

Pre-Kindergarten Common Core Learning Standards Mathematics

Common misunderstandings and ways to address them with young students

Counting and Cardinality

Misunderstanding	Example	Ways to address
Not realizing that the last number you say is the total	<p><i>Teacher:</i> How many plates do you have? <i>Dylan:</i> 1, 2, 3, 4 (as he touches each plate) <i>Teacher:</i> How many is that? <i>Dylan:</i> 1, 2, 3, 4! <i>Teacher:</i> You have four plates!</p>	<ul style="list-style-type: none"> Explicitly tell students, “The last number you say is how many you have.” Model for students, “1, 2, 3, 4. I have four.”
Counting the same object multiple times	<ul style="list-style-type: none"> Britney has a set of 7 objects. She counts the objects by touching them and stating the number, but touches and counts several objects twice. At the end, she announces that she has ten objects. 	<ul style="list-style-type: none"> Teach students to physically move objects as they count them. Model how to move and separate objects onto a tray after counting them. Explain that when we are counting, we trying to figure out how many things we have. To do this, we count everything one time.
Thinking that a number name refers to an object, not a quantity	<ul style="list-style-type: none"> When counting the number of students here today, you touch DeAnthony and say “five.” DeAnthony protests, “I’m not five, I’m four!” He knows that he’s four years old, but doesn’t understand that he remains four years old while being the fifth person in a counting sequence. 	<ul style="list-style-type: none"> Count a set one time, then mix up the objects and count it again. Talk explicitly about how it is the same number of objects, regardless of what order you count them in. Be intentional about your language – instead of just saying “1, 2, 3, 4,” for students how are struggling with this concept, say, “1 student, 2 students, 3 students, etc.” to reinforce that the number names are connected to the number of students.
Always counting each object to answer how many questions	<p><i>Teacher:</i> How many bears do you have?” <i>Tamara:</i> Three! <i>Teacher:</i> How do you know you have three bears? Tamara pauses but doesn’t respond. She then counts each bear aloud 1, 2, 3. <i>Teacher:</i> You are right... you counted each bear and there are three bears!</p>	<ul style="list-style-type: none"> Subitize is when a child has internalized a number of items and recognizes the number without counting. Document when a student knows the quantity of objects without counting each one. Help make students aware that there are many ways to determine how many. Counting is one way to find out “how many,” but sometimes we know by just seeing the number of objects.

Operations & Algebraic Thinking

Misunderstanding	Example(s)	Ways to address
Thinking that there is only one “type” of pattern	<ul style="list-style-type: none"> ○ Jayla can consistently identify AB patterns, but not ABC patterns. ○ Carlos can consistently identify patterns with snap cubes, but struggles to find patterns in the natural environment. 	<ul style="list-style-type: none"> ● Emphasize the definition of a pattern – “something that repeats over and over again or continues on in the same series.” ● Talk to students about how there are lots of patterns everywhere--the stripes on your shirt repeat to make a pattern, the tiles on the floor and walls. State the different patterns aloud...red square, blue square, green rectangle, etc. ● Introduce students to more abstract or complex patterns, such as your daily class schedule, the repetition in a book, or the rhythm in a song. ● Students are not expected to produce or extend more complex patterns, but exposure to them will help solidify students’ overall understanding of what is a pattern.

Measurement & data

Misunderstanding	Example(s)	Ways to address
Thinking that all descriptions of size are permanent, not relative	<ul style="list-style-type: none"> ○ Julius knows that he is “bigger” than his baby brother, so he thinks that he is “bigger” than everyone, including his teacher. He doesn’t understand that “bigger” is a relative term 	<ul style="list-style-type: none"> ● Frequently talk about the relative sizes of various objects, emphasizing how objects can be “bigger” and “smaller” depending on what they are compared to.

Geometry

Misunderstanding	Example	Ways to address
Recognizing objects or shapes in only one orientation, structure, or size	<ul style="list-style-type: none"> ○ Amani recognizes isosceles triangles, but not other types of triangles. ○ Rayuella thinks a triangle is a triangle only when one angle is pointing up, and two angles are at the bottom. ○ Samuel recognizes squares when they are “straight” but does not recognize them when tilted to the side. 	<ul style="list-style-type: none"> ● Explicitly define characteristics of shapes with students. For example, all squares have four equal sides that are the same length and four corners, and all triangles have three sides and three angles. ● Give students the opportunity to rotate and flip various shapes. Discuss how the attributes of the shapes stay the same regardless of how the shape is positioned.

Pre-Kindergarten Common Core Learning Standards English Language Arts & Literacy

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Literature & Informational Text

Misunderstanding	Example	Ways to address
Making surface level connections to books, but struggling to make more in-depth connections that enhance the meaning of the story.	While reading <i>Knuffle Bunny</i> , Khadija exclaims, "I went to the laundromat too!"	<ul style="list-style-type: none"> Ask follow up questions to help students make more complex connections. (E.g. What did you do at the Laundromat? What do you think Trixie will do there?) Think aloud about how you make connections to help enhance your understanding of the story.

Foundational Skills

Misunderstanding	Example	Ways to address
Thinking that every word that starts with a certain letter is the same word.	Every time Dylan sees a word that starts with "D" he exclaims, "My name!"	<ul style="list-style-type: none"> Talk about how each word has a special sequence of letters in a special order. Mix up the letters in the child's name and talk about how it doesn't spell the child's name anymore. Rearrange the letters to show how they can spell the child's name. Help the child find several words in environmental print that start with the same letter as his/her name. Talk about what each of the words says, and the different letters in each word.
Confusing alliteration and rhyming.	Michael picks up a picture of a "bat" and a "bug" and exclaims, "They rhyme!"	<ul style="list-style-type: none"> Explain that "words that rhyme sound the same at the end." First practice finding rhyming words without any alliteration (e.g. do not have any words that have the same beginning sounds). When students are secure in this skill, then add some words that have the same beginning sounds.

Writing

Misunderstanding	Example	Ways to address
Struggling to see the connections between pictures	Frankie draws an elaborate picture of the flowers the class planted, but when prompted to label his picture, he keeps	<ul style="list-style-type: none"> Emphasize the connection between words and pictures in story books and informational texts. Talk about

and words.	drawing. Kristen writes letter like forms across her paper, and verbally tells her story to her teacher. When prompted to draw a picture, she continues writing letter like forms.	how, when combined, the words and pictures help enhance the meaning of the book. <ul style="list-style-type: none"> • Guide students to draw or write about specific components of their work.
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Speaking & Listening

Misunderstanding	Example	Ways to address
Making comments when prompted to ask questions.	After observing the giraffes at the zoo, the teacher asks students if they have any questions about the lions. Tyra says, "I like their long necks!"	<ul style="list-style-type: none"> • Talk about how we ask questions to "find out more information." • Think aloud about questions that you have during stories or other classroom experiences. Encourage students to do the same. • Scaffold your interactions to help students ask questions – "Yes, I like their necks, too. They are different from our necks..."

Language

Misunderstanding	Example	Ways to address
Confusing commonly used prepositions.	Amanda announces, "I want to work to dramatic play."	<ul style="list-style-type: none"> • Repeat the child's sentence back using the appropriate preposition ("You want to work in dramatic play?"). • Play games (like Simon Says) that give students practice with prepositions (e.g. Simon says put your hand on your head. Simon says put your body in the circle.").