Builders at Work: Tasks & Tools for Developing Preschoolers' Number Sense

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Why Number Sense? In early math, when a primary goal is the development of sound understanding of the number system, students should spend much of their math time putting together and pulling apart different numbers as they explore the relationships among them. This builds a sense of number, flexibility with number, and quick mental math strategies.

Suggestions for Teaching: Activities should be concrete, pictorial, and finally abstract. Give students many meaningful opportunities with hands-on materials, exploration, and concept building before introducing the number sentence or purely symbolic representations.

Some Helpful Vocabulary:

- Number sense—big idea in math that includes estimation, place value, basic facts, relative size of numbers, counting strategies, and number composition/decomposition
- Compose/Decompose—break apart a number to find the numbers "hiding" inside, to move back and forth between the total and its composing addends: "I see 3. I see 2 and 1 make 3."

*Number Bonds/Break-Apart Partners of number 5

5 + 0 4 + 1 3 + 2

*Partitions of number 5

3+1+1 2+2+1 2+1+1+1 1+1+1+1+1

Number Sense-Building Tasks

Break-Apart Partners
Materials: craft stick, stickers, sentence strips
Instructions: Craft stick separates the line of counters into break-apart partners. Optional to record break-apart partners in writing using the number bond representation.

Number Bond Baggies
Materials: baggies, counters
Instructions: Draw line down middle of a zippered bag. Place counters inside. Shake then draw the break-apart partners or record them using the number bond representation.

Number Bonds Pom Pom Drop
Materials: manipulatives, paper with circle
Instructions: Drop manipulatives on the paper. Some may fall in the circle and some out of the circle. Students draw how many are in and how many are out.

Bears in a Cave
Materials: 10 bear counters, Styrofoam bowl
Instructions: Teacher plays with 1-2 students. Teacher and child count together 10 bears. The bowl is the cave. Child covers his eyes while teacher hides bears under bowl. Child uncovers his eyes and counts how many bears are "out" of the cave. He then determines how many bears must be in the cave. Teacher checks the amount by revealing the bears in the cave.

Number Bond Bracelets
Materials: pony beads, pipe cleaners
Instructions: Work with a small group of students. Have students each make a bracelet with a target number of beads. You may wish to limit the bracelets to just one color of beads so that color does not become a sorting rule and interfere with children's abilities to "see" the break-apart partners. Then have the students manipulate the beads to see the break-apart partners for the target number. You may wish to record the partitions on a chart. During the discussion, challenge the children to come up with some systematic way of ensuring that they find all the partitions.

Paper Plate Number Bonds
Materials: paper plates divided into three sections (one large section and two smaller), counters, index cards with numbers written on them (1-10)

Instructions: Child picks a card and puts the corresponding number of counters in the large section of the plate. Students explore different ways to move the counters from the large section to the two smaller sections. This shows how the number may be decomposed. It is not unreasonable to expect students to find six or more ways to break apart a number. After lots of exploration, have students choose a final card and draw the break-apart partners.

Balance Scale Exploration
Materials: pan balance, counters
Instructions: Have students explore how the pan balance works. After ample exploration, place 3 counters on one side of the scale. Place 7 counters on the other side. Ask students, "How many counters need to be removed (or added) to make them equal?" Continue exploring and discussing the results of adding and removing counters.

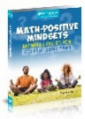
Domino Parking Lot
Materials: work mat with section for each focus number (ie. 0-10)
Instructions: Place dominoes face down on table. Students take turns drawing a domino, adding the number of dots on both sides of the domino and placing it in the correct "parking spot" on the mat. For example, if the domino has three dots and five dots, the domino is placed on the EIGHT parking spot. If a domino is already placed on the EIGHT parking spot, the new domino is stacked on top of it. Each person takes ten turns. At the end of ten turns, the person with the tallest stack on any parking spot is the winner.

Ten Frame Flash
Materials: ten-frame cards
Instructions: Flash ten-frame cards and see how fast the children can tell how many dots are shown. After a while, ask for the number that is one/two more, one/two less than the number shown. This is fast-paced and can be done in minutes at any time.

Ten Frame Fill
Materials: ten-frame cards, counters
Instructions: Roll a die. Put this number of counters on your ten frame. How many more counters would you need to fill your ten frame. Draw a picture and/or write a number sentence to show what you did. Repeat five times.

War and Double War with Ten Frames
Materials: 2 or 3 sets of ten-frame cards
Instructions: For War: players turn over one ten-frame card. The winner has the higher card and gets to keep both cards.
For Double War: players turn over two ten-frame cards. The winner is the one with the larger total number. Children can use many different number relationships to determine the winner without actually finding the total number of dots.

Carrie's YouTube Channel. Go to YouTube, search for Carrie Cutler, and subscribe for updates.

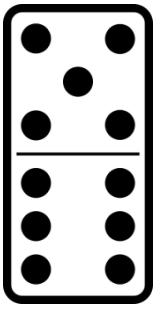


Many of these teaching ideas can be found in *Math-Positive Mindsets: Growing a Child's Mind without Losing Yours* (Cutler, 2020). The easy-to-follow Q&A format tackles more than 100 of the most perplexing questions about helping children with math from preschool to fifth grade. For parents and teachers.

Prekindergarten Domino Parking Lot Work Mat

1	**2**	**3**	**4**	**5**

DOMINO PARKING LOT



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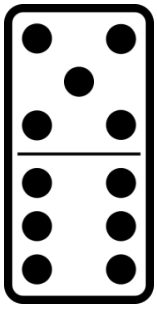
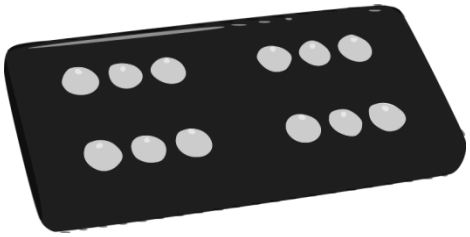


6	**7**	**8**	**9**	**10**

Kindergarten Domino Parking Lot Work Mat

0	1	2	3	4
5	6	7	8	9
10	**DOMINO PARKING LOT** 			11
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