![Pearson logo]

Geometry

Semester A Summary:

In this course, the student will explore the principles of logic as they learn concepts through a variety of instructional strategies and activities including peer model demonstration. The student will use formulas to solve problems and explore rigid transformations. Concepts such as proofs, axioms, postulates and theorems are presented as the student solves real-world applications. The student will also study parallel and perpendicular lines, including special angle pairs. Additionally, this course explores triangle concepts including the Pythagorean Theorem to find angle measurements, prove triangles congruent, and discover relationships within and between triangles.

Semester A Outline

1. **Course Overview**
    1. Geometry Course Overview
    2. Student Course Introduction Quick Check
2. **Geometry Basics**
    1. Geometry Basics Introduction
    2. Basic Geometric Terms
        - In this section, you will identify the definitions of angle, circle, and line segment.
    3. Basic Geometric Terms Quick Check
    4. Copying a Segment
        - In this section, you will identify the steps needed to construct a copy of a line segment using a compass and a straightedge.
    5. Copying a Segment Quick Check
    6. Bisecting a Segment
        - In this section, you will identify the steps needed to bisect a line segment using a compass and a straightedge.
    7. Bisecting a Segment Quick Check
    8. Copying an Angle
        - In this section, you will identify the steps needed to copy an angle using a compass and a straightedge.
    9. Copying an Angle Quick Check
    10. Bisecting an Angle
        - In this section, you will identify the steps needed to bisect an angle using a compass and a straightedge.
    11. Bisecting an Angle Quick Check
    12. Distance and The Pythagorean Theorem
        - In this section, you will use the Pythagorean Theorem to derive the distance formula.

13. Distance and The Pythagorean Theorem Quick Check
14. Finding the Midpoint of a Segment
    - In this section, you will calculate the midpoint of a line segment plotted on the coordinate plane.
15. Finding the Midpoint of a Segment Quick Check
16. Perimeter of Polygons
    - In this section, you will calculate the perimeter of a polygon plotted on the coordinate plane.
17. Perimeter of Polygons Quick Check
18. Area of Polygons
    - In this section, you will calculate the areas of triangles and rectangles plotted on the coordinate plane.
19. Area of Polygons Quick Check
20. Geometry Basics Apply
21. Geometry Basics Portfolio
22. Geometry Basics Online Practice
23. Geometry Basics Review
24. Geometry Basics Sample Work
25. Geometry Basics Unit Test

3. **Proofs**
    1. Proofs Introduction
    2. Axioms, Postulates, and Theorems
        - In this section, you will explain the structure of the axiomatic system found in geometry.
    3. Axioms, Postulates, and Theorems Quick Check
    4. Geometric Proofs
        - In this section, you will investigate patterns to make conjectures about geometric relationships.
    5. Geometric Proofs Quick Check
    6. Vertical Angles
        - In this section, you will prove the congruence of vertical angles.
    7. Vertical Angles Quick Check
    8. The Triangle Sum Theorem
        - In this section, you will prove that the measures of the interior angles of a triangle sum to 180°.
    9. The Triangle Sum Theorem Quick Check
    10. Proofs Apply
    11. Proofs Online Practice
    12. Proofs Review
    13. Proofs Sample Work
    14. Proofs Unit Test

4. **Parallel and Perpendicular Lines**
    1. Parallel and Perpendicular Lines Intro
    2. Parallel and Perpendicular Lines
        - In this section, you will identify the definitions of parallel lines and perpendicular lines.
    3. Parallel and Perpendicular Lines Quick Check
    4. Constructing Perpendicular Lines
        - In this section, you will identify the steps needed to construct perpendicular lines using a compass and a straightedge.

5. Constructing Perpendicular Lines Quick Check
6. Constructing Perpendicular Bisectors
    - In this section, you will identify the steps needed to construct the perpendicular bisector of a line segment using a compass and a straightedge.
7. Constructing Perpendicular Bisectors Quick Check
8. Constructing Parallel Lines
    - In this section, you will identify the steps needed to construct a line parallel to a given line through a point not on the line.
9. Constructing Parallel Lines Quick Check
10. Proving Congruent Angles
    - In this section, you will write proofs to prove the congruence of alternate interior angles and the congruence of corresponding angles.
11. Proving Congruent Angles Quick Check
12. Parallel Lines & Congruent Angles
    - In this section, you will use your understanding of the congruence of alternate interior angles and the congruence of corresponding angles to solve problems.
13. Parallel Lines & Congruent Angles Quick Check
14. Proving Supplementary Angles
    - In this section, you will write proofs to prove that alternate exterior angles are congruent and same-side interior angles are supplementary.
15. Proving Supplementary Angles Quick Check
16. Parallel Lines & Supplementary Angles
    - In this section, you will solve problems using your understanding of the congruence of alternate exterior angles and the fact that same-side interior angles are supplementary.
17. Parallel Lines & Supplementary Angles Quick Check
18. Slopes of Parallel Lines
    - In this section, you will write a proof to prove that parallel lines have equal slopes.
19. Slopes of Parallel Lines Quick Check
20. Using Slopes of Parallel Lines
    - In this section, you will use your understanding of the slopes of parallel lines to solve problems.
21. Using Slopes of Parallel Lines Quick Check
22. Slopes of Perpendicular Lines
    - In this section, you will write a proof to prove that perpendicular lines have negative reciprocal slopes.
23. Slopes of Perpendicular Lines Quick Check
24. Using Slopes of Perpendicular Lines
    - In this section, you will solve problems using your understanding of the slopes of perpendicular lines.
25. Using Slopes of Perpendicular Lines Quick Check
26. Perpendicular Bisectors
    - In this section, you will write a proof to prove that points on a perpendicular bisector are equidistant from the line segment's endpoints.
27. Perpendicular Bisectors Quick Check
28. Perpendicular Bisector Theorem

- In this section, you will solve problems using your understanding of the points on a perpendicular bisector and how they are equidistant from the segment's endpoints.
29. Perpendicular Bisector Theorem Quick Check
30. Partitioning a Line Segment
    - In this section, you will identify the point on a directed line segment between two given points that partitions the segment in a given ratio.
31. Partitioning a Line Segment Quick Check
32. Parallel and Perpendicular Lines Apply
33. Parallel and Perpendicular Lines Portfolio
34. Parallel and Perpendicular Lines Online Practice
35. Parallel & Perpendicular Lines Review
36. Parallel & Perpendicular Lines Sample Work
37. Parallel and Perpendicular Lines Test

5. **Rigid Transformations**
    1. Rigid Transformations Introduction
    2. Translations
        - In this section, you will define translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
    3. Translations Quick Check
    4. Reflections
        - In this section, you will define reflections in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
    5. Reflections Quick Check
    6. Rotations
        - In this section, you will define rotations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
    7. Rotations Quick Check
    8. Coordinate Plane Transformations
        - In this section, you will create and describe transformations in the coordinate plane.
    9. Coordinate Plane Transformations Quick Check
    10. Transformations and Symmetry
        - In this section, you will describe the rotations and reflections that will carry a figure onto itself.
    11. Transformations and Symmetry Quick Check
    12. Drawing Transformed Figures
        - In this section, you will draw a transformed geometric figure, given a pre-image and a description of the transformation(s) to be performed.
    13. Drawing Transformed Figures Quick Check
    14. Carrying a Figure onto Another
        - In this section, you will identify a sequence of transformations that will carry a figure onto another figure.
    15. Carrying a Figure onto Another Quick Check
    16. Rigid Motions
        - In this section, you will use descriptions of rigid motions to transform figures.
    17. Rigid Motions Quick Check
    18. Effects of Rigid Motions
        - In this section, you will predict the effect of a rigid motion on a given figure.
    19. Effects of Rigid Motions Quick Check

20. Rigid Motions and Congruence
    - In this section, you will use your understanding of the effects of rigid motions to decide if figures are congruent.
21. Rigid Motions and Congruence Quick Check
22. Rigid Transformations Apply
23. Rigid Transformations Online Practice
24. Rigid Transformations Review
25. Rigid Transformations Sample Work
26. Rigid Transformations Unit Test

6. **Congruence**
   1. Congruence Introduction
   2. Congruent Triangles
      - In this section, you will use your understanding of the effects of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides are congruent and corresponding pairs of angles are congruent.
   3. Congruent Triangles Quick Check
   4. Angle Side Angle Postulate
      - In this section, you will explain how the ASA criteria for triangle congruence follows from the definition of congruence in terms of rigid motions.
   5. Angle Side Angle Postulate Quick Check
   6. Side Angle Side Postulate
      - In this section, you will explain how the SAS criteria for triangle congruence follows from the definition of congruence in terms of rigid motions.
   7. Side Angle Side Postulate Quick Check
   8. Side Side Side Postulate
      - In this section, you will explain how the SSS criteria for triangle congruence follows from the definition of congruence in terms of rigid motions.
   9. Side Side Side Postulate Quick Check
   10. Hypotenuse Leg Postulate
       - In this section, you will explain how the HL criteria for triangle congruence follows from the definition of congruence in terms of rigid motions.
   11. Hypotenuse Leg Postulate Quick Check
   12. Angle Angle Side Postulate
       - In this section, you will explain how the AAS criteria for triangle congruence follows from the definition of congruence in terms of rigid motions.
   13. Angle Angle Side Postulate Quick Check
   14. Triangle Congruence
       - In this section, you will use congruence criteria for triangles to solve problems.
   15. Triangle Congruence Quick Check
   16. Proving Geometric Relationships
       - In this section, you will use congruence criteria for triangles to prove relationships in geometric figures.
   17. Proving Geometric Relationships Quick Check
   18. Proving Geometric Theorems
       - In this section, you will use coordinates to prove simple geometric theorems algebraically.
   19. Proving Geometric Theorems Quick Check
   20. Congruence Apply
   21. Congruence Review Online Practice

22. Congruence Review
23. Congruence Sample Work
24. Congruence Unit Test
7. **Triangle Relationships**
    1. Triangle Relationships Introduction
    2. The Isosceles Triangle Theorem
        - In this section, you will write a proof to prove that the base angles of an isosceles triangle are congruent.
    3. The Isosceles Triangle Theorem Quick Check
    4. The Triangle Midsegment Theorem
        - In this section, you will write a proof to prove that the segment joining the midpoints of two sides of a triangle is parallel to the third side and half the length.
    5. The Triangle Midsegment Theorem Quick Check
    6. Using the Triangle Midsegment Theorem
        - In this section, you will solve problems using your understanding of the relationship between the segment joining the midpoints of two sides of a triangle to the third side.
    7. Using the Triangle Midsegment Theorem Quick Check
    8. Medians of a Triangle
        - In this section, you will write a proof to prove that the medians of a triangle meet at a point.
    9. Medians of a Triangle Quick Check
    10. The Centroid of a Triangle
        - In this section, you will solve problems using your understanding of the medians of a triangle meeting at the centroid.
    11. The Centroid of a Triangle Quick Check
    12. Inequality in One Triangle
        - In this section, you will write proofs to prove the inequality in one triangle theorem and its converse.
    13. Inequality in One Triangle Quick Check
    14. Applying Inequalities in One Triangle
        - In this section, you will use the inequality in one triangle theorem and its converse to solve problems.
    15. Applying Inequalities in One Triangle Quick Check
    16. Inequality in Triangles
        - In this section, you will write proofs to prove the triangle inequality theorem and its converse.
    17. Inequality in Triangles Quick Check
    18. Using the Triangle Inequality Theorem
        - In this section, you will use the triangle inequality theorem and its converse to solve problems.
    19. Using the Triangle Inequality Theorem Quick Check
    20. The Hinge Theorem
        - In this section, you will write proofs to prove the hinge theorem and its converse.
    21. The Hinge Theorem Quick Check
    22. Applications of the Hinge Theorem
        - In this section, you will use the hinge theorem and its converse to solve problems.

23.Applications of the Hinge Theorem Quick Check
24.Triangle Relationships Apply
25.Triangle Relationships Online Practice
26.Triangle Relationships Review
27.Triangle Relationships Sample Work
28.Triangle Relationships Unit Test

8. **Semester Exam**
    1. Geometry A Semester Review Online Practice
    2. Geometry A Semester Exam Review
    3. Geometry A Semester Exam

Semester B Summary:

In this course, the student will expand their knowledge of geometric relationships as they explore quadrilaterals, triangles, and circles. The student will learn about congruency in parallelograms and create quadrilateral proofs. Similarity in triangles is explored as the student applies the Angle Angle Similarity Postulate and the Triangle Proportionality Theorem. The student will also learn about trigonometric ratios in triangles and apply them in real world applications. Concepts that are unique to circular figures such as radii, tangents, and circumference are explained and applied. The student will learn how to derive the equation of a circle given the center and the radius, and how to use these figures to graph the circle on the coordinate plane. Additionally, this course presents strategies to find the volume of three-dimensional objects including cylinders, spheres, pyramids, and cones.

Semester B Outline

1. **Course Overview**
    1. Geometry Course Overview
    2. Student Course Introduction Quick Check
2. **Quadrilaterals**
    1. Quadrilaterals Introduction
    2. Angles of Polygons
        - In this section, you will calculate the measures of interior angles of polygons and explain the method used to solve.
    3. Angles of Polygons Quick Check
    4. Congruency in Parallelograms
        - In this section, you will write a proof to prove that the opposite sides and opposite angles of a parallelogram are congruent.
    5. Congruency in Parallelograms Quick Check
    6. Angles and Sides of a Parallelogram
        - In this section, you will solve problems using your understanding of opposite sides and opposite angles of a parallelogram being congruent.
    7. Angles and Sides of a Parallelogram Quick Check
    8. Diagonals of a Parallelogram
        - In this section, you will write a proof to prove that the diagonals of a parallelogram bisect each other.
    9. Diagonals of a Parallelogram Quick Check
    10.Using Diagonals of a Parallelogram
        - In this section, you will solve problems using your understanding of diagonals of a parallelogram bisecting each other.

11. Using Diagonals of a Parallelogram Quick Check
12. Diagonals of a Rectangle
    - In this section, you will write a proof to prove that rectangles are parallelograms with congruent diagonals.
13. Diagonals of a Rectangle Quick Check
14. Using the Diagonals of a Rectangle
    - In this section, you will solve problems using your understanding of rectangles having congruent diagonals.
15. Using the Diagonals of a Rectangle Quick Check
16. Quadrilateral Proofs
    - In this section, you will use opposite sides, opposite angles, or diagonals to prove that a quadrilateral is a parallelogram, rectangle, square, or rhombus.
17. Quadrilateral Proofs Quick Check
18. Relationships within Quadrilaterals
    - In this section, you will solve problems using your understanding of the opposite sides, opposite angles, and diagonals of quadrilaterals.
19. Relationships within Quadrilaterals Quick Check
20. Quadrilaterals Apply
21. Quadrilaterals Review Online Practice
22. Quadrilaterals Review
23. Quadrilaterals Sample Work
24. Quadrilaterals Unit Test

3. **Similarity**
   1. Similarity Introduction
   2. Types of Transformations
       - In this section, you will compare transformations that preserve distance and angle measure to those that do not.
   3. Types of Transformations Quick Check
   4. Dilating a Line Part 1
       - In this section, you will describe a dilation of a line not passing through the center of the dilation as one that takes the line to a parallel line.
   5. Dilating a Line Part 1 Quick Check
   6. Dilating a Line Part 2
       - In this section, you will describe a dilation of a line passing through the center of the dilation as one that leaves the line unchanged.
   7. Dilating a Line Part 2 Quick Check
   8. Dilation by a Scale Factor
       - In this section, you will describe the length of a line segment that is dilated by a given scale factor.
   9. Dilation by a Scale Factor Quick Check
   10. Similarity in Triangles
       - In this section, you will use similarity transformations to explain the meaning of similarity for triangles.
   11. Similarity in Triangles Quick Check
   12. AA Similarity Postulate
       - In this section, you will use the properties of similarity transformations to establish the AA criterion for two triangles to be similar.
   13. AA Similarity Postulate Quick Check
   14. SAS and Side SSS Similarity Theorems

- In this section, you will apply and prove the SAS similarity criterion for triangles.
15. SAS and Side SSS Similarity Theorems Quick Check
16. Problem Solving with Similar Triangles
    - In this section, you will solve problems using similarity criteria for triangles.
17. Problem Solving with Similar Triangles Quick Check
18. Proving Relationships with Similarity
    - In this section, you will use similarity criteria for triangles to prove relationships in geometric figures.
19. Proving Relationships with Similarity Quick Check
20. The Triangle Proportionality Theorem
    - In this section, you will write a proof to prove that a line parallel to one side of a triangle divides the other two sides proportionally.
21. The Triangle Proportionality Theorem Quick Check
22. Using Triangle Proportionality
    - In this section, you will solve problems by applying the theorem that states that a line that is parallel to one side of a triangle divides the other two sides proportionally.
23. Using Triangle Proportionality Quick Check
24. Transformations and Similarity
    - In this section, you will use the definition of similarity in terms of similarity transformations to decide if two figures are similar.
25. Transformations and Similarity Quick Check
26. Similarity Apply
27. Similarity Review Online Practice
28. Similarity Review
29. Similarity Sample Work
30. Similarity Unit Test

4. **Trigonometry**
    1. Trigonometry Introduction
    2. The Pythagorean Theorem
        - In this section, you will use triangle similarity to prove the Pythagorean Theorem.
    3. The Pythagorean Theorem Quick Check
    4. Applying the Pythagorean Theorem
        - In this section, you will use the Pythagorean Theorem to solve right triangles in applied problems.
    5. Applying the Pythagorean Theorem Quick Check
    6. Special Right Triangles
        - In this section, you will find the trigonometric ratios for special right triangles.
    7. Special Right Triangles Quick Check
    8. Trigonometric Ratios in Triangles
        - In this section, you will use similarity to understand the meaning of trigonometric ratios of acute angles in right triangles.
    9. Trigonometric Ratios in Triangles Quick Check
    10. Problem Solving with Angle Complements
        - In this section, you will explain the relationship between the sine and cosine of complementary angles.
    11. Problem Solving with Angle Complements Quick Check

12. Sine and Cosine of Complementary Angles
    - In this section, you will solve problems using your understanding of the relationship between the sine and cosine of complementary angles.
13. Sine & Cosine of Complementary Angles Quick Check
14. Problem Solving with Trigonometry
    - In this section, you will use trigonometric ratios to solve right triangles in applied problems.
15. Problem Solving with Trigonometry Quick Check
16. Real World Applications
    - In this section, you will use triangle properties, similarity, special right triangles, and trigonometric ratios to solve multi-step real-world problems.
17. Real World Applications Quick Check
18. Trigonometry Apply
19. Trigonometry Portfolio
20. Trigonometry Online Practice
21. Trigonometry Review
22. Trigonometry Sample Work
23. Trigonometry Unit Test

5. **Circles**
    1. Circles Introduction
    2. Similar Circles
        - In this section, you will write a proof to prove that all circles are similar.
    3. Similar Circles Quick Check
    4. Parts of Circles
        - In this section, you will identify inscribed angles, radii, and chords.
    5. Parts of Circles Quick Check
    6. Properties of Inscribed Angles
        - In this section, you will identify an inscribed angle on a diameter as a right angle.
    7. Properties of Inscribed Angles Quick Check
    8. Properties of Radii
        - In this section, you will identify and describe radii as perpendicular to tangent lines where the radii intersect the circle.
    9. Properties of Radii Quick Check
    10. Circles and Angles
        - In this section, you will identify and describe the relationships among central, inscribed, and circumscribed angles.
    11. Circles and Angles Quick Check
    12. Inscribed and Circumscribed Circles
        - In this section, you will identify the steps needed to construct the inscribed circle of a triangle and the circumscribed circle of a triangle.
    13. Inscribed and Circumscribed Circles Quick Check
    14. Constructing Inscribed Polygons
        - In this section, you will describe the steps needed to construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
    15. Constructing Inscribed Polygons Quick Check
    16. Properties of Inscribed Quadrilaterals
        - In this section, you will write a proof to prove the properties of angles for a quadrilateral inscribed in a circle.
    17. Properties of Inscribed Quadrilaterals Quick Check

18. Graphing Circles
    - In this section, you will write the equation of a circle when given the center and radius of the circle.
19. Graphing Circles Quick Check
20. Deriving the Equation of a Circle
    - In this section, you will use the Pythagorean Theorem to derive the equation of a circle with a given center and radius.
21. Deriving the Equation of a Circle Quick Check
22. Center and Radius of a Circle
    - In this section, you will use the process of completing the square to find the center and radius of a circle given by an equation.
23. Center and Radius of a Circle Quick Check
24. Circles Apply
25. Circles Portfolio
26. Circles Online Practice
27. Circles Review
28. Circles Sample Work
29. Circles Unit Test

6. **Circumference and Area**
   1. Circumference and Area Introduction
   2. Circumference of a Circle
      - In this section, you will develop an informal argument for the derivation of the formula for the circumference of a circle.
   3. Circumference of a Circle Quick Check
   4. Arc Length
      - In this section, you will use similarity to show that the length of the arc intercepted by an angle is proportional to the radius.
   5. Arc Length Quick Check
   6. Angles in Radians
      - In this section, you will describe the radian measure of an angle as the constant of proportionality.
   7. Angles in Radians Quick Check
   8. Area of a Circle
      - In this section, you will develop an informal argument for the derivation of the formula for the area of a circle.
   9. Area of a Circle Quick Check
   10. Area of a Sector
       - In this section, you will develop the formula for the area of a sector.
   11. Area of a Sector Quick Check
   12. Circumference and Area Apply
   13. Circumference and Area Review Online Practice
   14. Circumference and Area Review
   15. Circumference and Area Sample Work
   16. Circumference and Area Unit Test

7. **Volume**
   1. Volume Introduction
   2. Describing Three-Dimensional Objects
      - In this section, you will use geometric shapes, their measures, and their properties to describe objects.
   3. Describing Three-Dimensional Objects Quick Check

4. Cross Sections of Solids
   - In this section, you will identify the shapes of two-dimensional cross-sections of three-dimensional objects.
5. Cross Sections of Solids Quick Check
6. Rotating Two-Dimensional Objects
   - In this section, you will identify three-dimensional objects that are generated by rotations of two-dimensional objects.
7. Rotating Two-Dimensional Objects Quick Check
8. Formula for the Volume of a Cylinder
   - In this section, you will develop an informal argument for the derivation of the formula for the volume of a cylinder.
9. Formula for the Volume of a Cylinder Quick Check
10. Volume of a Cylinder
    - In this section, you will use the volume formula for a cylinder to solve problems.
11. Volume of a Cylinder Quick Check
12. Formula for the Volume of a Pyramid
    - In this section, you will develop an informal argument for the derivation of the formula for the volume of a pyramid.
13. Formula for the Volume of a Pyramid Quick Check
14. Volume of a Pyramid
    - In this section, you will use the volume formula for a pyramid to solve problems.
15. Volume of a Pyramid Quick Check
16. Formula for the Volume of a Cone
    - In this section, you will develop an informal argument for the derivation of the formula for the volume of a cone.
17. Formula for the Volume of a Cone Quick Check
18. Volume of a Cone
    - In this section, you will use the volume formula for a cone to solve problems.
19. Volume of a Cone Quick Check
20. Volume of a Sphere
    - In this section, you will use the volume formula for a sphere to solve problems.
21. Volume of a Sphere Quick Check
22. Density of Objects
23. Density of Objects Quick Check
24. Real World Design Problems
    - In this section, you will apply geometric methods to solve design problems.
25. Real World Design Problems Quick Check
26. Volume Apply
27. Volume Review Online Practice
28. Volume Review
29. Volume Sample Work
30. Volume Unit Test

8. **Semester Exam**
   1. Geometry B Semester Review Online Practice
   2. Geometry B Semester Exam Review
   3. Geometry B Semester Exam