

..... LESSON PLAN

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Estimating with KEVA®

OBJECTIVE: Students will make uninformed and informed estimations.

MATERIALS:

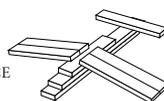
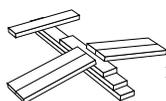
- 100 KEVA planks per student or small group
- Index cards
- Envelopes
- Shoe boxes or paper bags
- One data sheet per student (*See Appendix C*)

PROCEDURE:

A. Uninformed Estimation:

1. Divide the class into groups of two or three students. Have each group fill a shoe box with 50 to 100 KEVA planks.
2. Do not tell the class that you will be estimating or that the number of planks is of any significance. Have each group build a tower.
3. Label each of the towers A, B, C, etc. An index card folded in half makes a good label to place in front of each tower.
4. Have each student estimate the number of planks in each tower and record their answers in the "Estimate" column of the data sheet.
5. Have each group go back and count the planks in their own tower. This number should be recorded on the back of each label. Have the class gather this data from each tower and record it in the "Actual" column of their data sheet.
6. Calculate the difference between the estimates and the actual amount. Subtract the smaller number from the larger. You may also want to graph the class results.
7. The class can now quietly collapse their towers and return the planks to the bin.

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B. Informed Estimation:

1. On the next day or later the same day, have the groups scoop out a new pile of KEVA planks. (You can do this ahead of time and insure more diversity in the amount of planks in each pile.) They should count their planks, being careful to keep this information to themselves. The amount of planks should be written on an index card and placed inside an envelope with the group letter on the outside.
2. Have each group build a tower with their planks. They should place their envelope containing their amount of planks in front of their tower.
3. Tell the class that they now have a frame of reference to begin to make estimations. They know the amount of planks in their own towers. They should use this knowledge to help them make good estimations. This time, as they make estimations, they will be able to open the envelopes and see the actual amount of planks. In this way they will be gaining more and more information and, hopefully, becoming better at estimating the amount of planks in each successive tower.
4. Have the class take their data sheets and visit each tower. Students should record their estimates of the number of planks in the first tower they visit, then open the envelope and record the actual amount. Have students do this for each tower they visit, until they have estimated the planks in each tower. Students can remain in their groups as they do this, but each student should be able to make their estimations individually.
5. Be sure that you do not give the students enough time to count the planks before they are required to move on.
6. Calculate the difference between the estimates and the actual number of planks in each tower. Subtract the smaller number from the larger. You may want to graph the results.

MATH EXTENSION: Collect the data from the class and have each group determine the average differences for the class. Graph these results to see if improvement was made during the estimating process.

