Welcome to Content Session 3

Measurement:

What kind of "big" is it?

Who's just right for me?

Find the person whose strip is exactly the same length as yours.

Greet your partner and find seats next to each other.

Ordering Objects by Size

- Arrange your group's set of objects from smallest to biggest.
- Make a list of your items numbered from 1 for the smallest up to however many you have for the biggest.

Ordering Objects by Size

- Now, arrange your objects from biggest to smallest ***in a different way***. Again, number the order.
- Repeat, if possible.

Attributes

What kind of "BIG" is it?

Comparison

Nothing is "BIG" in and of itself.

Size is always relative.

Let's Draw a Ruler

What do I need to represent a ruler on the board?

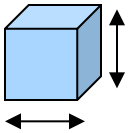
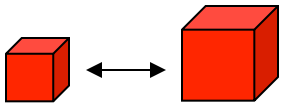
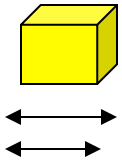
What are the rules of rulers?

When do we need rulers?

Wally's Stories: Rulers

A Conversation in Kindergarten

Big Ideas of Measurement

Topic	Big Ideas	Examples
Attributes 	• Many different attributes can be measured, even when measuring a single object.	• A bucket has many measurable attributes, including height, weight, capacity, or circumference: *What kind of "big" is it?*
Comparison 	• All measurement involves a "fair" comparison.	• Weighing rocks on a pan balance (direct comparison); using a length of string to measure a table in one room and chairs in another (indirect comparison). • A "fair" comparison measures the same attribute. Units must be of equal size, with no gaps or overlaps.
Precision 	• Quantifying a measurement helps us describe and compare more precisely.	• Nonstandard units (such as blocks) and standard units (such as inches) allow for more precision than direct comparison. • There is always a more precise measurement possible – we never get it exactly "right," but it must be "good enough" for the task at hand.

Stop & Reflect

Video Analysis

Focus on the Child: Measurement

"Comparing Objects by Length"

"Seriating Objects by Length & Capacity"

What evidence of children's thinking can you see or hear?

Development of children's thinking about measurement

Measurement is a complex combination of concepts and procedures that develops over years.

- At 2 years, children intuitively compare, order, and build with materials. They may use gesture to indicate attribute because they lack vocabulary for specific dimensions.
- At 3 years, children identify length as attribute. They often understand length as an absolute ("*I am tall*.") but not as a comparison ("*I am taller than my brother but shorter than my sister.*")

Development of children's thinking about measurement

Measurement is a complex combination of concepts and procedures that develops over years.

- By 4 years, children directly compare two objects to determine which is longer, taller, holds more, and so on.
- 4- and 5-year olds can begin to use indirect comparison. Also, children show an interest in assigning numbers to measures.

Teaching Implications

Teach measurement as more than a simple skill; give children opportunities to explore the ideas of measurement.

- Use informal activities to focus children on size attributes and direct comparison.
- Encourage children to solve real measurement problems. This will naturally lead them to think about quantifying measures and the need for units to count.
- Use manipulative units that closely connect with measurement tools.
- Attend to precision.

Video Analysis: Research Lesson
Just Right For Me

- *What evidence do you see of the children's thinking & understanding?*

- *What evidence do you see of the teacher's thinking & planning?*

How might this experience connect to other math?

Stop & Reflect