

**Level:** E1

**Standard:** Math E45c Estimation, including rounding/ B87b Estimating

**Materials Needed:** Golden Beads

**Previous Knowledge:** Students need to have worked with the Golden Bead material previously. They need to have a concept of numbers and know how much 10, 100, 1000 beads are.

**Goal:** Students can understand and apply estimation in their work.

**Procedure:**

- 1.) Begin lesson by putting out a number of golden beads.
- 2.) Have students tell you how much is there



Example: Picture = 99

- 3.) After determining that the students can count put out a group of unit beads.
- 4.) Ask the students to guess how many beads there are.



- 5.) Students can count the beads.
- 6.) After they have determined how many beads there are, explain that it takes a long time to count out that many beads.
- 7.) Explain to the students that we use 'estimation' to guess how many beads are.
- 8.) We can say that there are 'about 50 beads'.
- 9.) Explain that estimation is the closest guess that we can give. We can not say that there are 200 beads, or that there are 10 beads.
- 10.) For the rest of the lesson the teacher will be putting out groups of numbers and the students need to guess which ten it is closest to.
- 11.) For example.
  - Put out 12 beads. Is the number closer to 10 or 20?
  - Put out 37 beads. Is it closer to 30 or 40.
- 12.) If students are still having problems, show them by counting. 12 is only 2 away from 10; but it is 8 away from 20. 12 is closer to 10. When we round the number 12 to the nearest 10, we would round 12 to 10.

**Follow-Up work:**

- Students can take out beads on their own and grab a hand-full and estimate.
- They can work with a friend and have a friend estimate

**Extensions**

- Students continue their estimation work with rounding to the nearest 5, 100 and 1000
- Work can be done with the stamp game and bead frame as well
- After students have a concept of money they can use estimation with pennies.
  - o Is 18 cents closer to 10 cents or 20 cents?