# New York State Geometry Standards
# "Geometry: Circling the Bases"

## Problem Solving

G.PS.1 Use a variety of problem solving strategies to understand new mathematical content

G.PS.2 Observe and explain patterns to formulate generalizations and conjectures

G.PS.3 Use multiple representations to represent and explain problem situations (e.g., spatial, geometric, verbal, numeric, algebraic, and graphical representations)

G.PS.4 Construct various types of reasoning, arguments, justifications and methods of proof for problems

G.PS.5 Choose an effective approach to solve a problem from a variety of strategies (numeric, graphic, algebraic)

G.PS.6 Use a variety of strategies to extend solution methods to other problems

G.PS.7 Work in collaboration with others to propose, critique, evaluate, and value alternative approaches to problem solving

G.PS.9 Interpret solutions within the given constraints of a problem

G.PS.10 Evaluate the relative efficiency of different representations and solution methods of a problem

## Reasoning and Proof

G.RP.1 Recognize that mathematical ideas can be supported by a variety of strategies

G.RP.2 Recognize and verify, where appropriate, geometric relationships of perpendicularity, parallelism, congruence, and similarity, using algebraic strategies

G.RP.3 Investigate and evaluate conjectures in mathematical terms, using mathematical strategies to reach a conclusion

G.RP.5 Present correct mathematical arguments in a variety of forms

G.RP.9 Apply inductive reasoning in making and supporting mathematical conjectures

## Communication

G.CM.1 Communicate verbally and in writing a correct, complete, coherent, and clear design (outline) and explanation for the steps used in solving a problem

G.CM.2 Use mathematical representations to communicate with appropriate accuracy, including numerical tables, formulas, functions, equations, charts, graphs, and diagrams

G.CM.3 Present organized mathematical ideas with the use of appropriate standard notations, including the use of symbols and other representations when sharing an idea in verbal and written form

G.CM.4 Explain relationships among different representations of a problem

G.CM.5 Communicate logical arguments clearly, showing why a result makes sense and why the reasoning is valid

G.CM.6 Support or reject arguments or questions raised by others about the correctness of mathematical work

G.CM.7 Read and listen for logical understanding of mathematical thinking shared by other students

G.CM.8 Reflect on strategies of others in relation to one's own strategy

G.CM.9 Formulate mathematical questions that elicit, extend, or challenge strategies, solutions, and/or conjectures of others

G.CM.10 Use correct mathematical language in developing mathematical questions that elicit, extend, or challenge other students' conjectures

G.CM.11 Understand and use appropriate language, representations, and terminology when describing objects, relationships, mathematical solutions, and geometric diagrams

G.CM.12 Draw conclusions about mathematical ideas through decoding, comprehension, and interpretation of mathematical visuals, symbols, and technical writing

## Connection

G.CN.1 Understand and make connections among multiple representations of the same mathematical idea

G.CN.2 Understand the corresponding procedures for similar problems or mathematical concepts

G.CN.3 Model situations mathematically, using representations to draw conclusions and formulate new situations

G.CN.4 Understand how concepts, procedures, and mathematical results in one area of mathematics can be used to solve problems in other areas of mathematics

G.CN.6 Recognize and apply mathematics to situations in the outside world

G.CN.7 Recognize and apply mathematical ideas to problem situations that develop outside of mathematics

## Representation

G.R.1 Use physical objects, diagrams, charts, tables, graphs, symbols, equations, or objects created using technology as representations of mathematical concepts

G.R.2 Recognize, compare, and use an array of representational forms

G.R.4 Select appropriate representations to solve problem situations

G.R.5 Investigate relationships between different representations and their impact on a given problem

G.R.6 Use mathematics to show and understand physical phenomena

G.R.7 Use mathematics to show and understand social phenomena

G.R.8 Use mathematics to show and understand mathematical phenomena

## Geometry

G.G.34 Determine either the longest side of a triangle given the three angle measures or the largest angle given the lengths of three sides of a triangle

G.G.36 Investigate, justify, and apply theorems about the sum of the measures of the interior and exterior angles of polygons

G.G.37 Investigate, justify, and apply theorems about each interior and exterior angle measure of regular polygons

G.G.38 Investigate, justify, and apply theorems about parallelograms involving their angles, sides, and diagonals

G.G.39 Investigate, justify, and apply theorems about special parallelograms (rectangles, rhombuses, squares) involving their angles, sides, and diagonals

G.G.41 Justify that some quadrilaterals are parallelograms, rhombuses, rectangles, squares, or trapezoids

G.G.48 Investigate, justify, and apply the Pythagorean theorem and its converse