

# INTRODUCTION

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Welcome to **Understanding Fractions Book 7**. This book has been designed for Year 7 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 6 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 7 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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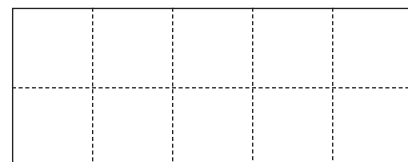
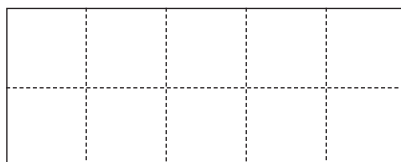
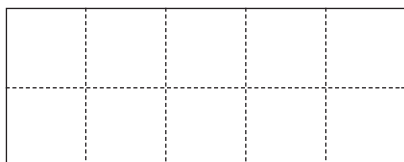
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# LESSON 1

**FOCUS:** Review tenths  
**MATERIALS:** Tiles



- Each rectangle is divided into 10 sections.
  - Write the common fraction form of each section. \_\_\_\_\_
  - Write the decimal form. \_\_\_\_\_
- Make models of the three rectangles with your tiles.
  - How many whole rectangles are there? \_\_\_\_\_
  - How many tenths are there in all? \_\_\_\_\_

3. Solve the problems. Use tiles to help.

- |  |                                 |   |
|--|---------------------------------|---|
| a. $0.2 + 0.2 + 0.2 =$ _____   | $3 \times 0.2 =$ _____          | $0.6 \div 0.2 =$ _____                    |
| b. $0.3 + 0.3 + 0.3 + 0.3 =$ _____                                     | $4 \times 0.3 =$ _____          | $1.2 \div 0.3 =$ _____                    |
| c. $0.5 + 0.5 + 0.5 =$ _____   | $3 \times 0.5 =$ _____          | $1.5 \div 0.5 =$ _____                    |
| d. $0.1 + 0.1 + 0.1 + 0.1 =$ _____                                     | $4 \times 0.1 =$ _____          | $0.4 \div 0.1 =$ _____                    |
| e. $0.6 + 0.6 =$ _____   | $2 \times 0.6 =$ _____          | $1.2 \div 0.6 =$ _____                    |
| f. $\frac{2}{10} + \frac{2}{10} + \frac{2}{10} + \frac{2}{10} =$ _____ | $4 \times \frac{2}{10} =$ _____ | $\frac{8}{10} \div \frac{2}{10} =$ _____  |
| g. $\frac{5}{10} + \frac{5}{10} =$ _____                               | $2 \times \frac{5}{10} =$ _____ | $1 \div \frac{5}{10} =$ _____             |
| h. $\frac{6}{10} + \frac{6}{10} =$ _____                               | $2 \times \frac{6}{10} =$ _____ | $1\frac{2}{10} \div \frac{6}{10} =$ _____ |

4. Solve the problems.

- |                                  |  |
|----------------------------------|--|
| a. $3 \div 0.1 =$ _____          | i. $5 \times 0.5 =$ _____                    |
| b. $3 \div 0.5 =$ _____          | j. $2 \div 0.4 =$ _____                      |
| c. $3 \div 0.2 =$ _____          | k. $30 \times 0.3 =$ _____                   |
| d. $2.5 \div 0.5 =$ _____        | l. $6 \times 0.5 =$ _____                    |
| e. $2 \div 0.2 =$ _____          | m. $\frac{30}{10} \div \frac{6}{10} =$ _____ |
| f. $3 \div \frac{3}{10} =$ _____ | n. $2.5 \div 5 =$ _____                      |
| g. $3 \div \frac{5}{10} =$ _____ | o. $5 \times 0.4 =$ _____                    |
| h. $3 \div 0.6 =$ _____          |  |

LESSON  
**2**

**FOCUS:** Review common and decimal fractions, including operations  
**MATERIALS:** Coloured textas, ruler

1. Solve the problems.

a.  $\frac{4}{4} + \frac{3}{3} = \underline{\hspace{2cm}}$

b.  $\frac{1}{2} + \frac{3}{6} = \underline{\hspace{2cm}}$

c.  $1 \div \frac{3}{6} = \underline{\hspace{2cm}}$

d.  $\frac{5}{5} \div 0.1 = \underline{\hspace{2cm}}$

e.  $4 \div 0.1 = \underline{\hspace{2cm}}$

f.  $\frac{2}{4} + \frac{5}{10} = \underline{\hspace{2cm}}$

g.  $\frac{3}{3} + \frac{5}{5} = \underline{\hspace{2cm}}$

h.  $4 \times (\frac{3}{6} + \frac{6}{12}) = \underline{\hspace{2cm}}$

i.  $\frac{4}{4} \div \frac{3}{6} = \underline{\hspace{2cm}}$

j.  $2 \div \frac{1}{10} = \underline{\hspace{2cm}}$

k.  $3 \div 0.3 = \underline{\hspace{2cm}}$

l.  $\frac{1}{4} + \frac{3}{12} = \underline{\hspace{2cm}}$

m.  $3 \times (\frac{2}{2} + \frac{6}{6}) = \underline{\hspace{2cm}}$

n.  $\frac{1}{2} \times (2 \times \frac{4}{8}) = \underline{\hspace{2cm}}$

o.  $(2 \times \frac{5}{5}) \div \frac{1}{2} = \underline{\hspace{2cm}}$

p.  $4 \div \frac{1}{10} = \underline{\hspace{2cm}}$

q.  $4 \div 0.4 = \underline{\hspace{2cm}}$

r.  $\frac{2}{8} + \frac{4}{16} = \underline{\hspace{2cm}}$

2. Explain how you can add, multiply, and divide the common fractions and decimals in problem 1 without using the rules. You may use words and pictures or diagrams to show your thinking.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Write any rules you know for each of these operations on common fractions and decimals. You may use pictures or diagrams to explain the rules.

a. Addition: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

b. Multiplication: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

c. Division: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

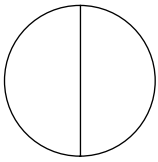
\_\_\_\_\_

# LESSON 3

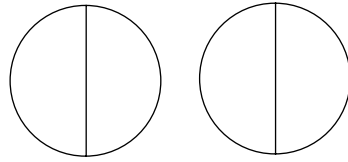
**FOCUS:** Review operations with common fractions and mixed numbers

**MATERIALS:** Coloured textas, ruler

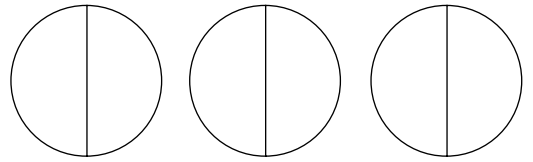
These examples show how to use circles to divide whole numbers, mixed numbers, and common fractions.



$$1 \div \frac{1}{2} = 2$$



$$2 \div \frac{1}{2} = 4$$



$$3 \div \frac{1}{2} = 6$$

Solve the problems. You may use circles or other figures to help.

- |  |   |
|--|---|
| 1. $1 \div \frac{2}{4} = \underline{\hspace{2cm}}$             | 13. $2 \times 3\frac{1}{4} = \underline{\hspace{2cm}}$          |
| 2. $4 \div \frac{4}{8} = \underline{\hspace{2cm}}$             | 14. $2 \times 2\frac{2}{4} = \underline{\hspace{2cm}}$          |
| 3. $6 \div \frac{2}{8} = \underline{\hspace{2cm}}$             | 15. $3 \times 1\frac{1}{2} = \underline{\hspace{2cm}}$          |
| 4. $3\frac{1}{2} \div \frac{1}{2} = \underline{\hspace{2cm}}$  | 16. $5 + \frac{1}{2} = \underline{\hspace{2cm}}$                |
| 5. $3\frac{1}{4} + 3\frac{1}{4} = \underline{\hspace{2cm}}$    | 17. $3 \div \frac{2}{4} = \underline{\hspace{2cm}}$             |
| 6. $2\frac{2}{4} + 2\frac{2}{4} = \underline{\hspace{2cm}}$    | 18. $2 \div \frac{1}{4} = \underline{\hspace{2cm}}$             |
| 7. $2\frac{4}{8} + 3\frac{5}{10} = \underline{\hspace{2cm}}$   | 19. $1\frac{2}{4} \div \frac{2}{4} = \underline{\hspace{2cm}}$  |
| 8. $5 - \frac{1}{2} = \underline{\hspace{2cm}}$                | 20. $1\frac{1}{2} \div \frac{5}{10} = \underline{\hspace{2cm}}$ |
| 9. $2 \div \frac{2}{4} = \underline{\hspace{2cm}}$             | 21. $6\frac{2}{4} \div 3\frac{1}{4} = \underline{\hspace{2cm}}$ |
| 10. $1 \div \frac{1}{4} = \underline{\hspace{2cm}}$            | 22. $5 \div 2\frac{2}{4} = \underline{\hspace{2cm}}$            |
| 11. $1\frac{1}{8} \div \frac{1}{8} = \underline{\hspace{2cm}}$ | 23. $7\frac{1}{2} \div 1\frac{1}{2} = \underline{\hspace{2cm}}$ |
| 12. $3\frac{1}{2} \div \frac{4}{8} = \underline{\hspace{2cm}}$ | 24. $5\frac{1}{2} + 5\frac{1}{2} = \underline{\hspace{2cm}}$    |