

Commentary on Student Work

There are two types of work samples: 1) pre-assessment and in-class work papers and 2) post-assessment papers. The papers pulled focus on several things:

1. The lists of numbers transition from all whole numbers with even and odd designations to lists that include numbers with significantly more variety.
 2. Student understanding shown at different levels might require different levels of intervention.
 3. Students show definitions using examples, ☺ and ☹.
 4. Examples of clearly written scoring criteria with examples and non-examples.
1. Consider student papers A through D and notice how the initial lists are consistently comprised of whole numbers only. Also of interest is that none of the initial lists included 0 or negative numbers. The last point of interest about these initial lists is that when number types were listed they primarily consisted of odd and even numbers. These trends were consistent across the majority of student samples collected. One might conclude that students at this grade level do not naturally think of numbers beyond those used for counting. On subsequent lists students begin to include fractions, decimals and integers.

Another interesting observation evident in the samples of student work is that by the second or sometimes the third game the lists of number types grows significantly. More often than not, single numbers have multiple labels associated with them. What makes this significant is that this lesson is designed around students sharing what they already know rather than the teacher telling. Additionally, the game environment may serve as a catalyst to encourage students to label numbers with multiple labels as a means to earn additional points.

2. Consider paper A and compare it to paper D or E. Paper A shows a lack of understanding or lack of engagement in the activity. Observing students and scanning student papers during the lesson can identify students who may need intervention. For example, a student who appears to be disinterested could be assigned to record examples and non-examples generated by the class. This solution requires the student to become actively involved in the learning while alleviating his or her boredom with the lesson. If student A has difficulty understanding perhaps, the student could be partnered with another student to enable peer tutoring.

A quick scan of papers at different times during this activity will yield much information with respect to student understanding. For example, paper D includes a number written as $-99.857\frac{1}{8}$ at the top right of the page, but examination of the bottom of the paper does not have numbers similar to that which might indicate that the teacher or a peer intervened with the student and provided assistance.

Another example of things to look for during this activity is shown on paper E, -3 is identified as negative, prime, odd, whole, integer. Certainly some of those designations are correct; however, -3 is not prime or a whole number, but it is rational. When this type of opportunity presents itself it is most beneficial for students to explore all classifications through guided questioning. Use questions like: Can someone list the factors of -3 ? Does -3 belong in the list of whole numbers? Can we make a list of those we know for sure?; Let's make a list of all the number types we know and determine which types can be used to describe -3 .

3. Paper E was selected to show how a student made a couple of notes to reflect the examples and non-examples using the ☺-face notations that were probably used in class. This student may not have needed the definitions to play the game, but it is hard to say because there are errors on the paper with respect to labeling the numbers. The student also stopped assigning labels to the numbers. This student may be a good peer tutor for another student who is struggling. Working with another student might increase his or her focus on assigning correct labels to all of the numbers while helping another student whose understanding or confidence may be lacking. Another option for a more advanced student would be to allow him or her to create additional scoring criteria for the class.
4. Papers F through H were selected to show samples of student created criteria. Each of these papers have clearly stated scoring criteria and provides examples and non-examples as required.