**EduTOOLBOX – Pre-K Professional Learning Program Lesson Plan**

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| **Content Area:** | **Math: Composing and Decomposing** |
| **Lesson Title:**  | **Decomposing Unifix Cube Towers** |
| **Time Frame/Lesson Length:** | 15 minutes |
| **Lesson Setting:**  | This lesson is designed to be taught at a small group table or on a classroom rug. |
| **Grouping of Students** | Small groups of 4-5 students are recommended for teaching this lesson. Students could be grouped homogeneously (similar ability levels) regarding counting and numeral recognition ability. The option of heterogenous (different ability levels) groups is also available to provide peer modeling among students. |

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| **Lesson Objective:** | The student will build and break cube towers at least two times using two different decomposition pairs and indicate their counting observations.*Student-friendly: I can count cube towers when they are together and apart.* |
| **Aligned Standard(s):****(TN-ELDS)** | *PK.OA.A.3 Compose and decompose numbers to 5, in more than one way, by using objects or drawings.*  |
| **Assessment Method:**  | The teacher will make anecdotal notes detailing student ability to count, decompose, and fluency of quantity knowledge when students build their tower. This documentation will be used to determine which students need more practice and instruction with sorting.  |

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| **Background Knowledge** | Students should have a basic knowledge of counting to 5 before participating in this activity. Students will also need a basic understanding of 2 parts in order to understand what you mean when you tell them to break the tower into 2 parts.  |
| **Intentional Vocabulary:** | Sample teacher talk is in italics. **Decompose -** *when we break a cube tower into 2 parts, we are decomposing or breaking apart the number of cubes. Today we are going to build towers and when I say decompose!, you will break your towers into two parts.* *Try this action with me to help us remember what decompose is: (make 2 fists and hold them together saying “this is the whole, now let’s decompose!” when you say decompose, pull your firsts apart)* |
| **Materials Needed:** | * Unifix Cubes
* Optional Decomposing Numbers Mat printed and laminated for extra support (attached to this lesson plan)

*Note: It is recommended to have each tower have cubes of the same color. If multiple colors are used, students may be tempted to break their towers up by color.*  |
| **Considerations for Learning:***possible challenges, management issues, and safety considerations* | Students may be excited to play with the cubes. Allow students a minute or 2 to free play with the objects at the start of the lesson. This allows them choice and autonomy with the objects before direct instruction and will help cut down on management issues that could arise.  |

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| **Lesson Procedures and Questioning** |
| **Lesson Section** | **Detailed Procedure***[Sample teacher script is in italics]* | **Questioning Sequence** |
| **Introduction:** | The teacher will place a handful of 3 cubes on the table in front of the students. *What do see on the table in front of me? Yes that’s correct, cubes! What do you notice about them? (pause) They are all the same color, that is correct. I want to know how many cubes I have, how can I find out? (pause or review counting strategies such as touch and count, line up, move, or stack). Today lets build a tower to count how many cubes I have. Count with me as a I build my tower! One, two, three. How many cubes are in my tower? Three!* *Today we are going to practice* ***decomposing*** *numbers. Can you say that word with me? Decompose. Decompose is a special math way of saying breaking apart or seeing the parts inside of a number.* W*hen we break a cube tower into 2 parts, we are decomposing or breaking apart the number of cubes. Decompose is a new word for us, so we will use this action to help us remember what it means. Do it with me! (refer to vocabulary section)* *Today we are going to build towers and when I say decompose, you will break your towers into two parts. Watch me! How many cubes did I have in my tower? That’s right, 3! Watch when I decompose or break apart my tower into 2 parts. Now I have 2 towers. How many cubes are in my first tower? How many are in my second tower? Now if I put my towers back together, how many do I have? So a tower of 3 has 2 secret towers inside of it, a tower of 2 and a tower of 1. Another way we can say that is a tower of 1 and a tower of 2 make a tower of 3.* *Decomposing towers will help us understand numbers in order to prepare us for addition and subtraction in kindergarten. We are always getting ready for kindergarten! Let’s get started.*  | Knowledge and comprehension questions are recommended for the introduction.* *Can you tell me what you see?*
* *What do you notice about the cubes?*
* *How can I find out how many cubes are in my tower?*
* *How many cubes are in my tower?*
* *How many cubes are in my first tower?*
* *How many cubes are in my second tower?*
* *If I put my towers back together, how many do I have?*
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| **Exploration:** | The teacher will provide each child with 4 cubes of the same color. *Now it is your turn to try decomposing.* *How many cubes do you have? Lets build a tower to count. How many cubes are in your tower? That’s right, 4. Now when I say decompose, you are going to break your tower into two parts. Ready, set, decompose! What do you notice about your towers? Look at your friends’ towers. Are yours the same or different?* *What will happen if we put our towers back together? How many cubes will be in our tower?* *Now that you have decomposed your towers can you put them back together? How many cubes are in your tower now?* *This time when I say decompose, can you break your tower apart in a different way?* *Great job! Can you put your tower back together, how many do you have now?* *I’m going to give each of you one more cube. If you add one more cube to your tower, how many cubes will you have in your tower?* *Ready, set, decompose!*  | Application and analysis questions are recommended for the exploration. * *How many cubes do you have?*
* *What do you notice about your towers?*
* *Look at your friends’ towers. Are yours the same or different?*
* *What will happen if we put our towers back together? How many cubes will be in our tower?*
* *Now that you have decomposed your towers can you put them back together? How many cubes are in your tower now?*
* *This time when I say decompose, can you break your tower apart in a different way?*
* *Can you put your tower back together, how many do you have now?*
* If you add one more cube to your tower, how many cubes will you have in your tower?
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| **Closing:** | The teacher will reflect on student learning using the questioning sequence. Post Reflection Discussion:*Today you practiced decomposing numbers.*The teacher will acknowledge various ways that students sorted objects. *Ronald had a tower of 5 and he decomposed the number 5 into 2 towers of 2 and 3. Greta had a tower of 5 and decomposed her tower of 5 into 2 towers of 4 and 1.* *Some numbers can be decomposed in different ways*. *Learning how to decompose numbers will help us understand numbers and be ready to learn addition and subtraction in kindergarten!* | Creation and evaluation questions are recommended for the closing. * *What did you do today?*
* *How did you count your cubes?*
* *What does it mean to decompose?*
* *Why is decomposing important?*
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| **Opportunities for Differentiation:** | Students may not understand the process of breaking a tower into 2 parts and may take their tower completely apart. The teacher should model taking apart one whole into two parts. If students need more support, use a mat with 2 different boxes for students to put their 2 towers on. This mat is attached. Students should work their way up to towers of 5. If students succeed with towers of 5, have them continue to build and decompose towers greater than 5 using the same questioning sequence. For students with limited language exposure, you may need to help provide visuals for specific vocabulary like “tower”, “decompose”, “parts” and “whole”.  |
| **Extending the Learning:** | Encourage decomposition practice during center time at various centers like toys and games, art, blocks, and math. Be intentional with language during this time, referencing back to the small group lesson. When students are fluent with decompositions to 5, they can play a partner game where one partner shows the whole tower and when the tower is broken, one part is hidden behind their back. The other partner will guess the amount in the hidden tower. This is a fun and engaging game for students to play with a partner.  |

**Decomposing Towers Mat**

Whole Tower

 Part Tower Part Tower