LEARNING and TEACHING POINTS

for

Chapter 17
Fractions and Ratios

Introduce fraction notation as meaning a number of equal parts of a unit, making particular use of pizzas (circles) and chocolate bars (rectangles) in the explanation. In this interpretation, the fraction $^p/_q$ means 'divide the unit into q equal parts and take p of these parts'.

Introduce children to the use of fractions to compare one quantity with another (that is, finding the ratio) especially in the context of prices. For example, we can compare two prices of £9 and £12 by stating that one is three-quarters of the other.

When explaining fractions, be careful about using the word 'whole' as a noun: try to use it only as an adjective, for example, 'three-eights of a whole pizza'.

It is quite acceptable to use informal language such as *top number*, *bottom number* and *top-heavy fraction*, alongside or instead of formal language such as *numerator*, *denominator* and *improper fraction*.

Build on the idea of a fraction as representing a number of equal parts of a unit to extend the meaning to include a number of equal parts of a set, for example, two-thirds of a set of 12.

Equivalence of fractions is one of the most important ideas to get across to primary children. Get them to make a variety of fraction charts like Figure 17.6 and find various examples of equivalent fractions.

Using simple examples with sharing pizzas and chocolate bars, establish the idea that $^p/_q$ can also mean 'p divided by q'. For example, 'three pizzas shared between four people' is '3 divided by 4' and this results in $^3/_4$ of a pizza each.

Help children to see the pattern in sequences of equivalent fractions and use this to establish the idea that you can change one fraction into an equivalent fraction by multiplying (or dividing) the top and bottom numbers by the same thing.

Explain to children, with concrete illustrations, why making the bottom number larger makes the fraction smaller, and vice versa.

Explain to children the procedure for finding a fraction of a quantity, by dividing by the bottom number and then multiplying by the top number, applying this procedure to a range of everyday practical contexts, and using a calculator where necessary.

With more able older children, introduce the procedure for finding which is the larger or which the smaller of two fractions, by changing them to equivalent fractions with the same bottom number.