

| <b>Activity Name</b>                                       | <b>[5]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <b>Activity Description</b>                                | <p>Students are provided with an index card, which they will divide into four equal parts, and then write a representation for the quantity “5” in each of the four sections. After all students have filled out a card the class will share their answers, and then the representations can be classified. Typical classifications include:</p> <ul style="list-style-type: none"> <li>• verbal models: five, cinco</li> <li>• symbols: 5, V</li> <li>• Tallies</li> <li>• pictures (icons) that are repeated five times</li> <li>• expressions and equations</li> <li>• graphs</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Standards Addressed</b>                                 | <p>Standards of Mathematical Practice<br/>Practice 2: Reason abstractly and quantitatively</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Student behavior</b></p> <p>Using a variety of concrete and visual representations to highlight quantities, relationships between quantities, and the underlying mathematical structure of a problem situation</p> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Materials</b>                                           | <p>One index card per student<br/>An area where students can share answers</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Set-up</b>                                              | <p>no particular classroom set up is required</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Prerequisite activities or prior knowledge required</b> | <p>none are needed</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Process</b>                                             | <ol style="list-style-type: none"> <li>1. Distribute one card per student</li> <li>2. Have students fold the card ‘hamburger’ style, then unfold the card, and then fold it “hot dog” style. Demonstrate while giving directions; The cards will now be divided into four equal pieces.</li> <li>3. Instruct students to write a representation of the quantity five in each of the four quadrants. I try not to use the number five and I try to provide any hints that will suggest an answer. If they ask what it means I repeat the instructions again “write a representation of the quantity five in each of the four quadrants” but may use a different word than quadrant.</li> <li>4. After all students have answers in each section I start inviting them to write their answers on a blank page of a smartnotebook file. Every student gets a turn.</li> <li>5. After all students have contributed (and there will still be plenty of answers that students have come up with that don’t make it to the board) classify the type of answers given. I do this by changing to dual page mode so we can classify the various representations without disturbing the students’ work.</li> <li>6. Discuss when the various representations could be used</li> </ol> |

**Why this activity is selected for use**

- Every student will be able to put up one representation of 5 that has not already been put up; if needed to insure this, the teacher can control the order in which students are selected to post an answer. This gives each student an opportunity to contribute to the class discussion; it gives the students an opportunity to write on the smartboard.
- It clearly demonstrates that there are many ways to represent a quantity; that there are many possible representations of an answer; it shows that many students can be correct even when they don't have the exact same answer.
- It provides an opportunity to mention topics that won't specifically be covered until later in the course. The repeating pictures won't show up when we are solving equations, but they are perfectly appropriate for showing quantities using pictographs and other graphical representations.
- There will be times throughout the year when we will be folding paper, the specific folding techniques start to give us a common language, and may or may not be familiar to them. [Portrait and Landscape will of course also be used.]
- It will be necessary to represent quantities in this class in different formats. Students that see that different formats are not intimidating when representing 5 may be more comfortable when they have to represent a more complex quantity in several formats.

After completing this activity, will a student go home and say they haven't done any math? Maybe. Maybe "math" to some students means calculations. I'm trying to get students to start thinking of math as more than that.