

Lesson Title: Bean flip and Measurement

Grade Level: 2nd

State Core Standards:

1. **MD.A Measure and estimate lengths in standard units.**
 - a. Estimate lengths using units of inches, feet, centimeters, and meters.

Lesson Purpose:

I want the students to be able to make estimates about how far away objects are and then measure to see how close their guess was.

Vocabulary Focus:

- 1 Length – a measured distance of an object
- 2 Distance – amount of separation between two points
- 3 Estimate – a guess or judgment based on observations.
- 4 Tenths __ 5.6 would be pronounced five and six tenths

Materials:

1. *Jim and the Beanstalk*, by Raymond Briggs; ISBN-13:9780698115774
2. Measurement items
3. Math Journals
4. Plastic bean counters
5. 12 inch rulers
6. Ziploc bag of coins
7. Small items: paper clips, birthday candles, tongue depressors, etc.
8. Bean flip PDF

B. Instructional Procedures.

Engage and Launch: (15 mins)

Have each student select a Ziploc bag from a basket. Each bag should contain a small item. [Example: a paper clip, a birthday candle, a tongue depressor, etc.] Ask the students to measure the height of their desk from the floor to the top of their desk using the item inside their bag. Have students trade items with other students and measure using the various nonstandard items. Students will recognize that the smaller the unit, the more iterations needed to cover a given length. Have students record their findings on the top of their Bean Flip

worksheet. Review with students that sometimes we use nonstandard units of measurement. For example at my work customers sometimes ask how big our burritos are. I have to show them with my hands because a burrito is much bigger than 1 inch but smaller than a foot. Remind the students to use academic language. If they want to say their desk is 25.5 paperclips high they must say “twenty five and five tenths”

Teacher Role	Asks questions; Assesses prior knowledge; Provides information needed for Explore phase
Student Role	Gains interest; Calls up prior knowledge; Develops a need to know

Explore: 20-25 min.

1. Read *Jim and the Beanstalk* to the class. Discuss how Jim measures the different body parts and items in the book. Refer to the proportions of what is being measured and what unit of measurement is used. Hand each child a bean counter.
2. Explain to students that they will be flipping a bean at their desks. They will be recording estimates as well as actual measurements. Demonstrate how to flip a bean across a desktop without it leaving that space. The beans must stay on the desktop for this activity.
3. Hand out the *Bean Flip* recording sheets and explain how to record the data. Review with your students the length of an inch before you ask them to make their estimates.
4. Students will complete 10 trials with their beans. Students should flip their bean, make an observation and record their estimate as to how far the bean traveled on their desk. Each time they complete a flip them must say what they recorded to their partner. “My bean flipped one and four tenths feet. Then students will use a ruler to measure the actual distance and record it on their sheets. Students can see how close their estimates were by finding the difference between the two measurements.

Teacher Role	Makes open suggestions; Questions and probes; Provides feedback; Assesses understanding and processes
Student Role	Explores resources and materials; Hypothesizes and predicts; Records observations and ideas;

Explain and Summarize: 5 mins

1. At the end of the lesson as why we should use a standard measurement? Just like the kings foot, why is it important?
2. How many inches are in a foot?

3. What happens to measurements when we use big measurements? Small?

Teacher Role	Asks for clarification and evidence from students; Enhances or clarifies student explanations; uses students' experiences as a basis for explaining new concepts; provides new vocabulary; evaluates student explanations.
Student Role	Clarifies understandings discovered; Shares understandings for feedback; Forms generalizations; Seeks new explanations

Elaborate and extend: 5 mins

1. Have students take home a dried bean and a recording sheet. They could challenge members of their family to flick the bean only a certain distance, making sure to measure and record the data.
2. Encourage students to teach the relay game to their families and play it at home.

Teacher Role	Asks questions; Poses new problems and issues;
Student Role	Applies new knowledge by performing related tasks; Asks questions;

Evaluate:

1. Ask students to move their bean about ____ inches to see if they comprehend how long one inch is.
2. Collect students' recording sheets to determine if students have used appropriate units of measurement.
3. Have students record in their Math Journal five different items with their measurement recorded in beans as well as inches.

Teacher Role	Observe and assess students; Asks open-ended questions;
Student Role	Demonstrate an understanding of a skill or concepts; Evaluates his/her own progress and knowledge; Answers open-ended questions by using observations, evidence, and previously accepted explanations

Adaptations for Special Needs:

ELL students with limited English are paired with other students speaking their first language in these groups. This allows them to have more complex concepts and thoughts translated and allows for deeper level understanding.

Students are grouped in mixed ability groups, allowing students in special education will benefit from group instruction and discussion. All students in the groups can share ideas and thoughts. Those with more advanced writing skills can help other students write their ideas in their science notebooks.

