L·I·F·E·P·A·C® Math

MATHEMATICS 410

CONTENTS

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I. PART ONE

You will need:
4 small paper bags and a large glass jar or dish filled with multi-colored or assorted objects. The objects should be small and there should be a large number of them. The assortment should contain four different colors or types of objects.

Suggested objects: beads

candies

money   (pennies, nickels, dimes, quarters)

Suggested container:
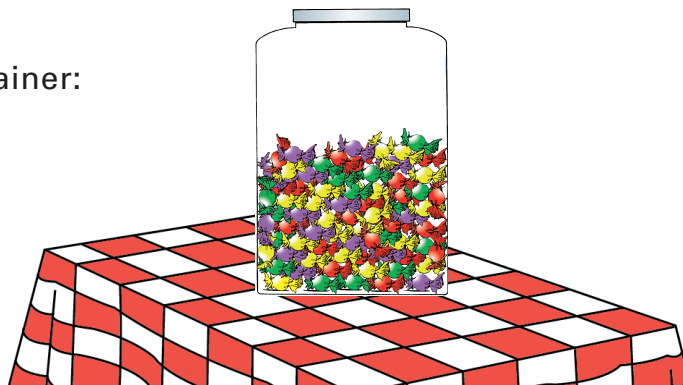
You have been practicing estimation with numbers. This LIFEPAC will teach you estimation with objects. You will estimate your problem and then collect data about it. Finally, you will place the information on a chart.

Estimation is an opinion of the amount, value or worth of something.

Data is a list of facts from which a conclusion may be drawn.

A **chart** is an arrangement of data in a logical order.

In Problem 1.1 you will discover how closely you can:
  (1) estimate the number of objects in each of four given groups, and
  (2) estimate the average number of objects in four groups.
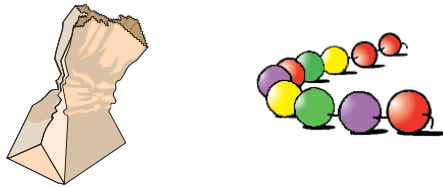
Your teacher will place a group of objects in each of four bags. The bags will be labeled Group 1, Group 2, Group 3, and Group 4. Each bag will contain a different number of objects. It may be an assortment of colors. You may hold the bag in any way, but do not look inside.

1.1 Estimate the objects.

  a. How many objects do you estimate are in the Group 1 bag? _____

  b. How many objects do you estimate are in the Group 2 bag? _____

  c. How many objects do you estimate are in the Group 3 bag? _____

  d. How many objects do you estimate are in the Group 4 bag? _____

  e. What do you estimate is the average number of objects
      in the four bags?   _____

(Review: To find the average, we total the numbers and then divide by the number of groups.)

1.2 Collect the data. Count the objects in each bag.

  a. How many objects do you count in the Group 1 bag?   _____

  b. How many objects do you count in the Group 2 bag?   _____

  c. How many objects do you count in the Group 3 bag?   _____

  d. How many objects do you count in the Group 4 bag?   _____

  e. What is the average number of objects in the four bags? _____

1.3   Compare the estimation to the data. What is the difference between...

    a.   your estimation and your count of the Group 1 bag?   _____

    b.   your estimation and your count of the Group 2 bag?   _____

    c.   your estimation and your count of the Group 3 bag?   _____

    d.   your estimation and your count of the Group 4 bag?   _____

    e.   your estimation of the average and the actual average?   _____

1.4   Chart the data. Enter the information that you have gathered on the chart.

Objects in Given Groups

	Group 1	Group 2	Group 3	Group 4	Average
Estimation					
Data					
Difference					

1.5   Review Problems 1.1 – 1.4. Answer the questions.

    a.   Have you compared your estimation to the actual
        count in each group?   _____

    b.   Have you compared your estimation to the actual
        average in each group?   _____

    c.   What is the difference between your estimation and
        the actual count in Group 2?   _____

    d.   What is the actual average number of objects from
        the four groups?   _____

    e.   What is the difference between your estimated
        average and the actual average?   _____

When you are finished, put all of the objects back into the large glass container.

Predicting is to tell something in advance.

A **random sample** is a sample in which every member of a large group has an equal chance of being chosen.

This next exercise will help you to determine by random sampling the distribution of colored objects in a large quantity.

You will need a random sample.

The colors selected for this exercise are red, yellow, green, and purple. NOTE: If your group of objects does not contain these colors, simply assign one of the colors (red, yellow, green, or purple) to each of the colors or different objects that you have. Be certain the objects are well mixed in the container, and then, without looking, remove a group of objects from the container. This is called a *random sample*. It should be large enough to represent the objects in the container. Ask your teacher to count and tell you the total number of objects in the random sample.

1.6   Predict the objects in the random sample *without looking* at the sample.

a. How many "red" objects do you predict are in the
   random sample?   _____

b. How many "yellow" objects do you predict are in the
   random sample?   _____

c. How many "green" objects do you predict are in the
   random sample?   _____

d. How many "purple" objects do you predict are in the
   random sample?   _____