**Lesson Plan: Ordering and Comparing Objects Using a Third Object** (This lesson should be adapted, including instructional time, to meet the needs of your students.)

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| **Background Information** | |
| **Content/Grade Level** | Mathematics/Grade 1  Domain: 1.MD - Measurement and Data  Cluster: 1.MD.A.1-2 - Measure lengths indirectly and by iterating lengths. |
| **Unit/Cluster:** | Measure lengths indirectly and by iterating lengths. |
| **Essential Questions/Enduring Understandings Addressed in the Lesson** | * What is length? * Why do I measure? * Why do I need standardized units of measurement? * How do you order objects by length? * How do you indirectly measure 3 objects? * When you order objects, what does the progression show? * Length is the distance measured from one end point to another end point. * Standard units of measure enable people to communicate about measurements and interpret the results or data. * You have to compare the lengths of the objects to order the objects as taller/shorter, longer/shorter. * You measure object A and object B. You find A is longer than B. Object B is longer than C. Then object A must be longer than C. * The progression shows the order from longest to shortest or shortest to longest. |
| **Standards Addressed in This Lesson** | * 1.MD.A.1 – Order three objects by length; compare the lengths of two objects indirectly by using a third object.   It is critical that the Standards for Mathematical Practice are incorporated in ALL lesson activities throughout the unit as appropriate. It is not the expectation that all eight Mathematical Practices will be evident in every lesson. The Standards for Mathematical Practice make an excellent framework on which to plan your instruction. Look for the infusion of the Mathematical Practices throughout this unit. |
| **Lesson Topic** | Ordering and comparing objects using a third object. |
| **Relevance/Connections** | * This unit extends the work that was done in Kindergarten using direct comparison. Students move from directly comparing objects to indirectly comparing objects, and ordering objects by measurement length. * The work done in this unit lays the foundation for the concepts of area in Grade 3. |
| **Student Outcomes** | The student will:   * Understand that the length is the distance measured from one end point to another end point. * The distance between the two end points is the length. * Understand that both the length and the width are measurements of length. * Order and compare the lengths of sets of object using length measurement. * Use the length of a third object to compare the lengths of two other objects and order them from longest to shortest or shortest to longest. |
| **Prior Knowledge Needed to Support This Learning** | * Students need to be able to describe measurable attributes. * Students need to be able to describe several measureable attributes for one single object. * Students need to be able to directly compare 2 objects with a measurable attribute in common to see which object has “more of”/”less of” of the attribute, and describe the difference. |
| **Method for determining student readiness for the lesson** | Teacher observation prior to the lesson.   * Review measureable attributes. * Students can identify several measurable attributes for a single object. * Students can directly compare 2 objects with a measurable attribute in common. |

| **Learning Experience** | | |
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| ***Component*** | ***Details*** | ***Which Standards for Mathematical Practice(s) does this address? How is the Practice used to help students develop proficiency?*** |
| ***Warm Up*** | Materials Needed:   * Basket of different objects (e.g. string, glue pencils, ball, dice, etc.).   Goal: Students will order 3 objects.   * Provide pairs/groups of students with a basket of different objects (e.g. string, glue pencils, ball, dice, etc.). * Tell students to select 3 objects to order using any attribute that they decide (length, width, height, etc.) * Tell students they will share with the class the attribute they used to order, the order of their objects, and how they determined their order. * Have the pairs or groups each have a chance to share. | SMP 4: Model with mathematics – Pairs or groups of students compare and order concrete objects by one attribute.  SMP 2: Reason abstractly and quantitatively – Students will share the objects they used, the order of the objects, and how they determined the order. |
| ***Motivation*** | Materials Needed:   * Set of connecting cubes for each group of three students   Goal: Students will order the heights of 3 students   * Give groups of 3 students a basket of connecting cubes. Each student takes a handful of cubes and puts them together to make a tower. * Have them order the cube towers by length from tallest to shortest. * Have students share out how they ordered their cube towers. | SMP 4: Model with mathematics – Pairs or groups of students compare and order connecting cube towers by height.  SMP 2: Reason abstractly and quantitatively – Students will share the towers they made, the order of the towers, and how they determined the order. |
| ***Activity 1***  UDL Components   * Multiple Means of Representation * Multiple Means for Action and Expression * Multiple Means for Engagement   Key Questions  Formative Assessment  Summary | UDL Components:   * **Representation** - Students order concrete objects by size and then record their comparison using pictures, numbers, and/or words * **Expression** –Students share their comparison using both pictures and words. * **Engagement** – Students are engaged through the use of concrete materials, drawing, and working with others.   Materials Needed:   * Set of connecting cube towers from motivation * Additional connecting cube tower * Mystery bag of 3 objects (sticky note, glue stick, crayon, pencil, paper clip, etc.) for each group of students * “Surprise bag” with a random classroom object that is not in the mystery bags for each group of students * Resource Sheets 1A&B: Mystery Bag: Ordering Objects * Resource Sheet 2: Observation Data (two copies)   Goal:   * Using a set of 3 cube towers from the motivation, tell students that you found another cube tower under all of the papers on your desk. Ask students where the tower belongs in the order of the three existing towers. How will I figure out where it goes? * Talk through comparing the new tower to the 3 existing towers to determine where it belongs in the series. * Give each table group a mystery bag of 3 objects (sticky note, glue stick, crayon, pencil, paper clip, etc.) * Students remove the objects from the bag and order them by length from tallest to shortest. * Give each table a “surprise bag” with a random classroom object that is not in the mystery bags. * Ask, where can you put the surprise object in the correct order with your other objects? * Have students share their ideas for putting the object in the order (compare it to the 3 items from the mystery bag). * Students then put the “surprise object” in the order with the 3 existing objects. * Once they are ordered, students record the order on Resource Sheets1A&B: Mystery Bag: Ordering Objects. * Mystery and surprise bags then rotate from table to table. Students continue to remove the objects, order them, add the surprise object to the order, and then record. * While students are working, teacher circulates through the room to ask questions such as: * How did you order your objects? * What did you use to help you figure out the order? * How did you know where to place the surprise object? * How are your objects ordered? * Once they have compared the objects in all of the bags, have them bring their recording sheet to the meeting area. * Have students share out how they ordered objects. Ask students what they had to do to fit the surprise object into the order.   Formative Assessment:   * As the students work, circulate around the room using Resource Sheet 2: Observation Data to record information about student progress. Add data during the discussion time as well.   Summary:   * Discuss with students what is important to think about when ordering objects. | SMP 4: Model with mathematics – Pairs or groups of students compare and order concrete objects by one attribute.  SMP 2: Reason abstractly and quantitatively – Students will share the objects they used, the order of the objects, and how they determined the order. |
| ***Activity 2***  UDL Components   * Multiple Means of Representation * Multiple Means for Action and Expression * Multiple Means for Engagement   Key Questions  Formative Assessment  Summary | UDL Components:   * **Representation** - Students order concrete objects by size and then record their comparison using pictures, numbers, and/or words * **Expression** –Students share their comparison using both pictures and words. * **Engagement** – Students are engaged through the use of concrete materials, drawing, and working with others.   Materials Needed:   * Large marker or popsicle stick for each student * Bag of 8 to 10 objects of varying size for each pair or group of students * Resource Sheet 3: Comparing Three Objects * Resource Sheet 2: Observation Data (two copies)   Goal: comparing 2 objects using a 3rd nonstandard unit   * Organize students in pairs or groups. * Give each student a marker or popsicle stick to use when comparing the length of other items. * Give each pair or group of students a bag of 8 to 10 items of varying size. * Distribute a copy of Resource Sheet 3: Comparing Three Objects. * Explain that the students are to take turns pulling out two objects from the bag. * Their job is to use the marker or popsicle stick to order it and the other two objects from shortest to longest. * Explain that they are to record the order on Resource Sheet 3 using pictures, numbers, and/or words. * The student then returns the items to the bag and passes to their partner or another student in their group. * Students repeat this activity until all have had three opportunities to compare and order items from the bag using the marker or popsicle stick for comparison. * Gather the students to the meeting area and allow time for them to share their comparisons, using the items from the bag, their recordings on Resource Sheet 3, and the strategies they used to order the items.   Summary:   * Ask students how it helped to have the marker or popsicle stick to use when ordering the items. Allow time for them to share their thinking.   Formative Assessment:   * Using Resource Sheet 2 Observation Data, record your observations of the students ordering of the objects as you move around the room during their work time. Add additional comments during the discussions when they share their results and strategies. | SMP 4: Model with mathematics – Pairs or groups of students compare and order concrete objects by using one objects as a comparison tool.  SMP 2: Reason abstractly and quantitatively – Students will share the objects they used, the order of the objects, and how they determined the order. |
| ***Closure*** | Provide center activities for students to use that require them to order various sets of objects from shortest to longer by comparing their lengths. |  |

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| **Supporting Information** | |
| **Interventions/Enrichments**   * Special Education/Struggling Learners * ELL * Gifted and Talented | Warm Up:  Special Education/Struggling Learners: Pair struggling students with another student who can help guide their exploration of the ordering activity. Allow pairs of students to use one recording sheet together.  ELL: Provide vocabulary cards with the words needed presented both in their native language and in English for their use.  Gifted and Talented: Present these students with orderings that are incorrect and ask them to find the error and correct it. Allow time for them to create a poster than explains and represents ordering objects by comparing size. Allow students to use connecting cubes to measure the objects to be ordered and explain their order based on the number of cubes equal to their lengths. |
| **Materials** | * Basket of different objects (e.g. string, glue pencils, ball, dice, etc.). * Set of connecting cubes for each group of three students * Mystery bag of 3 objects (sticky note, glue stick, crayon, pencil, paper clip, etc.) for each group of students * “Surprise bag” with a random classroom object that is not in the mystery bags for each group of students * Resource Sheets 1A&B: Mystery Bag: Ordering Objects * Resource Sheet 2: Observation Data * Large marker or popsicle stick for each student * Bag of 8 to 10 objects of varying size for each pair or group of students * Resource Sheet 3: Comparing Three Objects |
| **Technology** | * Whiteboard, Elmo, or other classroom projector |
| **Resources**  (must be available to all stakeholders) | See the Resource section of the Unit Plan for many resources. |

Resource Sheet 1A **Mystery Bag: Ordering Objects**

Directions: Record the number of your mystery bag on the line labeled bag. Draw and label your objects from tallest to shortest.

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| Bag: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Bag: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Bag: \_\_\_\_\_\_\_\_\_\_\_\_\_ | Bag: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Resource Sheet 1B **Mystery Bag: Ordering Objects**

Directions: Record the number of your mystery bag on the line labeled bag. Draw and label your objects from tallest to shortest.

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| --- | --- |
| Bag: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Bag: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| Bag: \_\_\_\_\_\_\_\_\_\_\_\_\_ | Bag: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Resource Sheet 2 **Observation Data**

Directions: Circulate to record observations as students are ordering the objects from the mystery bags. Use +. √, - or notes to identify students for re-teaching or extension opportunities.

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| **Student Name** | **Correct Ordering** | **Comparing Objects to Determine Order** | **Uses appropriate vocabulary terms: (longest/shortest, etc.)** | **Correct recording of information** |
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Resource Sheet 3 **Comparing Three Objects**

Draw a picture of each object from the smallest to the largest for each group you compare.

Group # 1:

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| --- | --- | --- |
| Smallest | Larger | Largest |

Group # 2:

|  |  |  |
| --- | --- | --- |
| Smallest | Larger | Largest |

Group # 3:

|  |  |  |
| --- | --- | --- |
| Smallest | Larger | Largest |