E-LEARNING
EdTechCenter@World Education

Geometry: Teaching About Shapes and Measures
Course Overview and Schedule

In this course, you will explore the van Hiele theory of geometric reasoning as well as key topics in geometry--area, perimeter, and volume--and their importance in everyday life. You will also look at instructional activities for teaching about angles, spatial relationships, symmetry, similarity, and figure transformations on a coordinate graph system. Through the readings and exercises in this course, you will learn about reasoning and problem-solving strategies that will enhance your teaching of mathematics and numeracy.

> **Format:** Scheduled, facilitated
> **Estimated Completion Time:** 2-3 hours per week (12 hours total)
> **Contact:** literacy@worlded.org

Course Objectives
By the end of course, you will be able to:
- Recognize how geometry is used in our everyday lives
- Understand the levels of geometric reasoning in the van Hiele theory
- Understand and facilitate hands-on activities for teaching about the characteristics of geometric shapes and various geometry concepts
- Demonstrate spatial relationships by using the elements of coordinate grids

Course Completion

To successfully complete this course, I will assess your work based on whether and to what extent you have done the following:
1. Participated in asynchronous discussions: 30%
2. Completed the required assignments: total of 40%
   - Lesson 1: Post to *Lesson 1 Review* discussion (10%)
   - Lesson 2: Post to *Lesson 2 Review* discussion (10%)
   - Lesson 3: Post to *Lesson 3 Review* discussion (10%)
   - Lesson 4: Post to *Lesson 4 Review* discussion (10%)
3. Completed the Final Lesson Plan: 30%

If you score an 80% or above, you will successfully completed the course and earn a certificate of completion from Professional Studies in Adult Education.

COURSE SCHEDULE

Getting Started

- ☐ Update computer software
- ☐ Become familiar with online tools
- ☐ Download course journal
- ☐ Review course objectives, schedule, and requirements
- ☐ Journal: Online learning plan
- ☐ Journal: Personal learning goal

Discussion Posts
- ☐ *Course Goals* (required)

LESSON 1

Geometry and Adult Learning

- ▪ Geometry and Measurement
- ▪ Van Hiele's Levels of Geometric Reasoning
- ▪ Geometry Activities
- ▪ Classroom Application

Readings
- ☐ "Jobs That Use Geometry"
- ☐ "Van Hiele's Levels of Geometric Reasoning"

Lesson Activities
- ☐ Journal: Jobs That Use Geometry
- ☐ Journal: Van Hiele's Levels of Geometric Reasoning and Your Students
- ☐ Journal: Geometry Activities—Try an activity yourself and reflect on your experience.
- ☐ Journal: Classroom Application—Write brief notes about how you might use one of the lesson activities in your classroom.

Discussion Posts
- ☐ *Geometry Activities*
- ☐ *Classroom Application* (required)

LESSON 2

Area, Perimeter, and Volume

- ▪ Measurement Concepts
- ▪ What Is Perimeter?
- ▪ What Is Area?
- ▪ Area vs. Perimeter
- ▪ Volume
- ▪ Classroom Application

Readings
- ☐ "A Footprint for Learning"

Lesson Activities
- ☐ Journal: Measurement Situations
- ☐ Journal: Area and Perimeter
- ☐ Journal: Area vs. Perimeter Activity
- ☐ Journal: Reflections on Popcorn Volume
- ☐ Journal: Classroom Application—Write brief notes about how you might use one of the lesson activities in your classroom.

Discussion Posts
- ☐ *Area vs. Perimeter*
- ☐ *Popcorn*
- ☐ *Classroom Application* (required)

LESSON 3

Angles and Triangles

- ▪ Triangles
- ▪ Angles
- ▪ Back to Triangles
- ▪ Properties of Triangles
- ▪ Pythagorean Theorem

LESSON 4

Spatial Understanding

- ▪ What Is Similarity?
- ▪ Similar Figures
- ▪ Coordinate Grid System
- ▪ Symmetry
- ▪ Classroom Application

- ▪ For Further Exploration
- ▪ Classroom Application

Readings/Videos
- ☐ "Pythagoras' Theorem"

Lesson Activities
- ☐ Journal: Reflections on "Strong Shape" Activity
- ☐ Journal: Reflections on "Add It Up" Activity
- ☐ Journal: Reflections on "Toothpick Triangles" Activity
- ☐ Journal: Reflections on Pythagorean Theorem Activity
- ☐ Journal: Classroom Application—Write brief notes about how you might use one of the lesson activities in your classroom.

Discussion Posts
- ☐ *Maps*
- ☐ *Toothpick Triangles*
- ☐ *Pythagorean Theorem*
- ☐ *Classroom Application* (required)

Readings/Videos
- ☐ "Larger than Life"
- ☐ "The Coordinate Plane"

Lesson Activities
- ☐ Journal: Reflections on "Larger Than Life" Activity
- ☐ Journal: Similar Figures Proportion Problem
- ☐ Journal: Coordinate Grid System Activities
- ☐ Journal: Classroom Application—Write brief notes about how you might use one of the lesson activities in your classroom.

Discussion Posts
- ☐ *Coordinate Grid System Activities*
- ☐ *Classroom Application* (required)

Course Summary

Integers, Variables, and Solving Equations

Activities
- ☐ Journal: Design an instructional plan, use one or more of the activities you've planned with your students, and reflect on your experience.
- ☐ Course Evaluation
- ☐ E-mail course facilitator when all course activities are complete and ready for evaluation.
- ☐ Print Certificate of Completion

Discussion Posts
- ☐ *Instructional Plan* (required)
  - ☐ *Reflections*

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

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.