Table of Contents

Introduction

The Guided Math Framework 5

What Is Math Workshop? 6

What Are Math Workstations? 7

Differentiating Math Workstation Tasks 9

How to Use This Book 10

Introduction to Standards Correlations 12

Standards Correlations 13

GUIDE Workstation Tasks

Games for Mathematicians

Fraction, Decimal, and Percent Memory Game 15

Difference from One 20

Dodge the Zombie 26

Integer Tug-of-War 32

Using What We Know

Exploring Manipulatives 37

Cuisenaire® Rod Equations 40

What's the Point? 44

Graphing Growing Patterns 52

You Write the Story 56

Table of Contents *(cont.)*

Express Yourself 62

Data Detective 73

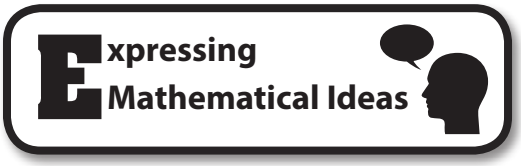
Slope and Intercept 80

Rate and Ratio Task Cards 86

Greatest Common Factor Bingo 94

Integer Battle 106

Scientific Notation 111



Making Connections 122

3-2-1 Learning Log 128

All About… 132

Wanted Vocabulary Poster 135

Appendix

References Cited 140

Answer Key 141

Digital Resources 142

© Shell Education

What Are Math Workstations?

Workstations are collections of tasks stored together and worked on independently of the teacher by students in specified workspaces. Students often work in pairs or small groups but may work alone. Each station contains a variety of carefully selected math tasks to support mathematical learning. Some of the tasks may be mandatory, while others may be optional. Essential for an effective Math Workshop is the inclusion of high-quality, appropriate tasks in the workstations. By grappling with these tasks independently, students gain greater mathematical proficiency and confidence in their mathematical abilities. Here, students "practice problem solving while reasoning, representing, communicating, and making connections among mathematical topics as the teacher observes and interacts with individuals at work or meets with a small group for differentiated math instruction" (Diller 2011, 7).

Math Centers versus Math Workstations

For many years, classrooms contained Math Centers where learners worked independently. Math Centers were considerably different from today's Math Workstations. Even the label *Math Workstation* clearly sends the message that students are expected to work as mathematicians. Workstation tasks are not included for fun alone but to further students' understanding of math, improve their computational fluency, and increase their mathematical competency. The chart below highlights the differences between Math Centers and Math Workstations.

Figure I.3 Math Centers versus Math Workstations

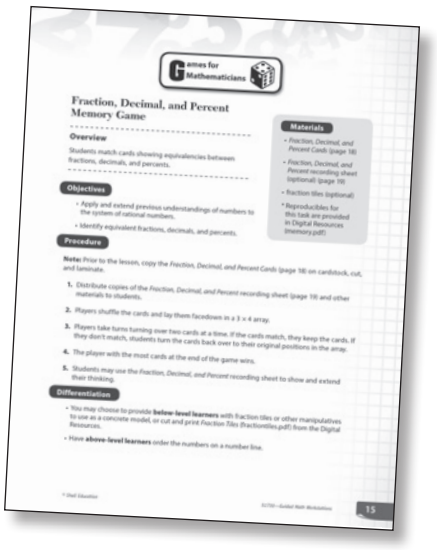
Math Centers	Math Workstations
• Games and activities are introduced to students when distributed at centers and are rarely used for instructional purposes. • Centers are often thematic and change weekly. • Centers are often made available to students after they complete their regular work. • All students work on the same centers, and activities are seldom differentiated.	• Tasks are derived from materials previously used during instruction, so students are already familiar with them. • Tasks are changed for instructional purposes, not because it is the end of the week. • Tasks provide ongoing practice to help students retain and deepen their understanding and are an important part of students' mathematical instruction. • Tasks are differentiated to meet the identified learning needs of students.

How to Use This Book

The tasks in this book have been designed for use with the GUIDE Workshop Model, but they may be incorporated into any workshop model you choose. It is important to model and practice these workstation tasks and the sentence stems on the *Talking Points* cards with students before expecting students to complete them independently.

Workstation Organization

An **overview** of the lesson, materials, objective, procedure, and differentiation is provided for the teacher on the first page of each GUIDE workstation task.


Games for Mathematicians

Fraction, Decimal, and Percent Memory Game

Overview

Students match cards showing equivalencies between fractions, decimals, and percents.

Materials

- Fraction, Decimal, and Percent Cards (page 18)
- Fraction, Decimal, and Percent recording sheet (optional) (page 19)
- fraction tiles (optional)
- Reproducibles for this task are provided in Digital Resources (memory.pdf)

Objectives

- Apply and extend previous understandings of numbers to the system of rational numbers.
- Identify equivalent fractions, decimals, and percents.

Procedure

Note: Prior to the lesson, copy the *Fraction, Decimal, and Percent Cards* (page 18) on cardstock, cut, and laminate.

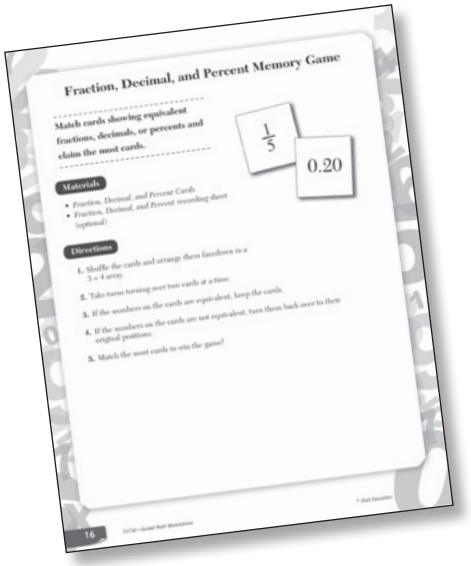
1. Distribute copies of the *Fraction, Decimal, and Percent* recording sheet (page 19) and other materials to students.
2. Players shuffle the cards and lay them facedown in a 3 × 4 array.
3. Players take turns turning over two cards at a time. If the cards match, they keep the cards. If they don't match, students turn the cards back over to their original positions in the array.
4. The player with the most cards at the end of the game wins.
5. Students may use the *Fraction, Decimal, and Percent* recording sheet to show and extend their thinking.

Differentiation

- You may choose to provide **below-level learners** with fraction tiles or other manipulatives to use as a concrete model, or cut and print *Fraction Tiles* (fractiontiles.pdf) from the Digital Resources.
- Have **above-level learners** order the numbers on a number line.

15

A **Student Task card** with directions and a materials list is provided for easy implementation and organization. Students may use the materials list as they put away their math workstation task so that all materials are included.


Fraction, Decimal, and Percent Memory Game

Match cards showing equivalent fractions, decimals, or percents and claim the most cards.

$\frac{1}{5}$ 0.20

Materials

- Fraction, Decimal, and Percent Cards
- Fraction, Decimal, and Percent recording sheet (optional)

Directions

1. Shuffle the cards and arrange them facedown in a 3 × 4 array.
2. Take turns turning over two cards at a time.
3. If the numbers on the cards are equivalent, keep the cards.
4. If the numbers on the cards are not equivalent, turn them back over to their original positions.
5. Match the most cards to win the game!

16

© Shell Education

Games for Mathematicians

Fraction, Decimal, and Percent Memory Game

Overview

Students match cards showing equivalencies between fractions, decimals, and percents.

Materials

- *Fraction, Decimal, and Percent Cards* (page 18)
- *Fraction, Decimal, and Percent* recording sheet (optional) (page 19)
- fraction tiles (optional)

* The *Talking Points* card and these reproducibles are also provided in the Digital Resources (memory.pdf)

Objectives

- Apply and extend previous understandings of numbers to the system of rational numbers.
- Identify equivalent fractions, decimals, and percents.

Procedure

Note: Prior to the lesson, copy the *Fraction, Decimal, and Percent Cards* (page 18) on cardstock, cut, and laminate.

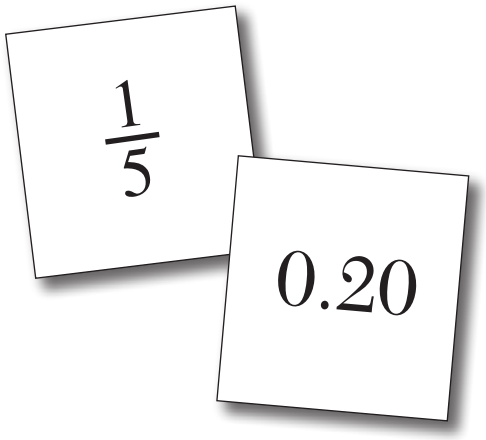
1. Distribute copies of the *Fraction, Decimal, and Percent* recording sheet (page 19) and other materials to students.
2. Players shuffle the cards and lay them facedown in a 3×4 array.
3. Players take turns turning over two cards at a time. If the cards match, they keep the cards. If they don't match, students turn the cards back over to their original positions in the array.
4. The player with the most cards at the end of the game wins.
5. Students may use the *Fraction, Decimal, and Percent* recording sheet to show and extend their thinking.

Differentiation

- You may choose to provide **below-level learners** with fraction tiles or other manipulatives to use as a concrete model, or print and cut *Fraction Tiles* (fractiontiles.pdf) from the Digital Resources.
- Have **above-level learners** order the numbers on a number line.

Fraction, Decimal, and Percent Memory Game

Match cards showing equivalent fractions, decimals, or percents and claim the most cards.



Materials

- *Fraction, Decimal, and Percent Cards*
- *Fraction, Decimal, and Percent* recording sheet (optional)

Directions

1. Shuffle the cards and arrange them facedown in a 3×4 array.
2. Take turns turning over two cards at a time.
3. If the numbers on the cards are equivalent, keep the cards.
4. If the numbers on the cards are not equivalent, turn them back over to their original positions.
5. Match the most cards to win the game!

© Shell Education

Talking Points

Vocabulary

- **array**
- **equivalent**
- **fraction**
- **decimal**
- **percent**

Talk like a mathematician:

I know _____ and _____ are equivalent because _____.

I can prove that _____ and _____ are equivalent by _____.

Fractions, decimals, and percents are all related because _____.

A pattern I noticed is _____.

Talking Points

Vocabulary

- **array**
- **equivalent**
- **fraction**
- **decimal**
- **percent**

Talk like a mathematician:

I know _____ and _____ are equivalent because _____.

I can prove that _____ and _____ are equivalent by _____.

Fractions, decimals, and percents are all related because _____.

A pattern I noticed is _____.

Fraction, Decimal, and Percent Cards

$\frac{1}{3}$	33%	$\frac{1}{5}$
0.20	$\frac{3}{4}$	75%
$\frac{1}{2}$	0.5	$\frac{4}{5}$
80%	$\frac{1}{20}$	0.05

© Shell Education

Name: _____ Date: _____

Fraction, Decimal, and Percent

Directions: Write the numbers from your matching cards in the chart. Then, write the missing equivalent. Write two more fraction-decimal-percent equivalencies of your own.

Fraction	Decimal	Percent