

APL (Active Playful Learning) Learning Experience Title: Digi-Blocks Discovery

Grade Level or Course	4th Grade		
Quarter # Unit #: Unit Title	Quarter 1 Unit 2 Addition and Subtraction		
Featured APL Practice:	Small & Paired Groups 	Student Contributions 	Hands-on & Minds-on 
	Voice & Choice 	Meaningful Connections 	Enthusiasm & Positivity 
APL Summary Briefly describe connection between lesson and APL practice	By using hands-on tools (digi-blocks) to explore place value concepts, students will create and show their understanding of the base 10 number system. This lesson also encourages students to engage in experimentation and exploration to develop understandings they can transfer to novel problems.		
Suggested Pacing # of minutes does <u>not</u> include your intervention - Unit Progression: When might you implement this learning experience within the unit?	Approximate Time (in min.): 20-30 minutes total -5-10 minute teacher-led introduction and material distribution -7-10 minute student-led exploration -7-10 minute reflection/check for understanding and clean-up	Unit Progression: First or second week of unit	
Driving Question Driving Question Resource - Open-ended; aligned with standards - Frames a rigorous, authentic context in which to learn content	How can we use digi-blocks to understand and explain the place value of whole numbers?		
Materials / Resources - Link Teacher Slide Deck - Include all materials and technology needed for teachers and students - Any digital links should be set to LCPS view-only - Add materials or resources directly to this document if possible	1,000 digi-blocks set (more if available) - Teacher should separate the 1,000-sets into varying totals for each group, making sure each group has ones, tens, and hundreds to compare and explore - Consider giving the digi-blocks loose, not packed into their cases Teacher-Selected Small Groups - Plan for mixed-ability groups of 3-4 students Anchor Chart with the driving question or learning objective on top. Options.. - T-chart for place value knowledge before and after experience - KWL - Leave blank and only record new learning during the Student Share		
Math Standards - Refer to VDOE standard(s) from Yearly Overview Elementary Cross-curricular	Math SOLs (<i>write out the whole SOL</i>): 4.NS.1 The student will use place value understanding to read, write, and identify the place and value of each digit in a nine-digit whole number. Students will demonstrate the following: c) Apply patterns within the base 10 system to determine and communicate, orally and in written form, the place and value of each digit in a nine-digit whole number (e.g., in		

document Tiered Vocabulary Words	568,165,724, the 8 represents 8 millions and its value is 8,000,000).	
Skills - Which 5C skill(s) will you highlight to students? Describe how students are developing the 5Cs within this experience. Critical Thinker, Communicator, Collaborator, Creator, Contributor - Which Math Process Goals are addressed in this experience?	5Cs - Communicator Critical Thinker Collaborator - Creator - Contributor <i>Confidence (APL)</i> <i>Content Expertise (APL)</i>	Math Process Goals: - Communication - Connections Representations Reasoning - Problem Solving
Learning Objective(s) - Student-facing "The student will..." "I can..." Elementary - PLC+ 5 Guiding Questions (Where are we going?)	<u>The student will...</u> - Work together with classmates to explore how digi-blocks help us understand numbers. <u>I can...</u> - Explain how digi-blocks relate to place value and numbers.	
Language Objective See Scaffolding and Supports for additional resources to support the language objective	<i>Grade level teams and EL co-teachers collaborate to create language objectives</i>	
Learning Experience Sequence - Follows Math Workshop Sequence - Teacher-facing language - Describe elements of the learning experience here, within the model of Math Workshop - Student and Teacher Actions: What should students be doing? What should teachers be doing?	Structure of Learning Experience:   Activate Prior Knowledge - Begin by prompting students to think about the question (or similar question), "What do we already know about place value?" <i>Expected answers will vary depending on when in the unit this experience is provided to the students.</i> Provide think-time so all students have the opportunity to organize their thoughts (consider implementing a system for students to silently indicate readiness like holding their thumb against their chest). Ask students to share their thinking with a partner, providing time for both partners to speak. Ask for volunteers to share their or their partner's answer to the prompt. <i>Consider recording these thoughts on the anchor chart or on the smartboard. New learning will be added to the anchor chart during the Student Share after the task.</i>   Ensure Understanding of Task - Tell students they will be working in small groups to explore a new set of materials, called Digi-Blocks. Show each individual piece but do not model how the pieces fit together. Explain that these blocks can help us understand and explain place value, and it's the students' job to figure out how. They need to work together as a group to explore the pieces and find the connection to answer the question on the anchor chart. Establish Clear Expectations - Take time to review classroom expectations for the correct handling of learning materials. Consider providing students 1-2 minutes to "play" with materials to get it out of their system before enforcing the correct expectations.	



- Task** - Start a timer of 7-10 minutes, depending on schedule/needs. While students are exploring, observe groups and step in to...
- correct any material mishandling,
 - encourage respectful participation,
 - prompt groups with guiding questions (*How can you make a larger block using the small blocks and the holders? Why isn't that holder staying together but the other is? How can you make even larger blocks? How many blocks of ten are in the larger block?*)
 - challenge groups to compose specific numbers



Student Share - When the time for exploration is up, bring the class back together. Ask each group the driving question and record their new learning on the anchor chart. Draw the focus to how the digi-blocks represent the base ten number system. *Consider bringing the class to meet each group at their location so they can use the materials to model their new learning.*



Check for Understanding - After every group has shared, give the class a 3-digit number and ask them to use the digi-blocks to create a model of it with their group. When they've correctly created the model, have students pack the digi-blocks and return them to an accessible location for use in stations.

Reflection ([Resources](#)):

Now that you've uncovered the relationship between the digi-blocks and place value, we can use the blocks to build and represent numbers. How has your thinking changed after today's activity? Share or write your response using the sentence frame, "Before the activity I thought... Now I know..."

Options for Continued Learning:

- Station Ideas:
 - Students build a structure using individual pieces (eg: castle), then deconstruct it by packing the pieces into their holders and identifying the number. Consider having students...
 - Record an estimate and their justification (4.CE.1b) before deconstructing
 - Write the number of blocks in standard, expanded, and written forms (4.NS.1abc)
 - Round the identified number to the tens/hundreds (??)
 - Partner with another student to compare structures and their total number of pieces using $<$, $>$, or $=$ (4.NS.2a)
 - Group up with 2-3 other students and order their total number of pieces from least to greatest or greatest to least (4.NS.2b)
 - Partner with another student or students to add or subtract their total number of pieces using the blocks and/or other strategy (4.CE.1c)
 - Students write a single or multi-step story problem involving addition and subtraction (4.CE.1d) and have a partner justify their solution using the digi-blocks (4.CE.1a)
 - Students roll a die to create a 3 to 4 digit number then represent that number with digi-blocks and write it in written and expanded forms (4.NS.1abc)