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| Date:  | Duration of Lesson: 25 Minutes |
| Title of Unit: Math Talks | Title of Lesson:  |
| Lesson Objectives: Students will be able to connect the use of algebra tiles to understanding algebraic expressions |
| Groupings (e.g., whole class, small groups, co-teaching): Whole Class |
| Skills & Standards: CCSS.MATH.CONTENT.7.EE.A.1: Use properties of operations to generate equivalent expressions. Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. |
| **Progression of Learning & Teaching**  |
| Opener:  | * On each desk, there will be a set of algebra tiles for when the students enter the room.
* Because this is a discovery lesson, the goals will not be presented at the beginning.
* Students will begin by making observations about their tiles
 | **Points to Remember** Picture from [EMBIBE](https://www.embibe.com/exams/cubic-polynomials)Notation: |
| Activities & Tasks:  | **Instructional Lesson: *(include as much detail as needed for others to understand the lesson)*** * Give students time to work with the tiles.
* Ask: “What did you notice? What do you wonder about?”
* Student: students will find ways to group their tiles in a way that makes sense to them and that they can explain to others.
* We Do: Facilitate a class discussion
* What do you notice?
* How can the tiles be grouped?
* List ideas on the board
* “Can you come up with a different way to organize the tiles?”
* Decide as a class (with guidance) what the tiles actually stand and can be used for. Be sure to correct any misconceptions that may arise.

 Activities/Tasks: * Sorting of tiles
* Discussing

  | Resources: * Set of algebraic tiles for each student
* Individual whiteboard, marker, and eraser for students
* Large whiteboard and markers to record student observations
* [A Beginner's Guide to Teaching with Algebra Tiles video](https://www.youtube.com/watch?v=AN4MGUP4VXQ)
* [Desmos Algebra Tiles activity builder](https://teacher.desmos.com/activitybuilder/custom/58d26f0673718c0482447d2d)
* [Desmos Algebra Tiles: Equations and Expressions](https://teacher.desmos.com/activitybuilder/custom/5dcd5529976f87557e48f8fb)
* [Desmos Algebra tiles for combining like terms](https://teacher.desmos.com/activitybuilder/custom/5b22ca2822ad447e1c654cb8)
* [Desmos Algebra Tile Challenges](https://teacher.desmos.com/activitybuilder/custom/5a80d4e5e5733503557b6a94)

 Vocabulary: * Algebra tiles - Algebra tiles are square and rectangle-shaped tiles that represent numbers and variables
* Algebraic Expression – a symbol or a combination of symbols used in algebra, containing one or more numbers, variables, and arithmetic operations
* Term – a single mathematical expression
* Coefficient – a numerical or constant quantity placed before and multiplying the variable in an algebraic expression
* Variable – a symbol (usually a letter) standing in for an unknown numerical value in an expression and equation
* Exponent – a symbol written above and to the right of a mathematical expression to indicate the operation of raising to a power
* Like terms – Terms whose variables (such as x or y) with any exponents (such as the 2 in $x^{2}$) are the same
* Unlike terms - Algebraic terms, which does not have the same literal coefficients, and cannot be raised to the same power
* Constant- a value or number that never changes in expression

Scaffolding/Differentiation: * Be sure to check on each student for understanding
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| Level of Cognitive Complexity:  | ☐ Creating ☐ Evaluating  ☐ Analyzing  | ☐ Applying ☐ Understanding ☐ Remembering  |
| Key questions:  | * What mathematical concept(s) could the tiles be used to help with understanding?
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| Closure:  | * Exit ticket: Using the algebra tiles, create one expression that contains four terms, two variables and at least one coefficient.
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| Next Steps:  | * Use the tiles to help when teaching about Algebraic Expressions
 | Formative Assessment Criteria for Success:  * After further instruction, student will be able to solve homework assignments by combining like terms in Algebraic Expressions.
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