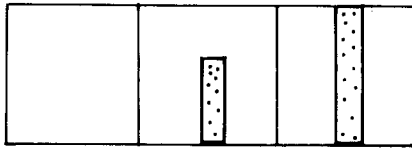


Three Bean Salads



TOOLS

3 types of dry “beans”

Red beans

Lima beans

Black-eyed peas

Paper plates or paper cups
to hold small portions
of beans

Why

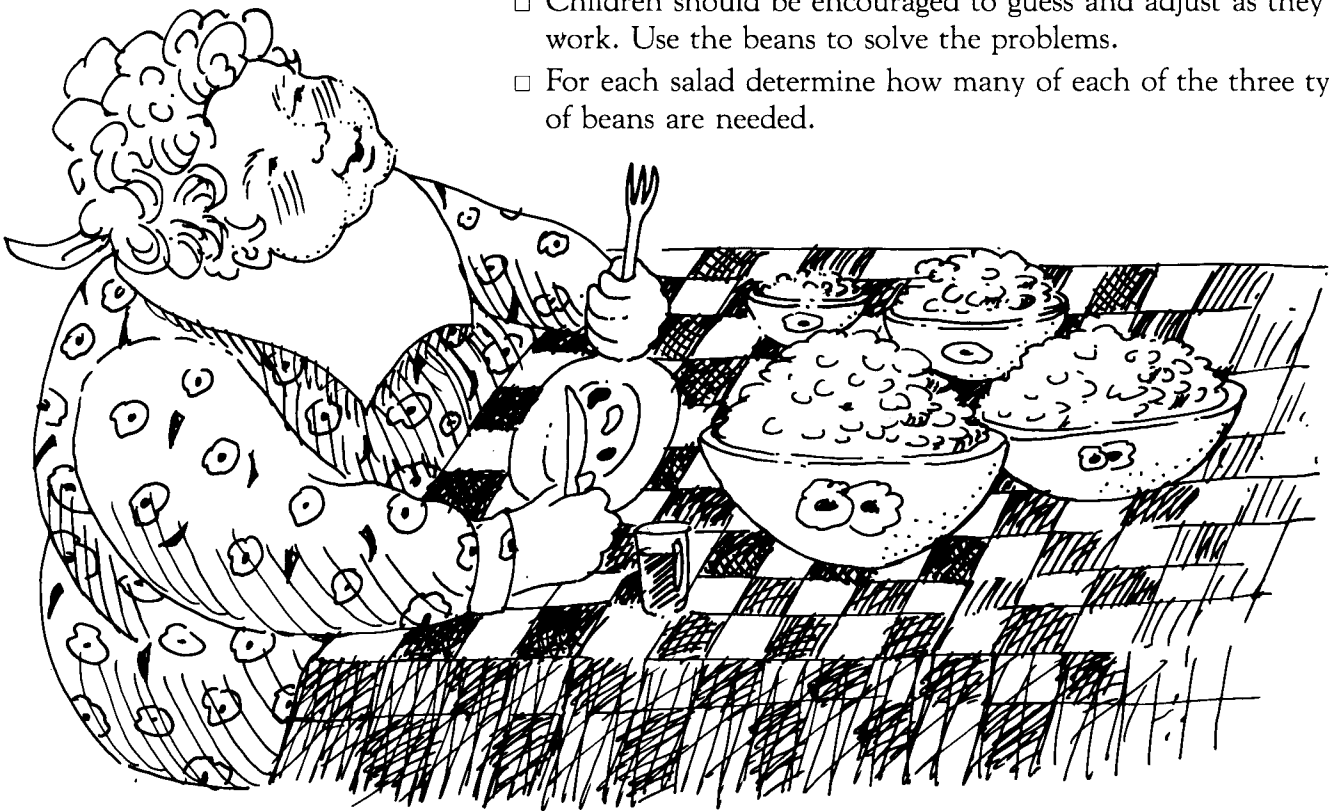
To practice working with **ratios and proportions**

- ▶ The language of ratio and proportion is very important in present-day mathematics. A **ratio** is the numerical relation between two quantities, usually determined by dividing one of the numbers by the other and expressing the result as a fraction or a percent. For example, a business might determine its ratio of assets to liabilities by dividing the value of the assets by the value of the liabilities.
- ▶ In geometry, the ratio of the circumference of a circle to its diameter is always the number π or πi or about 3.1416.
- ▶ **Proportion** is a statement showing that two ratios are equal. For example, the ratio $1/2$ is the same as the ratio $3/6$ or $2/4$. This is an important idea in algebra, since if any three of the numbers in a proportion are known, the fourth can be found—this is the “unknown” in algebra problems. ◀

The following section includes fairly difficult algebra problems, which can be solved easily by trial and error using the beans.

How

- All three types of beans go into each salad.
- Children should be encouraged to guess and adjust as they work. Use the beans to solve the problems.
- For each salad determine how many of each of the three types of beans are needed.



THREE BEAN SALADS

Each salad contains Red beans, Lima beans, and Black-eyed peas

1

This salad contains:

2 Lima beans

Twice as many Red beans as
Lima beans

10 beans in all

2

This salad contains:

4 Red beans

1/2 as many Black-eyed peas as
Red beans

10 beans in all

3

Lima beans make up 1/2 of this salad:

The salad has exactly 2 Red beans

The number of Lima beans is double
the number of Red beans

4

This salad contains:

The same number of Red beans
as Lima beans

3 more Black-eyes than Red beans

A total of 18 beans

5

This salad contains 12 beans

1/2 of the beans are Red

Lima beans make up 1/4 of the salad

6

This salad contains at least 12 beans

It has one more Lima bean than
Red beans

It has one more Red bean than
Black-eyes

7

This salad contains:

3 times as many Red beans as
Black-eyes

One more Lima bean than Red beans
8 beans in all

8

This salad contains:

An equal number of Red beans and
Black-eyes

5 more Lima beans than Red beans

No more than 20 beans

Make up a different salad.

Write instructions for someone else to make your salad.