

Unit Title: Areas of circles and polygons

Grade Level: 9-10

Subject Area: Math

Duration/Length/Number of class periods: 13

Description: In this unit students will find the areas of circles and polygons.

Established Goals (National, State, Local):

MN State Standards:

9.3.1.2 compose and decompose two and three dimensional figures: use decomposition to determine the perimeter, area, surface area, and volume of various figures.

9.3.1.3 understand that quantities associated with physical measurements must be assigned units; apply such units correctly in expressions, equations and problem solutions that involve measurements; and convert between measurement systems.

9.3.1.4 Understand and apply the fact that the effect of a scale factor k on length, area and volume is to multiply each by k , k^2 , and k^3 , respectively

9.3.3.7 Use properties of polygons-including quadrilaterals and regular polygons- to define them, classify them, solve problems and logically justify results.

9.3.3.8 Know and apply properties of a circle to solve problems and logically justify results.

9.3.4.2 Apply the trigonometric ratios sine, cosine, and tangent to solve problems, such as determining lengths and areas in right triangles and in figures that can be decomposed into right triangles. Know how to use calculators, tables or other technology to evaluate trigonometric ratios.

What Enduring Understandings are desired?

Knowing how to find areas of polygons and circles and estimate areas of shapes allows us to further understand the world around us.

What Essential Questions will be considered?

How do I find the area of a polygon or find the circumference and area of a circle?

How do perimeters and areas of polygons compare?

Students will know / be able to:

- Use special right triangles to find the area of a regular polygon
- Find the arc length and measure
- Find the area of a triangle given SAS
- Find areas of regular polygons using trigonometry
- Find areas of triangles using trigonometry
- Find the perimeters of similar polygons
- Find the area of similar figures
- Find the area of irregular figures
- Find the area of a regular polygon
- Find the area of: Rectangles, Triangles, Parallelograms, Trapezoids, Kites, Rhombuses, Circles, and Sectors

Description <i>Units must include at least one of each formative, summative, introductory activity and learning activity. Check the appropriate box; one per row.</i>	Fo m a t i v e	Su m m a t i v e	Intr o d u c t o r y A c t i v i t y	Lea r n i n g A c t i v i t y	Stu d e n t T e c h n o l o g y U s e d	Tea c h e r T e c h n o l o g y U s e d	I S T E S t a n d a r d s
(Day 1) Intro to Areas Video and exploration of areas of states using daftlogic			x		x		1,6,7
(Day 2) 10-1(Areas of Parallelograms and Triangles)				x	x	x	1
(Day 3) 10-2 (Areas of Trapezoids, Rhombuses, and Kites) “HW Quiz” and Self Reflection sheet on section 10-1	x			x	x		1,6
(Day 4) 10-3 (Area of Regular Polygons) “HW Quiz” and Self Reflection sheet on section 10-2	x			x	x	x	1,6
(Day 5) 10-5 (Trigonometry and Area) “HW Quiz” and Self Reflection sheet on section 10-3	x			x	x	x	1,6
(Day 6) 10-1 - 10-5 Review Regular Polygons Quizizz Trigonometry Quizizz				x	x		1,6
(Day 7) 10-1 through 10-5 Test		x			x		1
(Day 8) 10-6 (Circles and Arcs)	x			x	x	x	1
(Day 9) 10-7 (Areas of Circles and Sectors) “HW Quiz” and Self Reflection sheet on section 10-6	x			x	x	x	1,6
(Day 10) 10-8 (Geometric Probability) “HW Quiz” and Self Reflection sheet on section 10-7	x			x	x	x	1,6
(Day 11)10-4 Through 10-8 Review “HW Quiz” and Self Reflection sheet on section 10-8	x			x	x	x	1,6
(Day 12) Area Review Quizizz	x			x		x	1,6
(Day 13) 10-4 Through 10-8 Test		x			x		1

Resources: Prentice Hall Geometry Textbook (2011)
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