**Geometry in Construction UNIT 6 Lesson Plans**

**Day 118**

1) Classwork: Hang Drywall on Walls

2) Classwork: Quality Control on Drywall

3) Classwork: Tape and First Coat of Drywall Compound

4) Classwork: Second Coat of Drywall Compound

5) Classwork: Sand to Blend Drywall Compound

6) Classwork: PVA Drywall Primer

**Day 119**

1)Lesson: Prove that all circles are similar

*Objective:* Students will be able to prove that all circles are similar

2) Activity: Students will compare multiple circles, take measurements, define similarity, and prove that they are similar.

3)Lesson: Measurements in Circle

*Objectives:* Students will find the measures of angles in a circle, measures of their arcs, circumference, and their arc length.

4)Activity: Students will find the length of a curve using a circle rotating around the line; students will use angles of circle and arc length to determine the actual measurement.

Vocabulary: Students will review key terms associated with lesson: Minor Arc, Major Arc, Semicirle

6) Classwork: Circles W.S.

[CCSS.MATH.CONTENT.HSG.C.A.1](http://www.corestandards.org/Math/Content/HSG/C/A/1/)

Prove that all circles are similar.

[CCSS.MATH.CONTENT.HSG.C.A.2](http://www.corestandards.org/Math/Content/HSG/C/A/2/)

Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

[*CCSS.MATH.CONTENT.HSG.C.B.5*](http://www.corestandards.org/Math/Content/HSG/C/B/5/)

*Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.*

**Day 120**

1) Classwork: Hang Drywall on Walls

2) Classwork: Quality Control on Drywall

3) Classwork: Tape and First Coat of Drywall Compound

4) Classwork: Second Coat of Drywall Compound

5) Classwork: Sand to Blend Drywall Compound

6) Classwork: PVA Drywall Primer

**Day 121**

1) Activity: Students will design a circle and find the linear footage of various situations.

2) Lesson: Inscribed and Circumscribed Angles

*Objectives:* Students will explore the properties of inscribed and circumscribed angles

3) Activity: Students will use technology to define the relationships that exist between the angles and the arc length

4)Classwork: Inscribed & Circumscribed Angles W.S.

[CCSS.MATH.CONTENT.HSG.C.A.2](http://www.corestandards.org/Math/Content/HSG/C/A/2/)

Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

[*CCSS.MATH.CONTENT.HSG.C.A.3*](http://www.corestandards.org/Math/Content/HSG/C/A/3/)

Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.

**Day 122**

1) Classwork: Tape and First Coat of Drywall Compound

2) Classwork: Second Coat of Drywall Compound

3) Classwork: Sand to Blend Drywall Compound

4) Classwork: PVA Drywall Primer

**Day 123**

1)Lesson: Area of Circles & Sectors

*Objective:* Students will calculate the area of a sector of a circle

2) Activity: Students will split up a circle into sections and determine the area of a sector; students will calculate the cost based on its area

3) Classwork: Students will solve various application problems with area of a sector.

[CCSS.MATH.CONTENT.HSG.C.B.5](http://www.corestandards.org/Math/Content/HSG/C/B/5/)

Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

**Day 124**

1) Classwork: Second Coat of Drywall Compound

2) Classwork: Sand to Blend Drywall Compound

3) Classwork: PVA Drywall Primer

4) Classwork: Paint Siding

**Day 125**

1) Lesson: Area of Circles & Sectors

2) Activity: Students will work together to solve problems involving area of a sector and segment of a circle. Students will solve application problems with area.

3) Classwork: Area W.S.

[CCSS.MATH.CONTENT.HSG.C.B.5](http://www.corestandards.org/Math/Content/HSG/C/B/5/)

Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.

**Day 126**

1) Classwork: Second Coat of Drywall Compound

2) Classwork: Sand to Blend Drywall Compound

3) Classwork: PVA Drywall Primer

4) Classwork: Paint Siding

5) Classwork: Prime inside Walls

**Day 127**

1) Assessment: Students will review & be assessed on previous learning targets

2) Lesson: Chords of a Circle

*Objective:* Students will solve problems involving chords and arcs of a circle

3) Activity: Students will explore the properties of a chord and arcs through activities and technology

4) Classwork: Chords of a Circle W.S.

[CCSS.MATH.CONTENT.HSG.C.A.2](http://www.corestandards.org/Math/Content/HSG/C/A/2/)

Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

**Day 128**

1) Classwork: Sand to Blend Drywall Compound

2) Classwork: Third Coat of Drywall Compound where Needed

3) Classwork: PVA Drywall Primer

4) Classwork: Prime Interior Walls

5) Classwork: Paint Siding

6) Classwork: Paint Trim

**Day 129**

1) Lesson: Lines intersecting a circle

*Objective:* Students will solve problems involving lines intersecting a circle and their relationships of the arcs, angles, and segment

2) Activity: Students will do an exploration activity with the arcs and angles of line segments intersecting a circle

3) Classwork: Lines intersecting a circle W.S.

[CCSS.MATH.CONTENT.HSG.C.A.2](http://www.corestandards.org/Math/Content/HSG/C/A/2/)

Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

**Day 130**

1) Classwork: Sand to Blend Drywall Compound

2) Classwork: Third Coat of Drywall Compound where Needed

3) Classwork: PVA Drywall Primer

4) Classwork: Prime Interior Walls

5) Classwork: Paint Siding

6) Classwork: Paint Trim

**Day 131**

1) Lesson: Tangent Lines to Circles

*Objective:* Students will explore the relationship between tangent lines, chords, radii, and angle measurements

2) Activity: Students will use technology to discover the relationship between tangent lines, chords, radii, and angle measurements

3) Activity: Students will solve application problems involving properties of lines, chords, angles, and arcs.

4) Classwork: Tangent Lines W.S.

[CCSS.MATH.CONTENT.HSG.C.A.2](http://www.corestandards.org/Math/Content/HSG/C/A/2/)

Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

**Day 132**

1) Classwork: First Coat of Paint

2) Classwork: Second Coat of Paint

3) Classwork: Paint Trim

4) Classwork: Install Interior Doors

**Day 133**

1) Assessment: Formative Quiz on Properties of chords, line segments intersecting circles, and their relationships with the angle measures.

2) Lesson: Constructions inscribed in a circle

*Objective:* The students will use properties of arc length, inscribed angles, and chords to create shapes inscribed in a circle

3) Activity: Students will create various shapes inscribed in a circle on paper; students will eventually plot out design on large scale

4) Classwork: Constructions W.S.

[CCSS.MATH.CONTENT.HSG.CO.D.13](http://www.corestandards.org/Math/Content/HSG/CO/D/13/)

Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

**Day 134**

1) Classwork: Second Coat of Paint

2) Classwork: Paint Trim

3) Classwork: Install Interior Doors

4) Classwork: Install Door Trim

5) Classwork: Install Baseboard Trim

**Day 135**

1) Activity: Inscribed shapes large scale activity continued

2) Lesson: Inscribed & Circumscribed Circles of a Triangle

*Objective:* Students will construct inscribed and circumscribed circles of a triangle

3) Activity: Students will utilized Google Maps and tools to create inscribed and circumscribed circles in a triangle; students will discuss the significance of these terms

4) Classwork: Inscribed & Circumscribed Practice

[CCSS.MATH.CONTENT.HSG.CO.D.13](http://www.corestandards.org/Math/Content/HSG/CO/D/13/)

Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.

[*CCSS.MATH.CONTENT.HSG.C.A.3*](http://www.corestandards.org/Math/Content/HSG/C/A/3/)

Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.

**Day 136**

1) Classwork: Install Interior Doors

2) Classwork: Install Door Trim

3) Classwork: Install Baseboard Trim

4) Classwork: Prep for Paint

5) Classwork: Paint Interior Trim and Doors

6) Classwork: Electrical - Install Outlets

7) Classwork: Electrical - Install Lights

8) Classwork: Electrical - Install Switches

9) Classwork: Electrical - Install Smoke Detectors

10) Classwork: Electrical - Perform Operational Test

**Day 137**

1) Lesson: Equations of Circles in the Coordinate Plane

*Objective:* Students will write an equation of a circle and graph it on the coordinate plane. Students will define a locus of points.

2) Activity: Map out circular plot using the equation of a circle.

2) Classwork: Equations of Circles Packet

3) Lesson: General Form of a Circle

*Objective:* The students will identify and graph the equation of a circle on the coordinate plane.

4) Classwork: General Form of a Circle W.S.

[CCSS.MATH.CONTENT.HSG.GPE.A.1](http://www.corestandards.org/Math/Content/HSG/GPE/A/1/)

Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.

[CCSS.MATH.CONTENT.HSG.GPE.B.4](http://www.corestandards.org/Math/Content/HSG/GPE/B/4/)

Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*

**Day 138**

1) Classwork: Install Interior Doors

2) Classwork: Install Door Trim

3) Classwork: Install Baseboard Trim

4) Classwork: Prep for Paint

5) Classwork: Paint Interior Trim and Doors

6) Classwork: Electrical - Install Outlets

7) Classwork: Electrical - Install Lights

8) Classwork: Electrical - Install Switches

9) Classwork: Electrical - Install Smoke Detectors

10) Classwork: Electrical - Perform Operational Test

**Day 139**

1) Lesson: Finding points on a circle

*Objective: Students will determine if a point lies on a circle using equations for circles and trigonometry.*

2) Activity: Students will analyze a map of an area to determine if particular points reside within or on a circle.

3) Homework: Equations of Circles Packet

[CCSS.MATH.CONTENT.HSG.GPE.B.4](http://www.corestandards.org/Math/Content/HSG/GPE/B/4/)

Use coordinates to prove simple geometric theorems algebraically. *For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, √3) lies on the circle centered at the origin and containing the point (0, 2).*

**Day 140**

1) Classwork: Install Interior Doors

2) Classwork: Install Door Trim

3) Classwork: Install Baseboard Trim

4) Classwork: Prep for Paint

5) Classwork: Paint Interior Trim and Doors

6) Classwork: Electrical - Install Outlets

7) Classwork: Electrical - Install Lights

8) Classwork: Electrical - Install Switches

9) Classwork: Electrical - Install Smoke Detectors

10) Classwork: Electrical - Perform Operational Test

**Day 141**

1) Circles Formative Assessment

2) Activity: Paper folding activity to generate a parabola and discuss the definition based on results of the foldings

3) Lesson: Parabolas Definition

*Objective*: Students will identify a parabola and understand the definition as locus of points equidistant from a line and a focal point.

3) Lesson: General Form of a Parabola

*Objective:* Students will be able to write and graph the equation of a parabola from a vertex, directrix, and focus.

4) Classwork: Parabola W.S.

[CCSS.MATH.CONTENT.HSG.GPE.A.2](http://www.corestandards.org/Math/Content/HSG/GPE/A/2/)

Derive the equation of a parabola given a focus and directrix.

**Day 142**

1) Classwork: Prep for Paint

2) Classwork: Paint Interior Trim and Doors

3) Classwork: Electrical - Install Outlets

4) Classwork: Electrical - Install Lights

5) Classwork: Electrical - Install Switches

6) Classwork: Electrical - Install Smoke Detectors

7) Classwork: Electrical - Perform Operational Test

**Day 143**

1) Lesson: Forms of a Parabola

*Objective:* Students will be able to take the equation of a parabola in standard form and graph it. Students will also be able to use given information (directrix, focus, vertex) to write and graph a parabola

2) Activity: Chalk drawing activity to map out a parabola based on a description

3) Lesson: Transformations of a Parabola

*Objective:* Students will explore how changes in the equation of a parabola and circle affect the equation and vice versa.

4) Activity: Graphs of Circles and Parabolas exploration using technology

5) Classwork: Parabolas W.S.

[CCSS.MATH.CONTENT.HSG.GPE.A.2](http://www.corestandards.org/Math/Content/HSG/GPE/A/2/)

Derive the equation of a parabola given a focus and directrix.

**Day 144**

1) Classwork: Prep for Paint

2) Classwork: Paint Interior Trim and Doors

3) Classwork: Electrical - Install Outlets

4) Classwork: Electrical - Install Lights

5) Classwork: Electrical - Install Switches

6) Classwork: Electrical - Install Smoke Detectors

7) Classwork: Electrical - Perform Operational Test

8) Classwork: Install Cabinets

9) Classwork: Install Countertops & Backsplashes

**Day 145**

1) Review: Students will review Unit 6 Concepts & Enrichment Opportunities

**Day 146**

1) Classwork: Install Cabinets

2) Classwork: Install Countertops & Backsplashes

**Day 147**

1) Review: Students will review Unit 6 Concepts & Enrichment Opportunities

**Day 148**

1) Classwork: Install Cabinets

2) Classwork: Install Countertops & Backsplashes

3) Classwork: Install Door Knobs & Miscellaneous Hardware

4) Classwork: Touch Up Paint

5) Classwork: Final Cleaning

**Day 149**

1)Assessment: Students will be assessed on Unit 6 Learning Targets