## TEN FOUNDATIONS <br> for Reasoning Strategies With Whole Numbers



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## ACTIVITY 2.1 DOMINOES SUBITIZE AND SORT

Students develop subitizing skills over time. Therefore, repeated exposure to quantities in different configurations is beneficial for children developing subitizing skills. The main thing to keep in mind is to encourage students to share how many pips or dots they see without counting. This activity focuses on conceptual subitizing-seeing a quantity by subitizing subsets of that quantity. Dominoes are an effective manipulative for such subitizing.

Make sure to have enough dominoes for each student (or pair of students) to sort (about 10, depending on age/experience). Give the dominoes to students and let them engage in an open sort. A prompt might be, "Sort these dominoes in any way you would like." Provide time for students to do their sort. If students are not sure how to sort, offer a suggestion: "Can you sort your dominoes into two groups: four or more dots (pips) and less than four?" Ask students to sort in other ways, as time allows.

Your follow-up conversation could be simply showing a domino and asking students how many dots (pips) they see. Having students explain their thinking is valuable. A student might say, "I see two dots and four dots, so $2+4$ is 6 " or "I see 2 and 2 and 2." Ask students to point to the domino as they are sharing their thinking, as this will help other students see where the numbers are coming from. This is particularly helpful in intervention settings, as you can determine if a student is able to see a quantity of 4 (subitize up to 4). If not, keep sorting and using dominoes (or a die).


To increase the complexity of the task, discuss possible options for sorting. In an intervention, you can sort and ask the student to determine what your sorting rule was. In the classroom, choose the work of a student or group of students to display (e.g., under a document camera or on the carpet with students sitting in a circle). Ask students, "What do you think is the mystery rule?" Invite students who think they know the answer to place a new domino in the group it belongs in. Other students can agree or disagree with how that domino is placed.

This activity can easily become a center activity. Students could sort the dominoes in any way they choose. They could find all the dominoes that show a specific number. A more sophisticated set of dominoes could be used. The possibilities are endless!

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