OE: 16
As children progress through the Kindergarten program, they: measure, using non-standard **units of the same size**, and compare objects, materials, and spaces in terms of their **length**, **mass**, **capacity, area, and temperature**, and explore ways of measuring the **passage of time**, through inquiry and play-based learning

length
Objects and shapes have measurable attributes that can be compared and communicated in different ways.

We use comparative and descriptive language when communicating about measurement attributes

temperature
We use different tools to measure different things.

We use comparative and descriptive language when communicating about measurement attributes

units of the same size
The attribute we are measuring determines the tool we will use and therefore the unit of measurement.

The unit used to measure makes a difference.

Any space in between units counts as a measure.

capacity, area
Students use their understanding of composing and decomposing shapes to support their ability to measure objects

We use comparative and descriptive language when communicating about measurement attributes

passage of time
We use different tools to measure different things.

We use comparative and descriptive language when communicating about measurement attributes

mass
We use different tools to measure different things.

We use comparative and descriptive language when communicating about measurement attributes

16.1
Select an attribute to measure, determine an appropriate non-standard unit of measure

16.2
Investigate strategies and materials used when measuring with non-standard units of measure

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OE 16: Compare objects, materials, spaces in terms of **Length** through inquiry and play based learning

CU - Objects have measurable attributes that help us to describe, compare, and communicate
CU- Students use their understanding of composing and decomposing shapes to support their ability to measure objects

SE (Look Fors):
16.2
Investigate strategies and materials used when measuring with non-standard units of measure

Say, Do, Represent		
Initial	Intentional Interactions	Eventual
Saying “I’m bigger” *I am taller than you. *my hair is longer than yours Doing *Standing back to back and check. *using their hand to measure their hair *using finger to follow a line or object *”She’s older because she’s taller *Child puts arms over head to show that they are taller	Students laying down on the floor for friends to measure using different non standard materials, blocks, linking cubes, markers, etc. Display height chart in classroom (ask: What do you notice? Focus is on comparing heights) Modelling measurement language in context, real life experiences (“You are taller than ____”) Providing students with non-standard measurement tools at all times (e.g., cubes, loose parts) **Task: Roll a Tower** -(BWW) prompting with “how can we make it taller Cusinaire Rods - used as comparison tool (comparing 5 and 10 rods)	Children would use different materials to measure their height. “I’m three blocks taller than you.” Children might ask a younger and older friend for them to measure with different measuring materials. “I know my tower is taller than his because there are three more blocks on mine.” Comparable attributes needs to be the same (both people have arms up or both people have arms down)

OE 16: Compare objects, materials, spaces in terms of **Temperature** through inquiry and play based learning

CU - Objects have measurable attributes that help us to describe, compare, and communicate

CU- Students use their understanding of composing and decomposing shapes to support their ability to measure objects

SE (Look Fors):
16.2
Investigate strategies and materials used when measuring with non-standard units of measure

Say, Do, Represent		
Initial	Intentional Interactions	Eventual
Saying: “My mommy said it’s going to be cold today” “Do I have to wear my hat?” “Do we need to wear sweaters for outside?” “My hair feels wet after gym” Incorrectly describing temperature (e.g, saying it’s freezing instead of hot) Doing: Putting on and taking off clothing to match the temperature Representing: Putting on winter hat rather than a sun hat Taking clothing on or off to match the temperature	Compare morning and afternoon temperature (wear a sweater in the morning) Eg, a student came in morning in t shirt, “ It’s hot today, I checked the temperature on my mom’s phone.” Modelling measurement language in context, real life experiences (“It will be warmer outside at lunch recess than it was during morning recess”) Place a thermometer by the classroom where it can be seen and accessed by students Conversing about seasonal changes Supporting and modelling self-regulation pieces surrounding body temperature and weather	“Educators consider the Math Process: Reasoning when observing children as they get dressed for recess in relation to the weather. In context, use understanding of temperature independently- making a hot chocolate stand in winter vs freezie stand in summer, understanding what you will need/wear at a dramatic play centre beach Comparing and discussing temperature during inquiry/seasonal conversations or learning experiences (e.g., observing ice melt, watching a plant grow)

OE 16: Compare objects, materials, spaces in terms of **Area and Capacity** through inquiry and play based learning

CU - Objects have measurable attributes that help us to describe, compare, and communicate
CU- Students use their understanding of composing and decomposing shapes to support their ability to measure objects

SE (Look Fors):
16.2
Investigate strategies and materials used when measuring with non-standard units of measure

Say, Do, Represent		
Initial	Intentional Interactions	Eventual
Saying: "'I'm squished" "There's no space here" "Move over" "I have so much in my cup!" "I have more sand than you." "I will go to the carpet to get dressed because there are too many people at the cubbies" Doing: Filling containers with different materials (e.g., sand, water) in an exploratory manner Squeezing body into a small space on the carpet Sitting too close to someone Trying to join a table or activity that has too many students at it already Representing: Children spread materials over a large open space not noticing that it	Counting floor tiles How many people fit inside your house? Providing seating options so that they can pick one that is most comfortable for their body in the space "What materials can we use to cover/fill this space? Providing alternate spaces for dressing for dismissal or for activities (e.g., clipboards for writing, moving belongings to carpet if cubby area is full) Which window is bigger? How do you know? ___ wants to write a long message on a sticky note. Which sticky note will she/he choose to write her/his message on? How do you know? (provide small, medium, large notes)	Saying: " I filled up the cup with 3 scoops of sand" "I have to get a bigger cup because this cup is too small." Doing: Using materials to cover or fill other materials Selects tools and strategies (carpet, frame) to define their space within a bigger space Recognizing how much space their own body takes up (finding an appropriate space to sit in) Representing: explores coverage of area in play and shared or guided experiences with non standard-units of the same size with no gaps or overlays

OE 16: Compare objects, materials, spaces in terms of **Mass** through inquiry and play based learning

CU - Objects have measurable attributes that help us to describe, compare, and communicate
CU- Students use their understanding of composing and decomposing shapes to support their ability to measure objects

SE (Look Fors):
16.2
Investigate strategies and materials used when measuring with non-standard units of measure

Say, Do, Represent		
Initial	Intentional Interactions	Eventual
Saying “I can’t lift ths” “If know I weigh more than you because I am older than you” “This backpack is so heavy” “ I need help carrying this” Doing *Using a scale to weigh each other. *Asking for help to lift something Representing Understanding that they need more than one person to lift something Throwing a balloon up in the air and waiting for it to come down to catch it	**Task: Tip the Scale-** roll a dice, place items in one side of the scale to make your side heavier Exploring mass using a balance scale Comparing and discussing mass during inquiry/seasonal conversations or learning experiences (e.g., observing growth of caterpillars)	“I weigh more than you” “This ways more than the other object”- comparing two objects weight using scale. “I can use a scale to tell me how heavy something is” “My water bottle is heavier than yours” “This is light like a feather” “Nine bears are as heavy as 1 cube” Inquiry learning: “The caterpillars ate so much food now they are bigger/longer.” Comparing their mass from when we first got them.

OE: 16 Explore ways of measuring the **passage of time** through inquiry and play based learning

16.1
Select an attribute to measure, determine an appropriate non-standard unit of measure

16.2
Investigate strategies and materials used when measuring with non-standard units of measure

CU - Objects have measurable attributes that help us to describe, compare, and communicate

Say, Do, Represent		
Initial	Intentional Interactions	Eventual
Say: “I did that really fast” “When can I eat lunch, I am hungry?” “It’s almost my birthday” “It’s almost the weekend” “On wednesday I am going to the dentist” (without understanding when Wednesday is) Doing: Referring to things they did “yesterday” that happened in the past/”tomorrow” that will happen in the future Referring to a weekly event as a benchmark for the days of the week “is it pizza day?” Getting excited for their birthday that is approaching Represent Running to get their coat on for recess so they can get outside faster Understanding that the more people who tidy up, the faster it will go Making pretend personal clocks and calendars, but not using them correctly	Count aloud how long it takes for students to return from the office Children might feel it’s time for lunch because they feel hungry. Teachers explain then the short needle goes to 1, and long one goes to 12. That's 1 o’clock. Making comparisons to what is meaningful to them VIsual timers for various activities (sand, digital, analog) Intentionally utilizing a calendar timeline to represent real life events- pizza day, field trip, birthdays (focus on concepts of print - reading left to right and number line) Birthday calendar graph Visual Schedule- conversations about what comes before/after, first/next Integrating concept of time into dramatic play area (e.g., store hours)	Understanding that a clock can be used to tell the time “Can you tell me what the clock says?” Exploring how a calendar is used to measure time (days, weeks, months, years) “How many days are there until my birthday?” Understanding the concept of before and after (“We have gym after recess”) Making pretend personal clocks and calendars and using them as a means to tell time (e.g., pretending to tell time on a paper watch, crossing off days on their own paper calendar) Efficiency when managing time (more people helping to clean up means it goes faster, picking up more materials when tidying up means clean up is faster, eating lunch faster so they can have ice cream, play on the carpet etc…)

OE: 16 Measure with units of the same size

CU - Non-standard units (same size) can be used to measure different objects
CU - How we measure matters (no gaps or overlays)

16.1
Select an attribute to measure, determine an appropriate non-standard unit of measure

Say, Do, Represent

Initial
Uses gestures to indicate size.

"I measured the…"

Describes how tall something is with numerical representation "4" without using a tool to measure "It's one, two, three, four. Four!"

Measure an object using materials that are all different sizes (e.g., crayon, cube, marker)

Compares height without lining up the objects

Lining up the non standard materials in line, might not be in a straight line

Using the same size unit to measure but leaves gaps "I used markers to measure how tall my tower is" or "I can use 6 triangles to cover this shape"

Measures the length of the room using very small objects.

Intentional Interactions:
Using small measuring materials to measure big objects or using big materials to measure small objects.

Explicit Teaching:
Notice and name the unit used to measure "Oh you are 4 ***cubes*** tall."

Gesturing size of unit (big or small) to support them in having a size benchmark *(e.g., "Is it 4 elephants tall?)*

Providing a variety of different sets of same-sized counting objects (tiles, markers, cubes, pattern blocks)

Notice and name: "Big can mean different things - for example it can mean wide or tall"

Task- Box Comparison (pg 228 K Document):
The educators place two boxes of different sizes on the table with some linking cubes. They as a small group of children to tell them which box is bigger, and then ask them how they could use the materials on the table to prove their predictions. Some of the children put the cubes in the boxes randomly. Others methodically connect the cubes until the boxes are filled. The educators ask, "which of the ways of filling the boxes with cubes is more accurate? Why do you think that?"

Eventual
Realizing that their shoes have different sizes and there are holes between the shoes therefore it is not that accurate.

Finding a way to measure things with various materials correctly from one end to another and using same size materials.

Children might realize that using bigger measuring tools to measure bigger object is faster to measure.

Comparing the size of objects to find a suitable substitute when they run out of one material ("I ran out of markers but 4 cubes are the same size")