You will be teaching a mathematics lesson on measurement to a student with exceptional needs. Using your knowledge of students with exceptional needs, prepare a response in which you:

Briefly describe the student you will be teaching

(e.g., age/grade level/developmental level, exceptionality, strengths/needs).

- Describe **one** important concept or skill related to measurement you would include in this lesson.
- Describe two instructional activities and two

instructional resources, including any applicable technological resources, you would use to teach this concept or skill.

· Explain how these activities and resources would

be particularly effective for the student you describe and how you would measure the student's success.

Mackenzie is an 8th grade student who is developmentally age-appropriate. She qualifies for Exceptional Children's services in the category of Specific Learning Disability in math reasoning. Strengths: she cares about her grades and is a hard worker. She reads/writes at grade level, and she enjoys participating in classroom discussions. She asks numerous questions and she takes advantage of help whenever it is offered. Needs: she needs lots of repetition when learning math concepts in order to really learn new concepts. She also needs a lot of time when learning and practicing new concepts. She needs immediate responses when she asks a question or she gets frustrated and tends to shut down.

One important skill I would work on with Mackenzie in the area of measurement is finding the volume of a cone. We have already learned how to find the volume of a cylinder. She has already learned the formula for finding the volume of a cylinder is V=pi (3.14) x radius squared x height.

The first activity I would conduct with Mackenzie would be a guided discovery activity using manipulatives (resource 1). I would use a clear cylinder and a clear cone with the same diameter and height. I would ask her to guess how many cones' worth of water it would take to fill up the cylinder. Once she estimated, we would then pour water from the cone into the cylinder. We would repeat the process with different cones/cylinders of various sizes, each set having the same diameter and height. We

would then have a discussion about how to apply this knowledge to the formula for finding the volume of a cylinder, which she already knows. Through this activity, she would come to realize that it always takes 3 cones' worth of water to fill a cylinder with the same dimensions; she would discover that you can use the same formula that she has already learned for volume of a cylinder, but then divide it by three to get the correct answer. This approach would be especially useful for Mackenzie because she needs to take the time to discover and test theories on her own in order to make it "stick" for her. Also, discussing concepts as she is guided to discovery is essential for Mackenzie because she is so verbal and learns best through talking about a topic. She could ask questions of me throughout the activity and have them immediately answered, and I could immediately correct any fallacies in her thinking/reasoning.

The second activity I would have Mackenzie do is to then write out an explanation of the process and what we discovered in her own words in her math journal (resource 2). Writing in math is essential to help clarify one's thought process and helps to make abstract ideas more clear. It causes more pathways to be formed in the brain when learning a new concept. This is especially useful for Mackenzie for numerous reasons:

- She is forced to think about each step as she puts it into words
- This is a resource she can return to when needed to refresh her memory
- It allows me to see what she is thinking and to correct any misconceptions or to encourage clarification
- She is able to write questions and have me answer them in writing and look back at them later
- She is encouraged to write notes to herself that she suspects may be common mistakes for her ("Watch out if you are given the diameter instead of the radiusmake sure to cut it in half first!")
- She is also encouraged to draw pictures as another added layer in helping with comprehension of abstract ideas

Finally, I would measure her success by logging her on to the math program called IXL, where I can assign her practice in this particular area. This program requires kids to answer a series of practice problems in order to achieve a desired "smart score" (I would consider a score of 80 to be a success for Mackenzie). It's perfect for her because she is able to work at her own pace, and if she gets one wrong, she can click on the button that shows her how the correct answer is achieved.