

# Math(Grade 7-9)

## Math003-Geometry

Geometry aims to improve math proficiency and problem solving skills to prepare students for higher mathematics such as Algebra 2 and Precalculus. Topics include:

- Angles
- Triangle similarity and area
- Circles including Power of Point
- Quadrilaterals and Polygons
- Transformations and Coordinate geometry
- Basic trigonometry

### Contents

#### Section 0: Introduction

1. Intro: people intro, course run through, geometry preliminaries
  - a. Names and symbols
    - i. Points, lines, planes, circles, and triangles.

#### Section 1: Angles

2. Angle basics
  - a. Review
  - b. Supplementary and complementary angles
  - c. Vertical and straight angles
  - d. Parallel lines
  - e. Transversals
3. Angles in triangles
  - a. Basics
  - b. Exterior angles
  - c. Different triangles

#### Section 2: Triangles

4. Congruence
  - a. Conditions
  - b. Problem solving
5. Perimeter and Area
  - a. Basics
  - b. Base and altitude
6. Similarity
  - a. Conditions

- b. Problem solving
    - i. Involving area, side length, etc.
- 7. Right triangles and trigonometry
  - a. Right triangle basics
  - b. Pythagorean theorem review
  - c. Basic trigonometry
- 8. Triangle Properties
  - a. Special points
    - i. Incenter, Circumcenter, Orthocenter
  - b. Special lines
    - i. Altitude, Median, Angle bisector
  - c. Triangle Inequality
- 9. Triangle special formulas
  - a. Law of sines and law of cosines

### Section 3: Quadrilaterals and Polygons

- 10. Quadrilaterals
  - a. Basics
  - b. Problem solving using past knowledge
  - c. Special quadrilaterals - parallelograms, rectangles, rhombuses, squares
- 11. Polygons
  - a. Angles
    - i. Use of exterior angles
  - b. Similarity + congruence
  - c. Problem solving

### Section 4: Circles

- 12. Circle basics
  - a. Arcs, sectors
  - b. Circumferences
- 13. Area
  - a. Basics
  - b. Area problem solving
- 14. Angles
  - a. Inscribed angles
  - b. Secants and tangents
- 15. Power of Point
  - a. Basics

### Section 5: 3D geometry

- 16. 3D shapes
  - a. Cone, cylinder, pyramid, polyhedra

### Section 6: Transformations and Coordinate Geometry

17.Transformations

- a. Basic: reflection, dilation, translation

18.Coordinate Geometry

- a. Graphing
  - i. Lines and circles

**Syllabus:** <https://school.thinkland.ai/syllabus/>

**Curriculum:** <https://school.thinkland.ai/curriculum>

**Teachers:** <https://school.thinkland.ai/teacher>

**Email:** [contact@thinkland.ai](mailto:contact@thinkland.ai); **Wechat ID:** [thinklandai](#)

<https://school.thinkland.ai>