



## Mathematizing ESOL II: Integrating Benchmark Percentages and Decimals

### Course Overview and Schedule

The *Mathematizing ESOL II: Percentages and Decimals* course builds upon and extends conceptual understanding of math topics and how they can be integrated into ESOL instruction. In the prerequisite to this course, *Mathematizing ESOL I*, the focus is on math notation and operations with whole numbers.

In this course, we extend that knowledge to include other rational numbers, with an emphasis on percentages and decimals. We will explore these concepts before looking at real life applications of these math skills and strategies to contextualize them in the ESOL classroom.

*This course was developed by the Adult Numeracy Center at TERC in partnership with World Education, Inc., with funding from the Massachusetts Department of Elementary and Secondary Education.*

**Format:** Scheduled, Facilitated

**Estimated Completion Time:** 4 hours per week for 5 weeks (18 hours total)

**Contact:** [literacy@worlded.org](mailto:literacy@worlded.org)

### Course Objectives

By the end of course, you will be able to:

- Use benchmarks to visualize, compare, and describe fractions, percentages, and decimals
- Identify strategies for teaching conceptual understanding of percentages
- Identify strategies for teaching conceptual understanding of decimals
- Create and teach lessons that use strategies for integrating percentages and decimals in a language classroom
- Define and scaffold vocabulary needed for teaching percentages and decimals to ESOL learners

### Course Completion

Participants will be assessed on the extent to which they have done the following:

- Participated in asynchronous discussions (40%)
- Activities (60%)

Participants who earn a total of 100% will successfully complete the course and earn a certificate of completion.

## COURSE SCHEDULE

### WEEK 1

#### **Lesson 1: Getting Started**

- Required Software and Course Features
- Setting Up Your Profile and Notification Settings
- Course Overview
- Course Outline and Schedule
- Course Objectives
- Course Requirements
- Activity: Introductions
- Lesson Summary
- Lesson Feedback

#### **Lesson 2: Introductions to Fractions, Percentages, and Decimals**

- Overview and Objectives
- Activity: Where are the Fractions, Percentages, and Decimals?
- Look at the Relationship Between Numbers
- Decoding the Language of Numerator and Denominator
- How the Denominator Affects a Fraction
- The Larger the Denominator, the Smaller the Piece
- Activity: Loaves of Bread
- Getting Started with ESOL
- Activity: Connecting Words with Meaning—Lesson in Action
- Differing Representations
- Activity: What makes it a Quarter?
- Advantages of Different Representations
- Fractions: So Many Options
- Test Yourself
- Percentages and Decimals: Easier to Compare
- What is a Decimal?
- Fractions in Standard Measurement Units
- Test Yourself
- Activity: Which Representation Fits Best?
- What Do Other Countries Use?
- The Metric System
- Activity: Assessing Background Knowledge
- Making Connection Among Representations
- How is Math Addressed in ESOL Coursebooks?
- How is Math Addressed in ESOL Coursebooks? (con't)
- Math in ESOL Books
- Helping Students Make Connections
- Benchmarks and Curriculum Standards
- Connecting to Standards
- Lesson Summary

### WEEK 2

#### **Lesson 3: Introduction to Benchmarks**

- Overview and Objectives
- Activity: Using Percentages
- Beginning with Benchmarks
- Tapping Prior Knowledge
- Different Methods
- Activity: Tapping Prior Knowledge
- Merging Language and Math
- Activity: Think Aloud
- Number Line of Benchmarks
- What Can You Do with Benchmarks?
- Pie Chart (Circle Graph)
- Test Yourself: Pie Chart
- Making Sense of Fractions
- Using a Number Line to Estimate
- Test Yourself: Number Line
- Using a Number Line to Estimate (con't)
- Activity: Identifying Benchmarks

**WEEK 3**

---

**Lesson 4: Bringing Percentages into the Classroom**

- |   |  |
|---|--|
| <input type="checkbox"/> Overview and Objectives        | <input type="checkbox"/> Activity: Counting Calories             |
| <input type="checkbox"/> Activity: Grammar Quiz Score   | <input type="checkbox"/> Working with Singapore Strips           |
| <input type="checkbox"/> What is Percentage?            | <input type="checkbox"/> Using Singapore Strips to Conceptualize |
| <input type="checkbox"/> American Currency              | <input type="checkbox"/> Activity: Matching Problems to Models   |
| <input type="checkbox"/> Why Use Percentages?           | <input type="checkbox"/> Activity: Creating Context              |
| <input type="checkbox"/> Using Ratios                   | <input type="checkbox"/> Why Students Struggle with Problems     |
| <input type="checkbox"/> Another Everyday Example—Sales | <input type="checkbox"/> Lesson Summary                          |
| <input type="checkbox"/> Activity: Comparing Cookies    | <input type="checkbox"/> Recap                                   |
|   | <input type="checkbox"/> Activity: Bringing Percentages to ESOL  |

**WEEK 4**

---

**Lesson 5: Bringing Decimals into the Classroom**

- |   |  |
|---|--|
| <input type="checkbox"/> Overview and Objectives                  | <input type="checkbox"/> Building Vocabulary: Pronunciation of Ordinal Numbers |
| <input type="checkbox"/> Prior Experience Recall                  | <input type="checkbox"/> Decimals and Estimation                               |
| <input type="checkbox"/> Base Ten Number System and Place Value   | <input type="checkbox"/> Rounding and Reason                                   |
| <input type="checkbox"/> How About Symbols?                       | <input type="checkbox"/> Breaking the “Rules”                                  |
| <input type="checkbox"/> How Can Grouping Help?                   | <input type="checkbox"/> How Accurate Do I Have to Be?                         |
| <input type="checkbox"/> How Our Base Ten Number System Works     | <input type="checkbox"/> Activity: Math in Line                                |
| <input type="checkbox"/> Activity: How Do You Take Your Winnings? | <input type="checkbox"/> Connections to Money and Percentages                  |
| <input type="checkbox"/> Base Ten Blocks                          | <input type="checkbox"/> Money and Thousandths                                 |
| <input type="checkbox"/> Decimal Places: Imagine the Size (con’t) | <input type="checkbox"/> Test Yourself: Decimals and Money                     |
| <input type="checkbox"/> Activity: Imagine the Animals            | <input type="checkbox"/> Equating Decimals to Percentages                      |
| <input type="checkbox"/> Using Tenths as a Benchmark              | <input type="checkbox"/> Lesson Summary  |
| <input type="checkbox"/> Activity: Grid Visions                   |  |

**WEEK 5**

---

**Lesson 6: Course Closure**

- Course Summary
- Reflections
- Final Assignment
- Course Evaluation
- Course Completion Certificate

---

**Course materials are available for one month from the course end date.**

*This course was developed by the Adult Numeracy Center at TERC in partnership with World Education, Inc., with funding from the Massachusetts Department of Elementary and Secondary Education.*