

01/16/14

EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry

Days: 7

Unit 1: Basic Geometry Terms & Symbols

Grade Level: 9 & 10

Key Learning
Use and know the different geometry terms and symbols.



Unit Essential Question
How can you use the relationships of geometric figures to explain real life situations?

<u>Concept</u> Points, Lines, and Planes	<u>Concept</u> Segments, Rays, & Distance	<u>Concept</u> Angles
Standards: CC.2.3HS.A.14	Standards: CC.2.3HS.A.3 CC.2.3HS.A.11 CC.2.3HS.A.14	Standards: CC.2.3HS.A.3 CC.2.3HS.A.14
↓	↓	↓
<u>Lesson Essential Question</u> What are the characteristics of a point, line, and plane?	<u>Lesson Essential Question</u> How do you determine the length & midpoint of a line segment?	<u>Lesson Essential Question</u> What are the similarities/differences of various angles?
↓	↓	↓
<u>Vocabulary</u> equidistant point line plane space collinear points coplanar points intersection	<u>Vocabulary</u> segment ray length distance postulate Ruler Postulate Segment Addition Postulate congruent segments midpoint segment bisector	<u>Vocabulary</u> angle right acute angle obtuse angle straight angle Protractor Postulate Angle Addition Postulate congruent angles adjacent angles angle bisector

EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

<u>Concept</u> Postulates and Theorems Relating Points, Lines, and Planes	<u>Concept</u> Copy and Bisect Segments and Angles	
<u>Standards</u> CC.2.3HS.A.3 CC.2.3HS.A.14	<u>Standards</u> CC.2.3HS.A.3 CC.2.3HS.A.4 CC.2.3HS.A.14	
↓	↓	
<u>Lesson Essential Question</u> How do you describe the relationships between points, lines, and planes?	<u>Lesson Essential Question</u> How do you perform basic geometric constructions?	
↓	↓	
<u>Vocabulary</u> theorem proof intersection	<u>Vocabulary</u> construction straight edge compass	

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry – refer to Chapters 1 and 10
Journal, Ruler, Template, Protractor, Compass, Graphic Organizers

CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.
CC.2.3HS.A.4 – Apply the concept of congruence to create geometric constructions.
CC.2.3HS.A.11 – Apply coordinate geometry to prove simple geometric theorems algebraically.
CC.2.3HS.A.14 – Apply geometric concepts to model and solve real world problems.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry
Unit 2: Deductive Reasoning

Days: 8
Grade Level: 9 & 10

Key Learning

Justify statements with definitions, postulates, theorems, and given information.



Unit Essential Question

How do you justify the conclusion of a conditional statement?

<u>Concept</u> If-Then Statements; Converses	<u>Concept</u> Properties from Algebra	<u>Concept</u> Proving Theorems
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.14	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.14	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.14
↓	↓	↓
<u>Lesson Essential Question</u> How do you create a counterexample to disprove a statement?	<u>Lesson Essential Question</u> How are algebraic properties used as justifications in statements?	<u>Lesson Essential Question</u> How do you justify the conclusion of a conditional statement?
↓	↓	↓
<u>Vocabulary</u> conditional hypothesis conclusion converse counterexample biconditional	<u>Vocabulary</u> properties justification	<u>Vocabulary</u> theorem Midpoint Theorem Angle Bisector Theorem

EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

<u>Concept</u> Special Pairs of Angles	<u>Concept</u> Perpendicular Lines	<u>Concept</u> Planning a Proof
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13 CC.2.3HS.A.14	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13 CC.2.3HS.A.14	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.14
↓	↓	↓
<u>Lesson Essential Question</u> How do you justify a statement or solve a problem using pairs of angles?	<u>Lesson Essential Question</u> How do you justify a statement using perpendicular lines?	<u>Lesson Essential Question</u> How do you justify a statement or solve a problem using pairs of angles?
↓	↓	↓
<u>Vocabulary</u> complementary angles supplementary angles vertical angles	<u>Vocabulary</u> perpendicular lines	<u>Vocabulary</u> complementary angles supplementary angles

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry – refer to Chapter 2
Journal, Ruler, Template, Protractor, Compass, Graphic Organizers

CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.
CC.2.3HS.A.13 – Analyze relationships between two-dimensional (and 3-D) objects.
CC.2.3HS.A.14 – Apply geometric concepts to model and solve real world problems.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry
Unit 3: Parallel Lines and Planes

Days: 5
Grade Level: 9 & 10

Key Learning
Justify statements with definitions, postulates, theorems, and given information.



Unit Essential Question
What can you deduce when given parallel lines?

Concept Lines and angles	Concept Properties of Parallel Lines	Concept Proving Lines Parallel
Standards: CC.2.3HS.A.13 CC.2.3HS.A.14	Standards: CC.2.3HS.A.3 CC.2.3HS.A.6 CC.2.3HS.A.13 CC.2.3HS.A.14	Standards: CC.2.3HS.A.3 CC.2.3HS.A.6 CC.2.3HS.A.13 CC.2.3HS.A.14
↓	↓	↓
Lesson Essential Question How do you classify the angles form by lines?	Lesson Essential Question How do you calculate angle measures given parallel lines?	Lesson Essential Question How do you prove lines are parallel?
↓	↓	↓
Vocabulary parallel lines skew lines parallel planes transversal alternate interior angles same-side interior angles corresponding angles	Vocabulary alternate interior angles congruent same-side interior angles supplementary corresponding angles congruent	Vocabulary alternate interior angles congruent same-side interior angles supplementary corresponding angles congruent

Additional Information/Resources:
McDougal Littell Geometry 1990, Geometry – refer to Chapter 3
Journal, Ruler, Protractor, Compass, Graphic Organizers

CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.
CC.2.3HS.A.6 – Verify and apply theorems involving similarity as they relate to plane figures.
*** G.1.2.2.1 – write formal proofs and/or use logic statements to construct or validate arguments.
CC.2.3HS.A.13 – Analyze relationships between two-dimensional (and 3-D) objects.
CC.2.3HS.A.14 – Apply geometric concepts to model and solve real world problems.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry

Days: 6

Unit 4: Angles and Sides of Polygons

Grade Level: 9 & 10

Key Learning

Justify statements with definitions, postulates, theorems, and given information.



Unit Essential Question

How do you reason inductively to find unknown angle measures of polygons?

<u>Concept</u> Angles of a Triangle	<u>Concept</u> Angles of a Polygon	<u>Concept</u> Inductive Reasoning
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13 CC.2.3HS.A.14	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13 CC.2.3HS.A.14	<u>Standards:</u> CC.2.3HS.A.6 CC.2.3HS.A.14
↓	↓	↓
<u>Lesson Essential Question</u> How do you find the measures of unknown angles for a triangle?	<u>Lesson Essential Question</u> How do you find the measures of unknown angles for a polygon?	<u>Lesson Essential Question</u> How do you reason inductively to complete a pattern?
↓	↓	↓
<u>Vocabulary</u> triangle vertex sides scalene triangle isosceles triangle equilateral triangle acute triangle obtuse triangle right triangle equiangular triangle auxiliary line corollary exterior angle remote interior angles	<u>Vocabulary</u> polygon convex polygon diagonal regular polygon	<u>Vocabulary</u> inductive reasoning patterns

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Concept Indirect Proof	Concept Inequalities in Triangles	
Standards: CC.2.3HS.A.3	Standards: CC.2.3HS.A.3 CC.2.3HS.A.14	
↓	↓	
Lesson Essential Question How do you reason indirectly to prove a statement?	Lesson Essential Question How do determine the size of angles or length of sides in a triangle?	
↓	↓	
Vocabulary indirect proof negation	Vocabulary Triangle Inequality Theorem	

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry – refer to Chapters 3 and 6
Journal, Ruler, Protractor, Compass, Graphic Organizers

CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.
CC.2.3HS.A.6 – Verify and apply theorems involving similarity as they relate to plane figures.
*** G.1.2.2.1 – write formal proofs and/or use logic statements to construct or validate arguments.
CC.2.3HS.A.13 – Analyze relationships between two-dimensional (and 3-D) objects.
CC.2.3HS.A.14 – Apply geometric concepts to model and solve real world problems.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Honors Geometry
Unit 5: Congruent Figures

Days: 6
Grade Level: 9 & 10

Key Learning
Prove triangles congruent and use congruent parts to make deductions.



Unit Essential Question
How do you construct a proof using congruent triangles?

<u>Concept</u> Congruent Figures	<u>Concept</u> Some Ways to Prove Triangles Congruent	<u>Concept</u> Using Congruent Triangles
<u>Standards:</u> CC.2.3HS.A.4 CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.1 CC.2.3HS.A.2 CC.2.3HS.A.4 CC.2.3HS.A.6	<u>Standards:</u> CC.2.3HS.A.1 CC.2.3HS.A.2 CC.2.3HS.A.6 CC.2.3HS.A.13
↓	↓	↓
<u>Lesson Essential Question</u> How do you determine congruent angles and sides in congruent figures?	<u>Lesson Essential Question</u> How do you prove congruent triangles?	<u>Lesson Essential Question</u> How do you use congruent triangles to prove other conclusions?
↓	↓	↓
<u>Vocabulary</u> congruent corresponding parts	<u>Vocabulary</u> SSS Postulate SAS Postulate ASA Postulate	<u>Vocabulary</u> CPCTC

EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Concept More Methods of Proving Triangles Congruent	Concept Using More than One Pair of Congruent Triangles	
Standards: CC.2.3HS.A.1 CC.2.3HS.A.2 CC.2.3HS.A.3 CC.2.3HS.A.6 CC.2.3HS.A.13	Standards: CC.2.3HS.A.1 CC.2.3HS.A.2 CC.2.3HS.A.3 CC.2.3HS.A.6 CC.2.3HS.A.13	
↓	↓	
Lesson Essential Question How do you prove congruent triangles?	Lesson Essential Question How do you use congruent triangles to prove other pair of congruent triangles?	
↓	↓	
Vocabulary AAS Theorem right triangle hypotenuse legs HL Theorem	Vocabulary paragraph proof key step proof overlapping triangles	

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry – refer to Chapter 4
Journal, Ruler, Template, Protractor, Compass, Graphic Organizers

CC.2.3HS.A.1 – Use geometric figures and their properties to represent transformations in the plane.
CC.2.3HS.A.2 – Apply rigid transformations to determine and explain congruence.
CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.
CC.2.3HS.A.4 – Apply the concept of congruence to create geometric constructions.
CC.2.3HS.A.6 – Verify and apply theorems involving similarity as they relate to plane figures.
*** G.1.2.2.1 – write formal proofs and/or use logic statements to construct or validate arguments.
CC.2.3HS.A.13 – Analyze relationships between two-dimensional (and 3-D) objects.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Honors Geometry
Unit 6: Special Triangles

Days: 4
Grade Level: 9 & 10

Key Learning
Use facts about special triangles to make deductions.



Unit Essential Question
How do you use properties of triangles to make deductions?

<u>Concept</u> Isosceles Triangle Theorem	<u>Concept</u> Medians and Altitudes	<u>Concept</u> Perpendicular Bisectors and Angle Bisectors
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.6 CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.4	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.4 CC.2.3HS.A.14
↓	↓	↓
<u>Lesson Essential Question</u> How do you use properties of isosceles triangles to find unknown sides and angles?	<u>Lesson Essential Question</u>	<u>Lesson Essential Question</u>
↓	↓	↓
<u>Vocabulary</u> Isosceles Triangle legs, base, base angles, vertex, vertex angle Isosceles Triangle Th ^m Converse of Isos. Tri. Th ^m equiangular triangle equilateral triangle	<u>Vocabulary</u> median altitude	<u>Vocabulary</u> perpendicular bisector angle bisector equidistant distance

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry Chapter 4
 Journal, Ruler, Template, Protractor, Compass, Graphic Organizers
 CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.
 CC.2.3HS.A.4 – Apply the concept of congruence to create geometric constructions.
 CC.2.3HS.A.6 – Verify and apply theorems involving similarity as they relate to plane figures.
 *** G.1.2.2.1 – write formal proofs and/or use logic statements to construct or validate arguments.
 CC.2.3HS.A.13 – Analyze relationships between two-dimensional (and 3-D) objects.
 CC.2.3HS.A.14 – Apply geometric concepts to model and solve real world problems.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry
Unit 7: Quadrilaterals

Days: 7
Grade Level: 9 & 10

Key Learning
Use different quadrilateral properties to solve problems.



Unit Essential Question
How do you use the properties of quadrilaterals to solve real life problems?

<u>Concept</u> Properties of Parallelograms	<u>Concept</u> Ways to Prove that Quadrilaterals are Parallelograms	<u>Concept</u> Theorems Involving Parallel Lines
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13 CC.2.3HS.A.14
↓	↓	↓
<u>Lesson Essential Question</u> How do you use the properties of parallelograms to solve problems?	<u>Lesson Essential Question</u> How do you prove quadrilaterals are parallelograms?	<u>Lesson Essential Question</u> How are properties of parallelograms used to make deductions about parallel lines?
↓	↓	↓
<u>Vocabulary</u> parallelogram bisected diagonals consecutive angles	<u>Vocabulary</u> opposite sides opposite angles bisected diagonals	<u>Vocabulary</u> equidistant congruent segments transversal midpoints third side

EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Concept Special Parallelograms	Concept Trapezoids
Standards: CC.2.3HS.A.3 CC.2.3HS.A.13	Standards: CC.2.3HS.A.3 CC.2.3HS.A.13
↓	↓
Lesson Essential Question How do you determine if a quadrilateral is a special parallelogram?	Lesson Essential Question How do you calculate the length of the sides or median of a trapezoid?
↓	↓
Vocabulary rectangle rhombus square bisected angles midpoint of hypotenuse	Vocabulary trapezoid isosceles trapezoid base angles

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry – refer to Chapter 5
Journal, Ruler, Template, Graphic Organizers

CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.

*** G.1.2.2.1 – write formal proofs and/or use logic statements to construct or validate arguments.

CC.2.3HS.A.13 – Analyze relationships between two-dimensional (and 3-D) objects.

CC.2.3HS.A.14 – Apply geometric concepts to model and solve real world problems.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry
Unit 8: Similar Polygons

Days: 8
Grade Level: 9 & 10

Key Learning
Use similar polygons to solve problems.



Unit Essential Question
How do you use similar polygons to solve real life problems?

<u>Concept</u> Ratios and Proportions	<u>Concept</u> Properties of Proportions	<u>Concept</u> Similar Polygons
<u>Standards:</u> CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.5
↓	↓	↓
<u>Lesson Essential Question</u> How do you use a ratio to find unknown angle measures?	<u>Lesson Essential Question</u> How can properties of proportions be used to solve geometric problems?	<u>Lesson Essential Question</u> How can similar polygons be used to solve geometric problems?
↓	↓	↓
<u>Vocabulary</u> ratio proportion	<u>Vocabulary</u> extremes means	<u>Vocabulary</u> Similar Scale Factor

EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Concept A Postulate for Similar Triangles	Concept Theorems for Similar Triangles	Concept Proportional Lengths
Standards: CC.2.3HS.A.3 CC.2.3HS.A.5	Standards: CC.2.3HS.A.3 CC.2.3HS.A.5	Standards: CC.2.3HS.A.3 CC.2.3HS.A.5
↓	↓	↓
Lesson Essential Question How do you prove triangles similar using the AA Similarity Postulate?	Lesson Essential Question How do you prove triangles similar?	Lesson Essential Question How do you calculate the lengths of sides of similar triangles?
↓	↓	↓
Vocabulary AA Similarity Postulate Corresponding Sides Corresponding Angles	Vocabulary SAS Similarity Theorem SSS Similarity Theorem	Vocabulary Triangle Proportionality Theorem Triangle Angle-Bisector Theorem

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry – refer to Chapter 7
Journal, Ruler, Template, Graphic Organizers

CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.
CC.2.3HS.A.5 – Create justifications based on transformations to establish similarity of plane figures.
CC.2.3HS.A.13 – Analyze relationships between two-dimensional (and 3-D) objects.
CC.2.3HS.A.14 – Apply geometric concepts to model and solve real world problems.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry
Unit 9: Right Triangles

Days: 9
Grade Level: 9 & 10

Key Learning
Use right triangles to solve problems.



Unit Essential Question
How can right triangle facts be used to solve real life problems?

<u>Concept</u> Similarity in Right Triangles	<u>Concept</u> The Pythagorean Theorem	<u>Concept</u> Converse of the Pythagorean Theorem
<u>Standards:</u> CC.2.3HS.A.3	<u>Standards:</u> CC.2.3HS.A.3	<u>Standards:</u> CC.2.3HS.A.3
↓	↓	↓
<u>Lesson Essential Question</u> How do you find the length of any segment of a right triangle with the altitude drawn to the hypotenuse?	<u>Lesson Essential Question</u> How can you use the Pythagorean Theorem?	<u>Lesson Essential Question</u> How can you determine whether a triangle is acute, right, or obtuse?
↓	↓	↓
<u>Vocabulary</u> geometric mean simplest Form	<u>Vocabulary</u> Pythagorean Theorem hypotenuse legs	<u>Vocabulary</u> right triangle acute triangle obtuse triangle

EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Concept Special Right Triangles	Concept The Sine, Cosine, & Tangent Ratios	Concept Applications of Right Triangle Trigonometry
Standards: CC.2.3HS.A.3	Standards: CC.2.3HS.A.3 CC.2.3HS.A.7	Standards: CC.2.3HS.A.7 CC.2.3HS.A.14
↓	↓	↓
Lesson Essential Question What is so special about the special right triangles?	Lesson Essential Question How can trigonometric ratios be used to find sides and angles of a triangle?	Lesson Essential Question How can trigonometry be used to solve real life problems?
↓	↓	↓
Vocabulary 45°-45°-90° Triangle 30°-60°-90° Triangle	Vocabulary Sine Ratio Cosine Ratio Tangent Ratio Opposite Leg Adjacent Leg Grade	Vocabulary angle of depression angle of elevation

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry Chapter 8
Journal, Ruler, Template, Protractor, Compass, Graphic Organizers

CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.
CC.2.3HS.A.7 – Apply trigonometric ratios to solve problems involving right triangles.
CC.2.3HS.A.14 – Apply geometric concepts to model and solve real world problems.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry
Unit 10: Circles

Days: 9
Grade Level: 9 & 10

Key Learning
Use circles to solve problems.



Unit Essential Question
How can relationships in a circle allow you to solve problems involving segments, angles, and arcs?

<u>Concept</u> Basic Terms	<u>Concept</u> Tangents	<u>Concept</u> Arcs and Central Angles
<u>Standards:</u> CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.8	<u>Standards:</u> CC.2.3HS.A.8 CC.2.3HS.A.9
↓	↓	↓
<u>Lesson Essential Question</u> What are the characteristics of a circle or a sphere?	<u>Lesson Essential Question</u> How can relationships in a circle allow you to solve problems involving tangents?	<u>Lesson Essential Question</u> How can relationships in a circle allow you to solve problems arcs and central angles?
↓	↓	↓
<u>Vocabulary</u> center radius chord secant diameter tangent point of tangency sphere congruent circles congruent spheres concentric circles concentric spheres inscribed polygon circumscribed circle	<u>Vocabulary</u> inscribed circle circumscribed polygon common tangent tangent circles	<u>Vocabulary</u> central angle minor arc major arc semicircle adjacent arcs congruent arcs

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<u>Concept</u> Arcs and Chords	<u>Concept</u> Inscribed & Other Angles	<u>Concept</u> Circles and Lengths of Segments
<u>Standards:</u> CC.2.3HS.A.8 CC.2.3HS.A.9	<u>Standards:</u> CC.2.3HS.A.8 CC.2.3HS.A.9	<u>Standards:</u> CC.2.3HS.A.8 CC.2.3HS.A.9
↓	↓	↓
<u>Lesson Essential Question</u> How can relationships in a circle allow you to solve problems involving arcs and chords?	<u>Lesson Essential Question</u> How can relationships in a circle allow you to solve problems involving angles of a circle?	<u>Lesson Essential Question</u> How can relationships in a circle allow you to solve problems involving segments of a circle?
↓	↓	↓
<u>Vocabulary</u> midpoint of arc	<u>Vocabulary</u> inscribed angle intercepted arc	<u>Vocabulary</u> external segments

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry Chapter 9
Journal, Ruler, Template, Protractor, Compass, Graphic Organizers

CC.2.3HS.A.8 – Apply geometric theorems to verify properties of circles.

CC.2.3HS.A.9 – Extend the concept of similarity to determine arc lengths and areas of sectors of circles.

CC.2.3HS.A.13 – Analyze relationships between two-dimensional and three-dimensional objects.

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry
Unit 11: Areas of Plane Figures

Days: 8
Grade Level: 9 & 10

Key Learning
To apply formulas for perimeter, circumference, and area.



Unit Essential Question
How can you apply formulas for perimeter, circumference and area to find and compare measures?

<u>Concept</u> Areas of Rectangles	<u>Concept</u> Areas of Parallelograms, Triangles, and Rhombuses	<u>Concept</u> Areas of Trapezoids
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13
↓	↓	↓
<u>Lesson Essential Question</u> How do you calculate the area of a rectangle?	<u>Lesson Essential Question</u> How are the parallelogram, triangle, and rhombus area formulas related?	<u>Lesson Essential Question</u> How do you calculate the area of a trapezoid?
↓	↓	↓
<u>Vocabulary</u> perimeter area units square units formula base height length width	<u>Vocabulary</u> parallelogram triangle rhombus altitude diagonal	<u>Vocabulary</u> bases height altitudes median

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<u>Concept</u> Areas of Regular Polygons	<u>Concept</u> Circumference and Areas of Circles	<u>Concept</u> Arc Lengths and Areas of Sectors
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.8 CC.2.3HS.A.13	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.8 CC.2.3HS.A.9 CC.2.3HS.A.13
↓	↓	↓
<u>Lesson Essential Question</u> How do you calculate the area of a regular polygon?	<u>Lesson Essential Question</u> How do you calculate the circumference and area of a circle?	<u>Lesson Essential Question</u> How do you calculate the length of an arc and the area of a sector?
↓	↓	↓
<u>Vocabulary</u> regular polygon apothem	<u>Vocabulary</u> circumference pi	<u>Vocabulary</u> arc length sector

<u>Concept</u> Ratios of Areas
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.9 CC.2.3HS.A.13
↓
<u>Lesson Essential Question</u> How do you use the ratios of perimeters and areas?
↓
<u>Vocabulary</u> scale factor

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EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

	pi	sector
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Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry Chapter 11
Journal, Ruler, Template, Graphic Organizers

CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.

CC.2.3HS.A.8 – Apply geometric theorems to verify properties of circles.

CC.2.3HS.A.9 – Extend the concept of similarity to determine arc lengths and areas of sectors of circles.

CC.2.3HS.A.13 – Analyze relationships between two-dimensional and three-dimensional objects.

01/16/14

EASTERN LEBANON COUNTY SCHOOL DISTRICT STUDENT LEARNING MAP

Course/Subject: Geometry

Days: 7

Unit 12: Areas and Volumes of Solids

Grade Level: 9 & 10

Key Learning
 Knowing how to use surface area and volume formulas to solve problems in three dimensions.



Unit Essential Question
 Why is it important to calculate surface area and volume of three dimensional solids?

<u>Concept</u> Prisms	<u>Concept</u> Pyramids	<u>Concept</u> Cylinders and Cones
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13 CC.2.3HS.A.14	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.13 CC.2.3HS.A.14	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.8 CC.2.3HS.A.10 CC.2.3HS.A.13 CC.2.3HS.A.14
<u>Lesson Essential Question</u> What is the difference between lateral area and surface area of a prism?	<u>Lesson Essential Question</u> How is the surface area and volume of pyramids different from prisms?	<u>Lesson Essential Question</u> How is the surface area and volume of pyramids and cones different from prisms and cylinders?
<u>Vocabulary</u> solid right prism oblique prism net cube lateral area total area volume faces edges base base area	<u>Vocabulary</u> pyramid slant height	<u>Vocabulary</u> conic sections circle parabola ellipse hyperbola

<u>Concept</u> Areas and Volumes of Similar Solids	<u>Concept</u> Spheres
<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.9 CC.2.3HS.A.13 CC.2.3HS.A.14	<u>Standards:</u> CC.2.3HS.A.3 CC.2.3HS.A.8 CC.2.3HS.A.13 CC.2.3HS.A.14
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<u>Lesson Essential Question</u> How do the areas and volumes of similar solids compare?	<u>Lesson Essential Question</u> How do you calculate the area and volume of a sphere?
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<u>Vocabulary</u> similar solids ratio of areas ratio of volumes	<u>Vocabulary</u> Sphere hemisphere

Additional Information/Resources:

McDougal Littell Geometry 1990, Geometry Chapter 12
Journal, Ruler, Template, Graphic Organizers

- CC.2.3HS.A.3 – Verify and apply geometric theorems as they relate to geometric figures.
 CC.2.3HS.A.8 – Apply geometric theorems to verify properties of circles.
 CC.2.3HS.A.9 – Extend the concept of similarity to determine arc lengths and areas of sectors of circles.
 CC.2.3HS.A.10 – Translate between the geometric description and the equation for a conic section.
 CC.2.3HS.A.13 – Analyze relationships between two-dimensional and three-dimensional objects.
 CC.2.3HS.A.14 – Apply geometric concepts to model and solve real world problems.