

# Ordering Sets

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<b>Strand:</b>	Number and Number Sense
<b>Topic:</b>	Order three sets from least to greatest or greatest to least
<b>Primary SOL:</b>	K.2 The student, given no more than three sets, each containing 10 or fewer concrete objects, will b) compare and order sets from least to greatest and greatest to least.
<b>Related SOL:</b>	K.1a, K.2a, K.3c, K.4a, K.4b, K.10b

## Materials

- Large numeral cards (for whole-group lesson)
- Large blank 10 frames (for whole-group lesson, attached)
- Counters (for whole-group lesson)
- Student number cards (one set for each group of three students, attached)
- Bags of about 30 small counters (one bag per group, attached)
- Student 10 frames: blank (three 10 frames per group, attached)
- Least and greatest cards (one set per group, attached)

## Vocabulary

*fewer, greatest, least, more, number, order, same, set*

## Student/Teacher Actions: What should students be doing? What should teachers be doing?

*Note: If you do not have large number cards, you will need to make six cards that can easily be seen by the whole class. Each card should have one of the following numbers: 0, 2, 3, 5, 9, 10.*

1. Use a story such as *Goldilocks and the Three Bears* to launch a discussion of ordering three objects by size. For example, if we wanted to put the chairs in order from smallest to biggest, we would put Baby Bear's chair first, Mama Bear's chair next, and Papa Bear's chair last. Use pictures or real chairs and with the students' help place the chairs in order. Ask: *How do we know they are in order from smallest to biggest? What would we do if we wanted to put the chairs in order from biggest to smallest?* Repeat with a few additional examples of ordering three objects by size. Emphasize that you are putting objects in *order* by size.
2. Explain that today the students will be putting number sets in order by how many are in each set. Display three large number cards – 9, 3, and 5. Under each card, display a blank 10 frame. Invite one child to come up and place counters on the 10 frame to make nine. Ask: *How do you know you have nine? Does anyone have a different way to prove that is nine?* Invite different students to represent 3 and 5 on the corresponding 10 frames having students justify that their representation is correct.
3. Remove the numeral cards temporarily and ask students to think about placing the 10 frames in order from the one that shows the smallest number to the one that shows the biggest number. Have them turn and talk to a partner to explain what they are thinking. After students have shared with each other, invite a student to come up and choose the

10 frame that shows the smallest number and move it to be the first position. Ask: *Why do you think that is the smallest? Are there other ideas about how we know that is the smallest? (Students may offer that it has fewer counters, or say that it is only three, or that the others have more counters or are bigger, or that there are more empty spaces on the 10 frame.)* Then invite a child to choose the 10 frame that comes next and have them justify their thinking. Finally, have a child come up and move the remaining 10 frame representation to the last position. Ask: *Are our 10 frames in order from the smallest to the biggest number? How do you know?* Explain that when we order numbers, we use the word *least* to mean the smallest and *greatest* to mean the biggest. Write the words *least* and *greatest* under the appropriate 10 frames. Have students practice saying that the numbers are in order from *least to greatest*. Now invite three students to place the numeral cards above or below each of the 10 frames. Again, practice saying that the numbers are in order from *least to greatest*. Also ask: *Which number is the least (smallest)? Which number is the greatest (biggest)?*

4. Ask students to turn and talk to a partner: *What would we have to do if we want to put our 10 frames and numbers in order from greatest to least?* Once partners have discussed their thoughts, pose the question to the whole class and have students reorder the numbers. Write the words *greatest* and *least* in the appropriate places. Ask: *How do we know that we have the numbers in order from greatest to least? What changed when we put the numbers in order from greatest to least? What stayed the same?* Throughout the remainder of the lesson, try to use the words *least/smallest* and *greatest/biggest* interchangeably so that students get used to the new vocabulary.
5. Repeat steps 2–4 with the numbers 2, 10, and 0. This time, ask students to first put the 10 frames in order from greatest to least and then rearrange them to show least to greatest. You may need to discuss what it means to have 0 and how to represent 0 on the 10 frame.
6. Small-group Activity: Assign groups of three for this activity. Each group will need a set of number cards, three 10 frames, *greatest* and *least* word cards, and a bag of counters. Explain and model the activity and then allow students to work together. Students should place the number cards face down (can be in a pile or spread out.) Each student will turn over a number card and represent it on the 10 frame. Students then work together to put the numbers in order from least to greatest. They place the word *least* under the number that is the least and the word *greatest* under the number that is the greatest. Each student must say, *“The numbers are in order from least to greatest.”* They switch the order and say, *“The numbers are in order from greatest to least.”* After they have finished with that set of numbers, they should return the numbers and choose new ones.
7. As students work, observe and notice the following: *Are students modeling the numbers in the 10 frames correctly? Are students able to tell which number is least and which is greatest? Are students using the structure of the 10 frames to help compare and order? Are any students noticing one-more and one-less relationships? Are students able to order the sets correctly? Do any students seem to know how to order just by looking at the numbers? Are students using the vocabulary “least” and “greatest”?*

- When groups have had sufficient time to practice, call the students together and ask questions based on what you observed. Some questions you may want to ask include: *How is ordering numbers like ordering the three bears' chairs? How do you tell whether one number/set is bigger than another number/set?* Then using three numbers that you have represented in 10 frames, tell students you are going to place them in order and they must figure out if it is least to greatest, greatest to least, or neither.

### Assessment

- Questions**

- If I give you three sets, how will you decide which set is least? Which set is greatest?
- What does it mean to order numbers? What are two different ways we can order numbers?
- How is ordering numbers like comparing numbers?

- Journal/writing prompts**

- Jeremiah ordered three sets from least to greatest. He covered up the middle set. What could be hidden? Draw the hidden set in your journal.



- Draw three sets in order from greatest to least.
- Other Assessments (include informal assessment ideas)**
  - Use a set of 10 frame cards with representations for the numbers 0–10. Ask students to choose three cards and order them from greatest to least or least to greatest.
  - Using dot cards or 10 frame number cards, choose one card (such as 5) and say, “I am ordering numbers from greatest to least. If this card is in the middle, can you find a card that I can use as my greatest card and my least card?”
  - Show students three “ordered” sets. Have them identify whether the sets show least to greatest, greatest to least, or neither. (If neither, can they fix it?)

### Extensions and Connections (for all students)

- Repeat the student activity from the lesson, but change the representations used. Instead of number cards, use dot cards so that students must first determine the numbers represented and then represent them in 10 frames before ordering. Or have students turn over numeral cards and represent each number using a collection of objects, a beaded number frame, a string of beads, or a stack of linking cubes before ordering the numbers.
- Create a set of cards that shows numbers represented in various ways (e.g., dots, 10 frames, a train of linking cubes). Students turn over three cards and order them from least to greatest or greatest to least.

*Mathematics Instructional Plan – Kindergarten*

- As students become more familiar with ordering three sets, include opportunities for them to address situations where two of the sets are equal.
- Choose three students and write their names on the board. Ask students to order the names according to the number of letters – least to greatest or greatest to least. This can also be done with word wall words or any other words.
- When graphing, discuss the category with the least, the category with the greatest, and the order of the data from least to greatest or greatest to least.

**Strategies for Differentiation**

- Differentiate the number of sets students will order.
- Use five frames instead of 10 frames when working with smaller numbers.
- Use connecting cubes instead of 10 frames.
- Work on comparing sets without numerals before adding numerals.

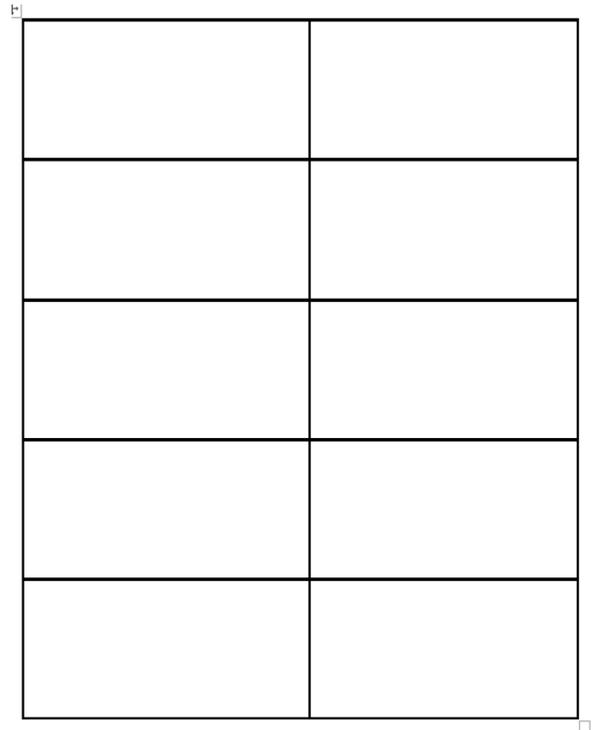
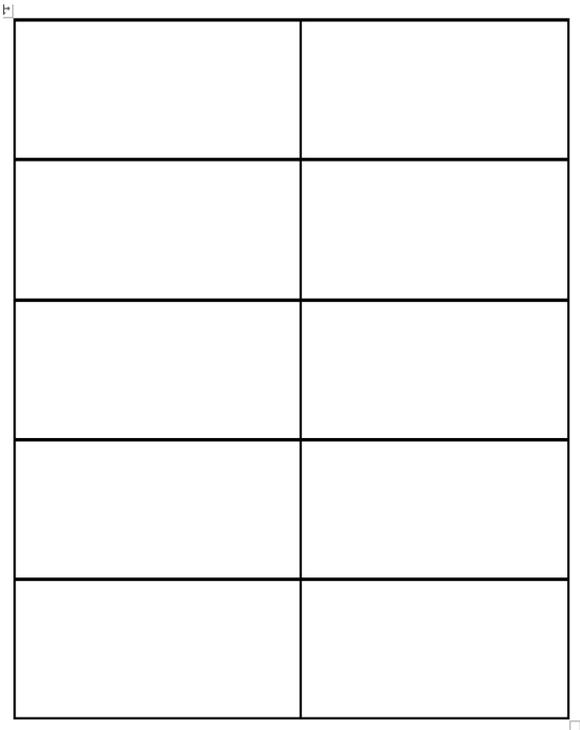
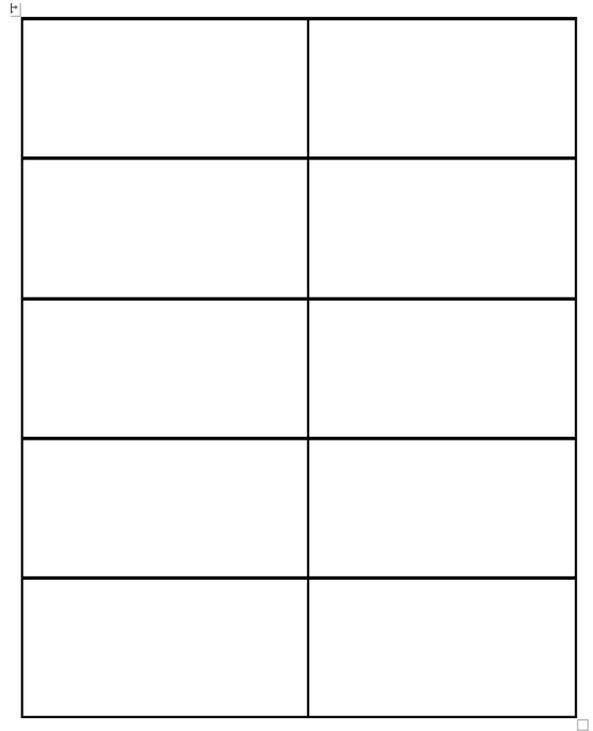
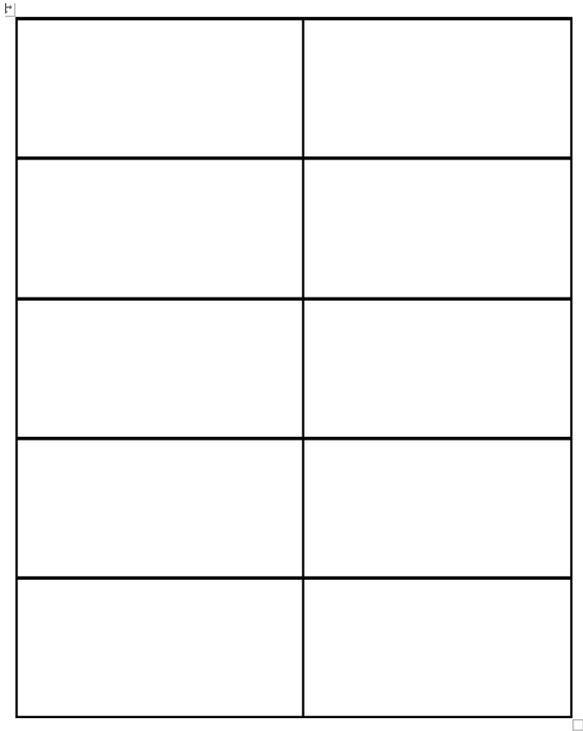
**NOTE: The following pages are intended for classroom use for students as a visual aid to learning.**

**Ten-Frame (Large)**


### Student Number Cards

0	1	2
3	4	5
6	7	8
9	10	

### Student 10 Frames (Cut apart)



### Greatest and Least Cards

<b>least</b>	<b>greatest</b>
<b>least</b>	<b>greatest</b>