



## Number Sense: Teaching About Parts and Wholes

### Course Overview and Schedule

Teaching students how to estimate, do mental math, and use calculators will help them to better understand how to use numbers. This course focuses on how to help adult students answer key questions: When is it necessary to have an exact answer, and when is an estimate sufficient? When calculation is necessary, which tool is appropriate to use? This course examines how students develop and apply number sense and provides lots of teaching strategies and activities that you can use right away.

**Format:** Scheduled, facilitated

**Estimated Completion Time:** 2 hours per week (12 hours total)

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

**Prerequisite:** Foundations of Teaching Adult Numeracy

### Course Objectives

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

- Define number sense in your own words;
- Recognize the importance of number sense for your students;
- Analyze appropriate uses of various computation approaches (estimation, mental math, calculator, paper and pencil);
- Compare and contrast two models for developing conceptual understanding of benchmark fractions and their equivalents; and
- Design math activities that are permeated with estimation, mental math, and reasonableness strategies.

### Course Completion

To successfully complete this course, the instructor will assess your work based on whether and to what extent you have:

- Participated in asynchronous discussions: 30%
- Completed the required assignments: total of 60%
- Lesson 2 Review: What About Your Students (10%)
- Lesson 3 Review: Post to Estimation Mindset forum (10%)
- Lesson 4 Review: Post to Estimation Application forum (10%)
- Lesson 5 Review: Post to Mental Math forum (10%)
- Lesson 6 Review: Post to Benchmark Problems forum (10%)
- Lesson 7 Review: Post to Calculator forum (10%)
- Completed the course exam: 10%

If you score an 80% or above, you will successfully complete the course and earn a Certificate of Completion.

## COURSE SCHEDULE

### Week 1

#### Getting Started

- Required Software and Course Features
- Course Objectives
- Course Requirements
- Planning for Learning
- Forum: Course Goals
- Forum: Questions and Observations
- Lesson Summary

#### Number Sense

- Journal: Test Your Number Sense
- Number Sense Overview
- Forum: Your Number Sense
- Definitions of Number Sense
- Developing Number Sense
- Forum: Developing Number Sense
- Number Sense Applied
- Forum: Number Sense Applied
- Lesson 2 Review: What About Your Students
- Forum: Questions and Observations
- Lesson Summary

### Week 2

#### Estimation

- What is Estimation?
- Estimation and Calculation
- Wiki: When to Use Estimation
- Importance of Estimation
- Wiki: Importance of Estimation
- Reasons for Estimation
- Establishing an Estimation Mindset
- Lesson 3 Review: Estimation Mindset
- Forum: Questions and Observations
- Lesson Summary

### Week 3

#### Types of Estimation

- Computational Estimation
- Numerosity Estimation
- Forum: Numerosity Estimation Answer
- Measurement Estimation
- Measurement Scavenger Hunt
- Practicing Measurement Estimation
- Personal Measuring Benchmarks
- Lesson 4 Review: Estimation Application
- Forum: Questions and Observations
- Lesson Summary

### Week 4

#### Mental Math

- Computation vs. Mental Math
- Compatible Numbers
- Forum: Compatible Numbers
- Numerical Compensation
- Forum: Buying Books
- Forum: Numerical Compensation
- Forum: Decomposing Numbers
- Decomposing Numbers: Addition
- Decomposing Numbers: Multiplication
- Lesson 5 Review: Mental Math
- Forum: Questions and Observations
- Lesson Summary

## Week 5

### ***Fractions, Decimals, and Percents***

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| <ul style="list-style-type: none"> <li><input type="checkbox"/> Fractions, Decimals, and Percents in Everyday Life</li> <li><input type="checkbox"/> Forum: Fractions, Decimals, and Percents in Everyday Life</li> <li><input type="checkbox"/> Benchmarks</li> <li><input type="checkbox"/> Benchmarks Fraction Models</li> <li><input type="checkbox"/> Linear Model</li> <li><input type="checkbox"/> Area Model</li> <li><input type="checkbox"/> Diagram Model</li> <li><input type="checkbox"/> Establishing Benchmarks</li> <li><input type="checkbox"/> Establishing the Benchmark 1/2</li> <li><input type="checkbox"/> Building on the Benchmark 1/2</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Number Line and Benchmark 1/2</li> <li><input type="checkbox"/> Establishing the Benchmark 1/4</li> <li><input type="checkbox"/> Number Line and Benchmark 1/4</li> <li><input type="checkbox"/> Establishing the Benchmark 3/4</li> <li><input type="checkbox"/> Forum: Establishing 1/4 and 3/4 Benchmarks</li> <li><input type="checkbox"/> Benchmark Fractions</li> <li><input type="checkbox"/> Forum: Using Benchmark Fractions</li> <li><input type="checkbox"/> Forum: Establishing the Benchmark 1/10</li> <li><input type="checkbox"/> Benchmark Percents</li> <li><input type="checkbox"/> Lesson 6 Review: Benchmark Problems</li> <li><input type="checkbox"/> Forum: Questions and Observations</li> <li><input type="checkbox"/> Lesson Summary</li> </ul> |
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## Week 6

### ***Calculator Usage***

- When to Use a Calculator
- What Went Wrong?
- Lesson 7 Review: Calculator
- Forum: Questions and Observations
- Lesson Summary

### ***Course Summary***

- Course Summary
- Forum: Reflections
- Course Exam
- Evaluation
- Certificate

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

*This course was produced by World Education and ProLiteracy and written by Marilyn Moses, Brockton Adult Learning Center, Brockton, MA.*

## **Minimum Technical Requirements**

World Education’s online courses are offered via the Moodle learning management system (LMS) and WebEx Internet conferencing system. To participate in courses, you must have access to a reliable computer with an Internet connection. We recommend a high speed Internet connection. For courses that include Webinar sessions, you must have the ability to be on an Internet-connected computer and a telephone at the same time. We recommend a screen resolution 800×600 or higher. If you are using a mobile device, we recommend that you review these [FAQs from Moodle](#).

## **System Requirements**

Moodle requires that JavaScript, cookies, and Java be enabled in a recommended browser. (Note: Enabled pop-up blockers may interfere with accessing content.) Recommended browsers consist of any standards-supporting browser. Examples are:

- Mozilla Firefox 3 or later
- Safari 3 or later
- Google Chrome 4 or later
- Opera 9 or later
- Microsoft Internet Explorer 7 or later

## **Additional Plug-ins**

Some courses require additional plug-ins to access media and course resources, such as Flash and Adobe Acrobat. You should have the ability to download and install these plug-ins on your computer, or have access to a technical support staff person who can do this for you.