

06 Geometry

Content Area: **Mathematics**
Course(s):
Time Period: **Week1**
Length: **1 Week**
Status: **Published**

Stage 1: Desired Results

Unit Overview/ Rationale

Standards & Indicators

Common Core: Mathematics, Common Core: Grade 8, Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

MA.7.7.G.A	Draw, construct, and describe geometrical figures and describe the relationships between them.
MA.7.7.G.A.2	Draw (with technology, with ruler and protractor, as well as freehand) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
MA.7.7.G.B.4	Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
MA.7.7.G.B.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a

MA.7.7.G.B.6

figure.

Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

Big Ideas - Students will understand that...

-Area of polygons and circles can be used to solve real world problems.

-Area of basic polygons can be used to find area of irregular regions.

-Drawing geometric figures freehand, by using tools such as rulers and protractors, and by using software can be used to model real world situations.

Essential Questions - What provocative questions will foster inquiry and transfer of learning

-What are the types of angles and their relationships?

-What is the difference between sketching a geometric figure, drawing a geometric figure, and constructing a geometric figure?

-How do we find area of polygons?

-How do we find area and circumference of circles?

Content - Students will know...

Key vocabulary:

Acute angle, angle, adjacent angles, base of parallelogram, base of triangle, bases of trapezoid, circumference, complementary, congruent angles, diameter, height of a parallelogram, height of a trapezoid, height of a triangle, obtuse angle, pi, radius, right angle, straight angle, supplementary, vertical angles

Skills - Students will be able to...

-Classify angles and find unknown angle measures.

-Draw geometric shapes and analyze the angles and sides of triangles.

-Find the areas of parallelograms, triangles, trapezoids, and figures composed of these shapes.

-Find the circumference and area of circles.

Stage 2: Assessment Evidence

Assessment

Stage 3: Learning Plan

Learning Activities

Activities:

Students will write and solve equations to find unknown angle measures.

Formative Assessment:

Teacher observation of student work in small-group and independent practice.

Closure:

Students will be asked to write an equation relating the measures of two angles and find the measures. Students will be asked to find missing angle measures.

Example:

Given a right angle broken into two smaller angles, $3x - 10$

◦ and $2x$ ◦, find the measures of the two angles.

Sample Solution:

$$3x$$

$$-10 + 2x = 90$$

$$5x$$

$$-10 = 90$$

$$5x = 100$$

$$x = 20$$

$$2x \ 3x - 10$$

$$2(10) \ 3(20)$$

$$-10$$

$$20$$

$$\circ \ 70 \circ$$

Activities:

Students will find the area of a parallelogram and to relate perimeter and area.

Formative Assessment:

Teacher observation of student work in small-group and independent practice.

Closure:

Students will be asked to find the area of a given parallelogram.

Example:

Find the area of a parallelogram with a base of 14 in and a height of 8 in.

Sample Solution: $A = bh$

$$A = 14(8)$$

$$A = 112 \text{ sq in}$$

Activities:

Students will find the area of a triangle and to relate side lengths and area. Students will construct or draw triangles with given criteria.

Formative Assessment:

Teacher observation of student work in small-group and independent practice.

Closure:

Students will be asked to find the area of a given triangle. Students will be asked to construct a triangle with certain requirements.

Example:

Find the area of a triangle with a base of 12 in and a height of 9 in. Construct a triangle that meets those requirements.

Sample Solution:

$$A = bh/2$$

$$A = 12(9)/2$$

$$A = 54 \text{ sq in}$$

Activities:

Students will find the area of a trapezoid and other irregular figures.

Formative Assessment: Teacher observation of student work in small-group and independent practice.

Closure:

Students will be asked to use familiar figures to find the area of a given figure.

Example:

Find the area of an irregular figure.

Sample Solution:

Break the space into familiar shapes, including triangles, parallelograms, trapezoids. Find each individual area and then calculate the sum.

Activities:

Students will find the circumference and area of a circle.

Formative Assessment:

Teacher observation of student work in small-group and independent practice.

Closure:

Students will be asked to find the circumference and area of a given circle.

Example:

Find the circumference and area of a circle with a diameter of 8 cm.

Sample Solution:

A =

πr^2

A =

$\pi(4)^2$

A = 3.14(16)

A = 50.24 sq cm

C =

πd

$C =$

$\pi(8)$

$C = 25.12 \text{ cm}$

Resources

Prentice Hall

Course 2

Mathematics Common Core

C2013

Unit 6