Ages 10+

Remedial Maths Series:

Fractions

For students requiring assistance with fraction concepts.

Contents

Teachers' Notes

Mathematics education encompasses a wide range of topics and concepts, many of which are only briefly dealt with in the classroom due to time constraints. It is important that these fundamental concepts are understood before students move onto the next mastery level.

Students often fail to grasp all concepts and are unable to catch up to the level at which the rest of the class are working. It is here that the real difficulty for these students begins as they will sometimes withdraw from activities and miss further valuable concepts, simply because they had not mastered the prerequisite skills.

Remediation for many students is frequently associated with a reduced self esteem as students are aware that they are working behind the rest of the class, especially when text books and worksheets for lower grades are used to help them to catch up.

This remediation series is designed to provide upper primary students with the necessary skills and knowledge of mathematical concepts required for their year level and can be used both in the classroom and as a "take-home" package for extra consolidation of concepts.

The reading and content level is appropriate to the age of the student, even though many of the remedial activities are focused on previous stages of the maths syllabus. It is hoped that this series will boost students' self esteem as they realise that they are able to successfully complete the maths activities in the book. In addition, students will not feel as if they are doing "baby" work as is the case when maths sheets for 8 year olds are given to 12 year old students.

For best results the series should be used to complement a remedial maths programme for a small group or for individual students who need to catch up. Many of the worksheets explain the mathematical concepts and provide examples, however, it is assumed that this is not the student's first experience with the concept. Each book in the series follows the same format and is directed at a particular age group, yet can be used in the secondary school if required.

The Challenge question at the bottom of most pages tests the child's knowledge of the mathematical concept for that particular page. The Challenge is usually presented as a word problem in a real world context so as to highlight the need for the skill.

This book explains the basic concepts of fractions, including the relationship between fractions, decimals and percentages. The activities are sequenced in line with standard syllabus structures, covering a number of stages as opposed to a straight year level, and are basically designed to provide students with the opportunity to catch up on much needed mathematical skills.

The Fraction Chart on page 5 is referred to in a number of activities. This sheet can be photocopied onto card, allowing students to colour the strips and cut them out.

Introduction to Fractions

A fraction is a part of a whole. It is used to describe how much of something is left.
Look at the first circle below.

$$= \frac{6}{6}$$ $$= \frac{4}{4}$$
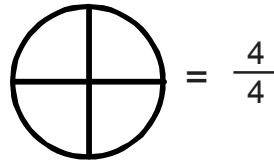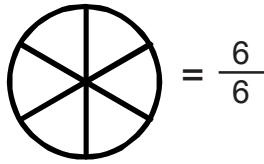
We can say that $\frac{6}{6}$ are equal to a whole. The number on top is known as the **numerator** and tells us how many parts we have. The bottom number is known as the **denominator** and tells us exactly how many parts the whole has been divided into.

The second circle has four pieces left. How can we represent this as a fraction? $\frac{}{4}$

1. Circle the denominator in each of these fractions.

$$\frac{3}{4} \qquad \frac{6}{7} \qquad \frac{7}{8} \qquad \frac{4}{8} \qquad \frac{9}{10} \qquad \frac{1}{6} \qquad \frac{3}{9}$$

2. What fraction is shared in each of these pictures?

a.   **b.**   **c.**   **d.**

....

3. Shade the fraction for each of these:

$$\frac{1}{4} \qquad \frac{3}{6} \qquad \frac{4}{8} \qquad \frac{2}{7} \qquad \frac{6}{6} \qquad \frac{2}{3}$$

4. Complete the number sentences below by shading in the correct amount.
The first one has been done for you.

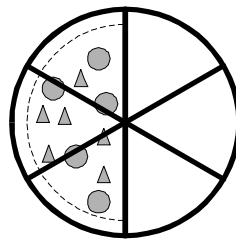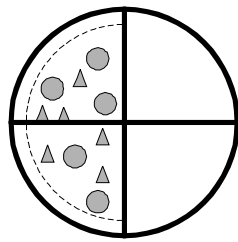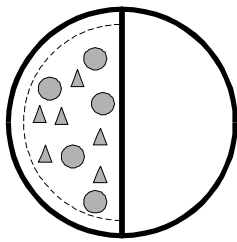$$\frac{2}{4} = \frac{3}{6} \qquad \frac{4}{8} = \frac{}{4} \qquad \frac{2}{5} = \frac{}{10} \qquad \frac{1}{3} = \frac{}{6}$$

Challenge:

What should I order if I'm really hungry: a pizza cut into ten pieces or twelve pieces?

⊙ *Understanding the concept of numerators and denominators.*

Page 6

Ready-Ed Publications

Equivalent Fractions 1

Equivalent fractions have the same value. Look at the pizza below.

......................   ....

In the first picture half of the pizza has been eaten. We can say that two quarters of the second pizza has been eaten. In the third picture we can see that three pieces or ⅜ of the pizza has been eaten.

Each picture shows that **half** the pizza has been eaten. The only difference is that each pizza has a different number of pieces left. Write the number of pieces left as a fraction under each pizza.

We can say that these three fractions are *equivalent* as they represent the same value.

1. Shade these equivalent fractions in the shapes below.
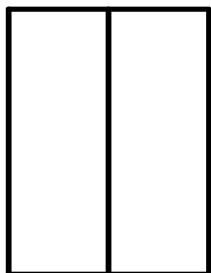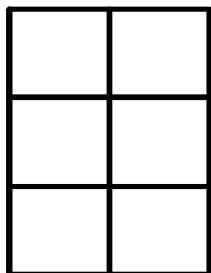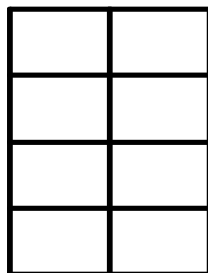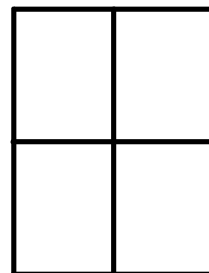
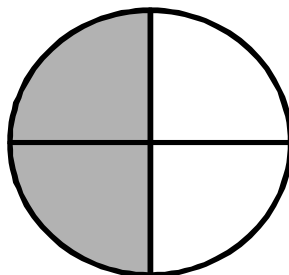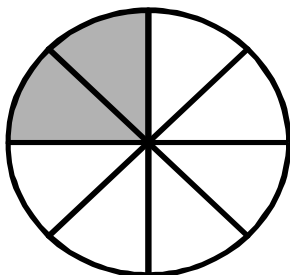$$\frac{1}{2} \qquad \frac{3}{6} \qquad \frac{4}{8} \qquad \frac{2}{4} \qquad \frac{5}{10}$$
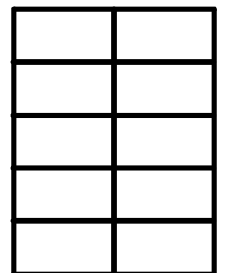
2. Circle the fractions that represent the amount shaded in the picture. There may be more than one answer.
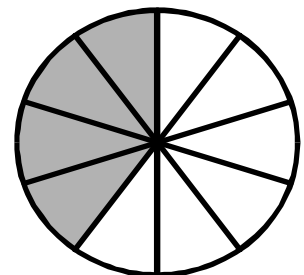
a. $\frac{1}{4}$ $\quad$ $\frac{2}{8}$ $\quad$ $\frac{1}{3}$ $\qquad$ **b.** $\frac{2}{4}$ $\quad$ $\frac{1}{2}$ $\quad$ $\frac{1}{3}$ $\qquad$ **c.** $\frac{1}{5}$ $\quad$ $\frac{2}{5}$ $\quad$ $\frac{4}{10}$

Challenge:

Anthony has ⅓ of his chocolate bar left and Mel has a quarter.
Who has the most chocolate left?

⚙ *Carrying out activities involving the equivalence of fractions.*

Fractions as Parts of a Whole

Already we know that a fraction is part of a whole. For example, a cake cut into three even pieces equals one whole. Two pieces of the cake are eaten leaving only one piece left or one third.
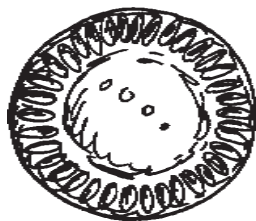
This can be represented as ⅓ - ⅔ = ⅓. Only a *fraction* of the *whole* cake remains.

1. Write the fraction of food that remains in each drawing below.

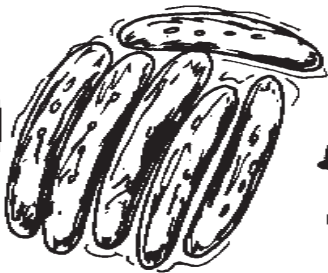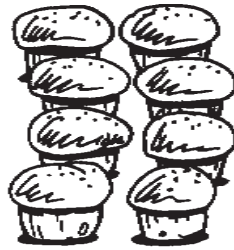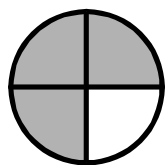**2.** Shade in the amount represented as a fraction for each picture below.

$$\frac{2}{3} \qquad \frac{3}{6} \qquad \frac{5}{7} \qquad \frac{4}{8}$$
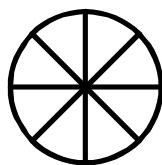
3. In the shapes below shade in the pairs of equivalent fractions. Write the fractions underneath.
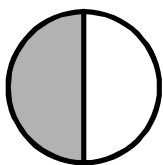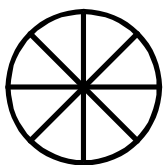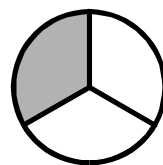
$$\frac{3}{4} = \qquad \frac{1}{2} = \qquad \frac{1}{3} =$$
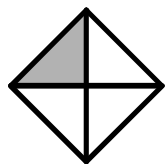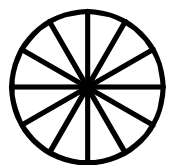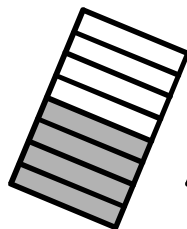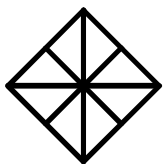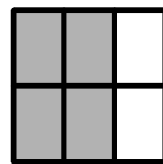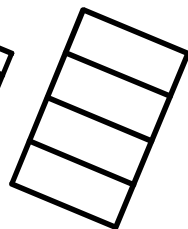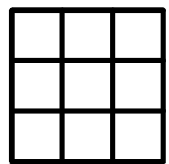
$$\frac{1}{4} = \qquad \frac{4}{8} = \qquad \frac{4}{6} =$$

Challenge:
Joshua has 20 jellybeans and eight of them are blue. What fraction of the jellybeans are not blue? Can you simplify this fraction?

○ *Carrying out activities that demonstrate: i) part/whole nature of fractions; ii) subset/set nature of fractions.*

Simplifying Fractions 1

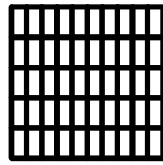The fractions below can all be expressed as 1 because they represent all parts of a whole.
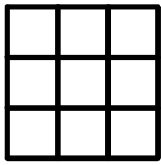
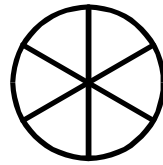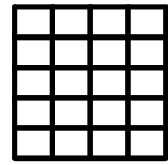$$\frac{3}{3} \qquad \frac{9}{9} \qquad \frac{7}{7} \qquad \frac{50}{50} \qquad \frac{6}{6} \qquad \frac{20}{20}$$

1. Write four fractions below that are equivalent to a whole.

a. .... **b.** .... **c.** .... **d.** ....

2. Shade the shapes below according to the fraction.
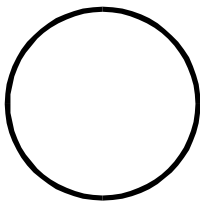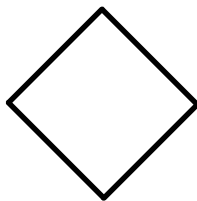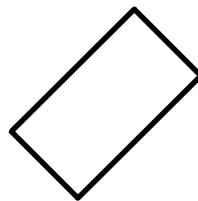
$\frac{2}{2}$ $\qquad$ $\frac{4}{4}$ $\qquad$ $\frac{12}{12}$ $\qquad$ $\frac{20}{20}$

3. Use the pictures and circle the amounts shown below.

$$\frac{2}{4} \qquad\qquad \frac{4}{8} \qquad\qquad \frac{3}{6} \qquad\qquad \frac{12}{12}$$
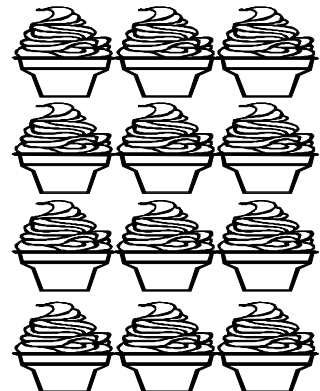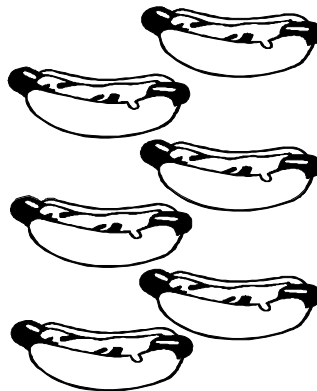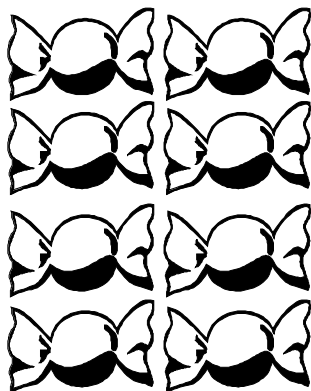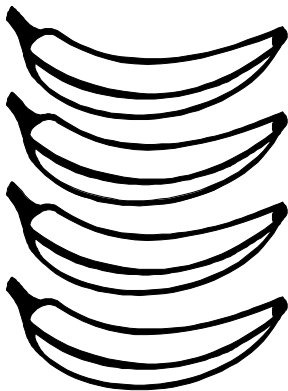
4. All of the amounts you have shown above are equal to ....

5. Use a red pen to circle the fractions below that represent a third.
Use a blue pen to circle the fractions equivalent to a half.

$$\frac{4}{8} \quad \frac{4}{12} \quad \frac{3}{9} \quad \frac{20}{40} \quad \frac{5}{10} \quad \frac{50}{100} \quad \frac{2}{6} \quad \frac{5}{15} \quad \frac{6}{12} \quad \frac{100}{200}$$

Challenge:

Kathy was checking her netball goal scoring for the last three games. In the first game she scored 15 of the 28 goals for the game. In the second game a total of 36 goals were scored by her team of which Kathy scored 18 and in the third game she scored 12 out of 26 goals. In which game did Kathy score exactly half the goals?

⊙ *Simplifying fractions by converting them to equivalent fractions.*