

INTRODUCTION

Welcome to **Understanding Fractions Book 5**. This book has been designed for Year 5 students, although it may also be helpful in reinforcing fractional concepts for children who are experiencing some difficulties or providing more challenging activities and understandings for Year 4 students.

The activities in this book allow students to explore and play with fractional relationships and to come to their own understandings. Students are encouraged to analyse shapes, relationships and numbers. They are also encouraged to develop their skills in communicating, reasoning and problem solving.

Whereas the earlier levels in this series depend primarily upon visual input for students to construct a framework for understanding fractions, Book 5 directs students to self-discovery of the operational algorithms and the move from simpler to more complex fractions.

Your organisation of students may vary as you continue to use this resource. The tasks have been designed to be completed in small groups or pairs as the student exchange of ideas increases the power of learning as it uncovers a variety of problem solving strategies. Working together also allows students to answer one another's questions about the directions and concepts. You may, however, prefer that some tasks be completed individually. When this is the case, bring the students back together on completion of the task and share understandings and experiences. This will help you identify students who require further assistance and will also reinforce the skills that have been taught. Other students will be ready to expand on the concepts they have understood.

It is recommended that at the conclusion of each lesson, you focus more on discussion of students' results than correction of individual pages. Encourage students to focus more on their strategies than just on getting the right answer.

Assessment is multifaceted and this resource encourages a range of strategies for assessing students. Each lesson is part of this process. You can gather valuable information by listening to student's explanations, observing their thinking and examining their writing and reflections. These assessment tools are some methods of exploring student progress and modifying instruction to suit the needs of your students.

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E D U C A T I O N

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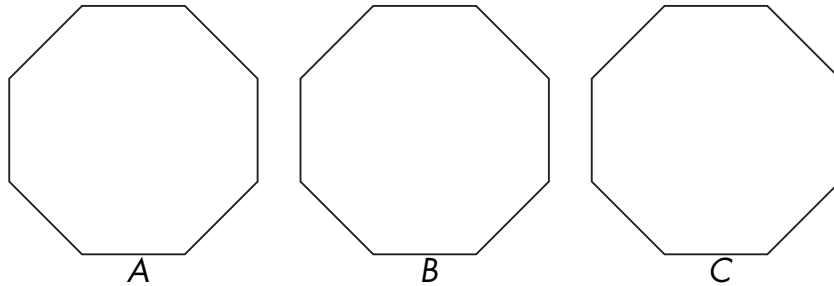
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LESSON
1

FOCUS: Review and compare halves, quarters, and eighths

MATERIALS: Ruler, pencil, red and black crayons or textas

1. Divide the first **octagon** into halves, and label each part $\frac{1}{2}$. Divide the second octagon into quarters, and label each part $\frac{1}{4}$. Divide the third octagon into eighths, and label each part $\frac{1}{8}$. NOTE: Begin each division at a **vertex**.



2. Colour in red $\frac{1}{2}$ of each of the octagons. Then answer the questions.
- How many halves are in octagon *A*? _____
 - How many halves are in octagon *B*? _____
 - How many halves are in octagon *C*? _____
 - How many quarters are in octagon *B*? _____
 - How many quarters are in octagon *C*? _____
 - How many eighths are in octagon *C*? _____
3. In octagon *B*, shade with pencil the parts that are not coloured red. Then answer the questions.
- How many quarters are shaded with pencil? _____
 - How many quarters are coloured red? _____
 - Are more quarters coloured red or shaded with pencil? _____
 - One-half equals two-quarters. True or false? _____
 - Use numbers to write the first sentence in *d*. _____
4. In octagon *C*, shade with pencil the parts that are not coloured red. Then answer the questions.
- How many eighths are shaded with pencil? _____
 - How many eighths are coloured red? _____
 - Are more eighths coloured red or shaded with pencil? _____
 - One-half equals four-eighths. True or false? _____
 - Use numbers to write the first sentence in *d*. _____
5. In octagon *B*, outline a $\frac{1}{4}$ section with black texta. In octagon *C*, outline with black texta an equal-sized section. Then answer the questions.
- How many eighths are outlined? _____
 - One-quarter equals two-eighths. True or false? _____
 - Use numbers to write the first sentence in *b*. _____

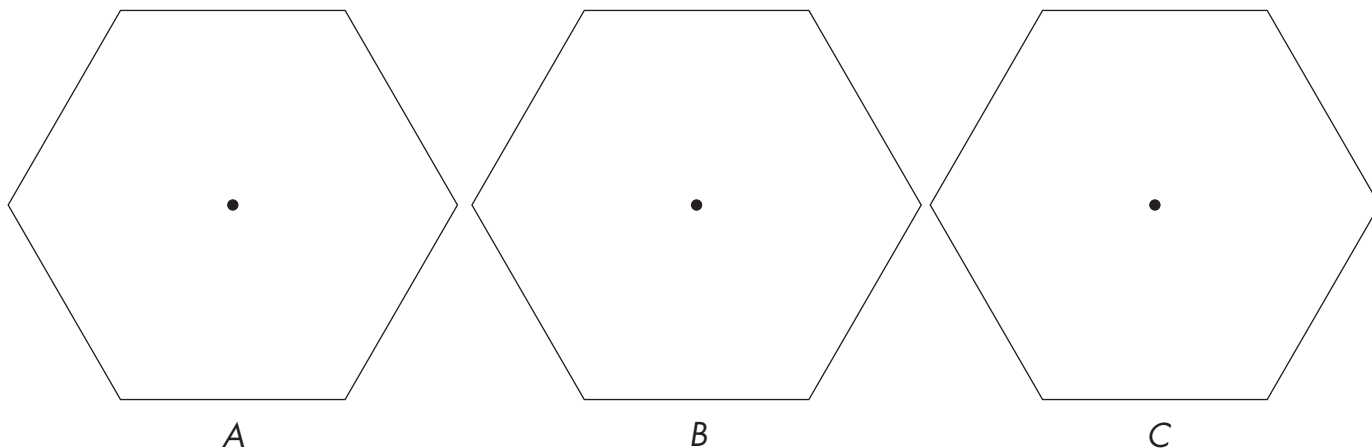
LESSON 2

FOCUS: Review and compare halves, thirds, and sixths; explore operations

MATERIALS: Ruler, blue and red crayons or textas

1. Divide the first **hexagon** into halves, and label each part $\frac{1}{2}$. Divide the second hexagon into thirds, and label each part $\frac{1}{3}$. Divide the third hexagon into sixths, and label each part $\frac{1}{6}$.

NOTE: Begin each division at a vertex. The centre point will help you divide the hexagon into thirds.

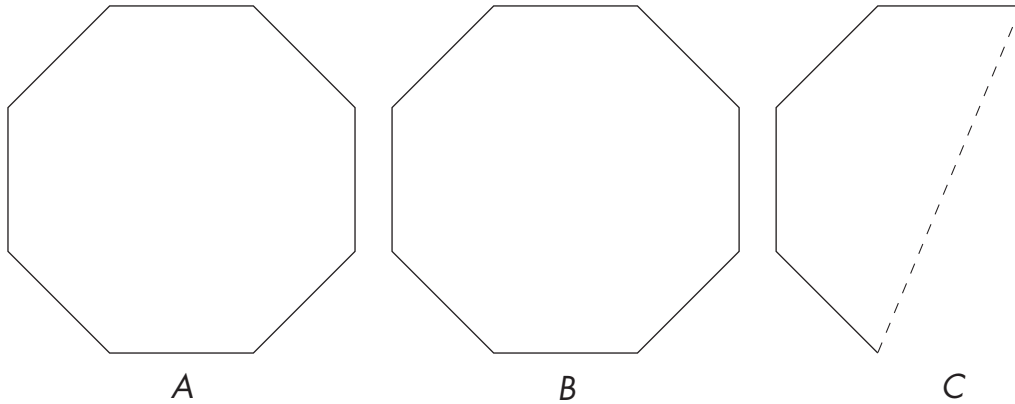


2. Colour in blue $\frac{1}{2}$ of hexagon A and $\frac{1}{2}$ of hexagon C. Then answer the questions.
 - a. How many sixths equal $\frac{1}{2}$? _____
 - b. $\frac{1}{2} = \frac{3}{6}$ True or false? _____
 - c. Which is more, $\frac{1}{2}$ or $\frac{1}{6}$? _____
 - d. Which is more, $\frac{1}{2}$ or $\frac{3}{6}$? _____
 - e. Which is more, $\frac{1}{2}$ or $\frac{4}{6}$? _____
3. Colour in red $\frac{1}{3}$ of hexagon B and $\frac{1}{3}$ of hexagon C. Then answer the questions.
 - a. Which is greater, $\frac{1}{3}$ or $\frac{1}{6}$? _____
 - b. Which is greater, $\frac{1}{3}$ or $\frac{1}{2}$? _____
 - c. Which is greater, $\frac{1}{2}$ or $\frac{1}{6}$? _____
 - d. In one-half, there are how many one-sixths? _____ $\frac{1}{2} \div \frac{1}{6} = ?$ _____
 - e. In one-third, there are how many one-sixths? _____ $\frac{1}{3} \div \frac{1}{6} = ?$ _____
 - f. One-third plus one-third equals how many thirds? _____ $\frac{1}{3} + \frac{1}{3} = ?$ _____
 - g. One-sixth plus one-sixth plus one-sixth equals how many sixths? _____ $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} = ?$ _____
 - h. $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = ?$ _____
 - i. Three of the one-sixths parts equals how many sixths? _____ $3 \times \frac{1}{6} = ?$ _____
4. Use the shaded hexagons to help you find the answers.

a. $3 \times \frac{1}{6} =$ _____	c. $5 \times \frac{1}{6} =$ _____	e. $2 \times \frac{2}{6} =$ _____	g. $2 \times \frac{1}{2} =$ _____
b. $4 \times \frac{1}{6} =$ _____	d. $2 \times \frac{1}{3} =$ _____	f. $3 \times \frac{2}{6} =$ _____	h. $3 \times \frac{1}{3} =$ _____

LESSON
3

FOCUS: Review halves and quarters; practise with operations
MATERIALS: Ruler, red crayon or texta



1. Colour in red $\frac{1}{2}$ of octagon *A* and $\frac{1}{2}$ of octagon *B*. Only $\frac{1}{2}$ of octagon *C* is shown. Colour it red. Then answer the questions. Some answers may be expressed as **mixed numbers**.
 - a. How many halves are coloured red? _____
 - b. How many halves are not coloured? _____
 - c. How many halves are there altogether? _____
 - d. $\frac{1}{2} + \frac{1}{2} =$ _____
 - e. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} =$ _____
 - f. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2} =$ _____
 - g. $2 \times \frac{1}{2} =$ _____
 - h. $3 \times \frac{1}{2} =$ _____
 - i. $4 \times \frac{1}{2} =$ _____
 - j. $5 \times \frac{1}{2} =$ _____
 - k. $\frac{5}{2} \div \frac{1}{2} =$ _____
 - l. $\frac{3}{2} \div \frac{1}{2} =$ _____
 - m. $1\frac{1}{2} + \frac{1}{2} =$ _____
 - n. $1\frac{1}{2} + 1 =$ _____
 - o. $1\frac{1}{2} + 1\frac{1}{2} =$ _____

2. Draw four octagons. Divide each octagon into quarters. Then erase half of the last octagon. On a separate piece of paper, write five of your own maths problems about these octagons. Use numbers and maths symbols instead of words.