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# Striving To Improve

# Fractions

For students aged 11 - 15 years who are underachieving at their year lavel



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# Teachers' Notes

This resource is focused on the Number and Algebra Strand of the Australian Curriculum for lower ability students and those who need further opportunity to consolidate these core areas in Mathematics.

Each section provides students with the opportunity to consolidate written and mental methods of calculation, with an emphasis on process and understanding.

The section entitled *Understanding Fractions* enables students to reencounter ideas of equivalent fractions, simplifying fractions, improper fraction, mixed numerals and comparing fractions. These activities are a useful way to scaffold a new unit of Mathematics and will hap mild confidence for lower ability students to attempt more challenging, problems at their year level.

The section entitled Calculating With Fractions walks stu gh the ents four core calculations. The activities are designed lide udent learning with minimal input from the teacher and there is a stro g en phasis on process and understanding. Students explore dition d subtraction of fractions with and without common milarly, students omin explore how to multiply and divide fraction. efore oplying them to a variety of applications. Student ans begin to ee the common uses f a quality and be expressing various for fractions by finding fraction quantities as fractions.

The activities can be used for a slivideal students needing further consolidation in a mainstree in conscroom or as instructional worksheets for a whole classic on over ability students. The activities are tied to Curriculum Links in the Australian Curriculum ranging from grade levels of Year 4 through a Year and an appropriate for students requiring extra support in Years 7, 8 and 9.

It is hoped that the ons will be used to help teachers provide appropriate resources and support to those students in greatest need. The book as a whole can be used as a programme of work for those students on a Modified Course or Independent Learning Programme. Activities are sufficiently guided so that students can work independently and at their own pace without constant supervision and guidance from the teacher.



# Teachers' Notes

# **Understanding Fractions**

The activities in this section provide students with the opportunity to explore the concept of a fraction and the many different ways to represent fractions.

The concepts include:

#### **Equivalent Fractions**

Students explore a few different methods for recogning and utilising fractions that hold equivalent values.

#### **Simplifying Fractions**

Students explore the common methods used to implify fractions so that they are easier to use in calculations.

#### **Comparing Fractions**

Students explore methods to compare the size of fractions using their skills of simplifying and establishing equivalence.

#### **Mixed Numerals**

Students learn to convert more fractions to mixed numbers.

#### Imp oper Fraction

Stulents leaves to not mixed numerals to improper fractions.



# Shading Fractions 1

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



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



6 6

> 4 4

# Shading Fractions 2





#### **\*** TASK C: CHALLENGE YOUR PARTNER

Create four of your own shaded grids (you may like to use grid paper) similar to those in Task B above. See if your partner can give you the correct fraction for each of your grids.



# Equivalent Fractions 2



#### \* TASK C: RESEARCH CHALLENGE

In small groups of 3 or 4 students, research "Equivalent Fractions". Write a half page report on what Equivalent Fractions are and use pictures and diagrams to help explain what you mean. Make sure you give some examples of pairs of equivalent fractions. Present your report to the class.





### Equivalent Fractions 5

#### **\* TASK A** Simplify each fraction to make it into a smaller, equivalent fraction.



#### **\*** TASK C: PARTNER CHALLENGE

Create a task of ten questions, similar to those in Task B, for your partner to answer. Make sure you work out the answers before giving the worksheet to your partner!



# Comparing Fractions 2





#### Improper Fractions 2

Follow this example:  $\frac{3}{4} + \frac{2}{4} = \frac{3+2}{4} = \frac{5}{4} = 1\frac{1}{4}$ 

 $\frac{5}{4}$  is known as an improper fraction because the numerator is greater than the denominator. This means that there is more than 1 whole. We know that  $\frac{4}{4}$  is equal to one whole so  $\frac{5}{4}$  must be equal to 1 whole and  $\frac{1}{4}$  or  $1\frac{1}{4}$ .

**A.** Express the answers to these sums as improper fractions.



- **D.** Jessica had four choice pranges and half of an orange and Ben had one orange and a half. Hence put them together how many oranges would there be?
- E. Hamish divideo surbananas into thirds. How many thirds did he now have? Express your answer as an improper fraction.....
- F. Suzanne had four sets of pencils each with eight colours and half a set with four colours. Drew gave her three pencil sets and four extra pencils. Write a number sentence to show how many pencils Suzanne has.





# Mixed Numerals 2

To convert improper fractions into a mixed numeral divide the *denominator* into the *numerator*. For example,  $\frac{3}{2} = 1\frac{1}{2}$ . There are three halves and we know that two halves make a whole. One half is left over so the answer is  $1\frac{1}{2}$ .



#### **\*** TASK E: CHALLENGE

Nicole cut some oranges into quarters for her netball team to eat at half time. At the end of the game there were 17 quarters left on the tray. Express the fraction of oranges on the tray as a mixed numeral.

