Persistent URL <http://dx.doi.org/doi:10.7282/T3T43W4>

Fourth Grade Students' Generic Reasoning while Exploring Fraction Comparison Ideas

Purpose Effective teaching; Lesson activity; Professional development activity; Student model building; Reasoning; Representation
Creator Cheryl Van Ness (Rutgers University)
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James Finds the Difference Between $\frac{1}{4}$ and $\frac{1}{9}$

Purpose Effective teaching; Student engagement; Student model building; Reasoning; Representation
Creator Elizabeth Uptegrove (Video Mosaic Collaborative)
Published 2016-01-24
Persistent URL <http://dx.doi.org/doi:10.7282/T3PC34FQ>

Small Group and Whole Class Collaboration about Fractional Relationships Using Rod Models

Purpose Lesson activity; Professional development activity; Student collaboration; Student elaboration; Student engagement; Student model building; Reasoning; Representation
Creator Megan Grocholske (Rutgers University)
Published 2016-08-02
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Students Compare $\frac{1}{4}$ and $\frac{1}{9}$

Purpose Effective teaching; Student model building; Reasoning; English translation
Creator Elizabeth Uptegrove (Video Mosaic Collaborative)
Published 2016-07-11
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The Candy Bar Problem: Researcher Moves to Encourage 4th Grades Reasoning About Fractions

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The Museum Problem: Seventh grader Ariel investigates linear functions

Purpose Student engagement; Reasoning
Creator Susan Hinds (Rutgers University)
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Published Analytics: 2015

[Analysis on Student Collaboration and Comparing Fractions](#)

Creator Margaret Molloy

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[Ariel Constructing Linear Equations for "Guess My Rule" and the "Ladder" Problems](#)

Creator Mary Pierce

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[Attending to Students' Reasoning By Discovery of Fraction Concepts: An Illustration of the Common Core State Standards for Mathematical Practice](#)

Creator Phyllis Cipriani

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[Building Multiple Models Using Recursive Reasoning](#)

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[Collaborative Learning Groups Construct Viable Arguments and Critique the Reasoning of Others](#)

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[Comparing 1/2 and 1/3: Confusion about the Unit](#)

Creators Cheryl Van Ness; Alice S. Alston

Published 2015-09-17

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Comparing Models and Justifying the Choice of Unit

Creators Cheryl Van Ness; Alice S. Alston

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Developing Mathematical Precision in the Primary Grades

Creators Esther Winter; Marjory Palius

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Discovering Probability with Dice Games and the Evolution of a Convincing Argument

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Published 2015-06-28

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Eight-Grade Students explore Surface Area and Volume Problems: The Role of Representations

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Eighth Grader Stephanie's Argumentation about Meaning for the Square of a Binomial using Algebraic Reasoning

Creator Cheryl Van Ness

Published 2015-06-18

Persistent URL <http://dx.doi.org/doi:10.7282/T3FN180C>

Eighth Grader Stephanie's Argumentation about Meaning for the Square of a Binomial using Geometric Reasoning

Creator Cheryl Van Ness

Published 2015-06-22

Persistent URL <http://dx.doi.org/doi:10.7282/T3QZ2CRF>

[Eleventh Graders Collaborating and Recognizing Isomorphisms in their Problem Solving](#)

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[Establishing Norms and Creating a Mathematical Community](#)

Creator Miriam Gerstein

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[Extending Fraction Placements from Segments to Number Line: Obstacles and Their Resolutions](#)

Creator Kenneth Horwitz

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[Fourth Graders Analyses of Equivalence: 1/5 or 2/10?](#)

Creator Miriam Gerstein

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[Fourth Graders Build Towards Proportional Reasoning](#)

Creator Esther Winter

Published 2015-06-16

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[Fourth Graders Design a New Rod](#)

Creator Miriam Gerstein

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Persistent URL <http://dx.doi.org/doi:10.7282/T33B61X8>

Fourth Graders Explore the Magnitude of Fractions and Make Comparisons

Creator Miriam Gerstein

Published 2015-06-18

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Fourth Graders Reason by Cases as They Explore Fraction Ideas

Creator Esther Winter

Published 2015-06-18

Persistent URL <http://dx.doi.org/doi:10.7282/T3Q242>

Fourth graders' argumentation about the density of fractions between 0 and 1

Creator Cheryl Van Ness

Published 2015-04-14

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From Student to Teacher: The Role of Argumentation and Collaboration in Matt's Progression and Understanding of an Inductive Argument

Creator Michael Cimorelli

Published 2015-07-24

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Imagining the Density of Fractions

Creators Suzanna Schmeelk; Kenneth Horwitz

Published 2015-07-10

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Pascal's Triangle and Pascal's Identity: Contextualizing and Decontextualizing

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[Robert B. Davis Engages Students in Finding the Sum and Product Rule for Quadratic Equations](#)

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[Stephanie’s Journey with the Towers \(Grades 3-8\): A Metaphor for Making Connections](#)

Creator Solaris Ortiz

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[Student Perseverance in Discovering Patterns: Guess My Rule with Robert B. Davis](#)

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[Teachers Promoting Mathematical Discourse: Fraction Explorations by Fourth Graders](#)

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[The Development of Upper and Lower Bound Arguments while Comparing Fractions](#)

Creator Esther Winter

Published 2015-05-06

Persistent URL <http://dx.doi.org/doi:10.7282/T3ZS2Z8N>

[Tracing Ariel's Algebraic Problem Solving: A Case Study of Cognitive and Language Growth](#)

Creators Robert Sigley; Louise Wilkinson

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Persistent URL <http://dx.doi.org/doi:10.7282/T3N0186C>

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