Making a Necklace

Students are making necklaces to sell at the marketplace. Each child has 42 inches of string and 25 beads with designs on them. The beads are 3 different shapes: long, round and flat.

How many necklaces can a child make with the string and beads?

Grade Levels Pre-K-2

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Context

Our first grade class has been learning about different African cultures over the past six weeks. We examined the use of beads in four African countries while looking at shape, design, pattern and bartering strategies. This was also in combination with our measurement unit from non-standard units to standard linear measurement using inches and rulers.

What This Task Accomplishes

This task combines standard measurement skills using rulers, a review of patterning using the three shapes of beads and problem-solving strategies in planning how to use an odd number of beads. This task builds upon their prior knowledge from making their own clay beads and necklaces the week before.

What the Student Will Do

The students were each given a 42 inch gold string. They were asked to cut the string, use all 25 beads and to make more than one necklace. They were asked to use rulers to measure each string and use the three shapes of round, long and flat. The beads should show a pattern too. It was up to the student to select how many of the three designs, but it had to total 25. After the lengths of string were cut and measured the students were asked to draw their necklaces and beads on paper. Unifix cubes were available as a strategy to represent the beads if the students chose to use them.

Time Required for Task

90 minutes

We usually begin our task during an uninterrupted block of time of 60 minutes and leave extra time if needed in the afternoon to bring conclusion. This task took 90 minutes split into 45-minute spans between the morning and afternoon.

Interdisciplinary Links

This problem was a nice culmination of our interdisciplinary theme covering four countries in

Africa, which were Kenya, Ghana, Nigeria and Tanzania. Between the African kit from the Fleming Museum and guest speakers from Middlebury College and African Imports, the children were able to touch and see many necklaces and beads. We had also spent a month on how the culture would measure using objects from their environment to make cloth, beads, pottery, spears, etc. without rulers. The students did a variety of measuring activities with the inch and ruler in the classroom and at home. Our fifth grade partners also helped the first graders measure with tape measures in inches and centimeters while making comparisons in different body lengths.

Teaching Tips

It was very valuable for the students to make different shapes of beads, design them and plan their necklace before being presented with the task on paper. Stringing different kinds of beads and cutting string into different lengths would also be helpful. This could be a home-school activity to ask children to bring in necklaces for the class to make comparisons in length, bead shapes, size and patterns.

Suggested Materials

- String
- Scissors
- Beads and/or manipulatives

Possible Solutions

The students at the Practitioner and Expert levels should be able to be very accurate on measuring the strings so that they total 42 inches. You do need to keep in mind that the string is not perfectly straight and "wiggles" so it was not exact in this activity. The beads should show a use of pattern and explanations in independent writing or dictation should be clear in relation to the correct total of 25 beads that were used.

This problem is more open-ended for all children to choose how many necklaces they think is reasonable to make and how many of each shaped bead they want to use. This will also show how the student applied pattern and designs in a global extension.

Benchmark Descriptors

Novice

This student could not figure out how to measure his/her longer strings with a ruler and had help from an adult to position the rulers and count which reflects the use of 21 inches. There is no use of pattern, design or planning with the beads. This student insisted on using 25 beads on both necklaces even though Unifix cubes were tried and directions were reviewed several times. The mathematical reasoning and independent procedures are at a beginning stage of development.

Apprentice
This student started appropriate strategies of cutting and measuring, but wanted the two necklaces to be even and threw away the rest of the string instead of trying to figure out how to use all of the string. The student did attempt a little patterning in the beginning, but was not consistent. The total number of beads is not accurate with 25 and this is not a full solution.

Practitioner
This student used a lot of labeling to clarify his/her problem. The string measurement equals 41 inches and the beads are in a pattern of long, circle and flat. The student has used a total of 25 beads and has used tally marks to show how many of each designed bead was used. There is a strong understanding of all the criteria asked for in this problem.

Expert
This student has a clear understanding of the problem, was consistent with a strategy and self-corrected when too many beads did not equal the 25 total. The string measurements equal 41 inches, the sentences clearly label the number of beads used on each string and each string shows a different use of pattern with designs. Excellent reasoning.