Teacher: Black	*Course: 8th Grade Math*	*Grade Level(s): 8th*
	Unit 1 *Topic(s): Real Numbers*	
Content/Big Ideas	*Mathematical relationships among numbers can be represented, compared, and communicated. Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. Patterns exhibit relationships that can be extended, described, and generalized.*	
Essential Questions	*How is mathematics used to quantify, compare, represent, and model numbers? How can mathematics support effective communication? How are relationships represented mathematically? How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations? What does it mean to estimate or analyze numerical quantities? What makes a tool and/or strategy appropriate for a given task? How can patterns be used to describe relationships in mathematical situations?*	
Concepts	*Rational Numbers and Irrational Numbers*	
Competencies	*Distinguish between rational and irrational numbers using their properties. Convert a terminating or repeating decimal into a rational number. Use rational approximations of irrational numbers to compare the size of irrational numbers.*	
Standards/Benchmarks	*CC.2.1.8.E.1* *CC.2.1.8.E.4* *M08.A-N.1.1.1* *M08.A-N.1.1.2* *M08.A-N.1.1.3* *M08.A-N.1.1.4* *M08.A-N.1.1.5*	

Activities & Assessments	• *Homework* • *Collaborative work* • *think-pair-share* • *Quizzes* • *Tests* • *•Written reflection on lesson* • *•Plus/delta* • *•Quick thinks (correct the error, paraphrase…)* • *•Written summary of main points* • *•Peer feedback* • *•Self-analysis of work* • *•Recitation* • *•Discussion* • *•Observations* • *•Bell-ringers*

Teacher: Black	*Course: Pre-Algebra*	*Grade Level(s): 8th*
	Unit 2 *Topic(s): Expressions*	
Content/Big Ideas	*Mathematical relationships among numbers can be represented, compared, and communicated.*	
Essential Questions	*How is mathematics used to quantify, compare, represent, and model numbers?*	
Concepts	*Expressions*	

Competencies	*Apply concepts of integer exponents to generate equivalent expressions. Use and evaluate square roots and cube roots to represent solutions to equations.*
Standards/Benchmarks	*CC.2.2.8.B.1 M08.B-E.1.1.1 M08.B-E.1.1.2 M08.B-E.1.1.3 M08.B-E.1.1.4*
Activities & Assessments	• *Homework* • *Collaborative work* • *think-pair-share* • *Quizzes* • *•Written reflection on lesson* • *•Plus/delta* • *•Quick thinks (correct the error, paraphrase…)* • *•Written summary of main points* • *•Discussion* • *•Bell-ringers* • *Observation* • *Collins writing* • *Interviews* • *Performance tasks* • *Exhibitions and demonstrations* • *Portfolios* • *Journals* • *Teacher-created tests* • *Rubrics* • *Self- and peer-evaluation*

Teacher: Black	*Course: Pre-Algebra*	*Grade Level(s): 8th*
	Unit 3 *Topic(s): Linear equations*	
Content/Big Ideas	*Mathematical relationships among numbers can be represented, compared, and communicated. Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions. Data can be modeled and used to make inferences.*	
Essential Questions	*How can mathematics support effective communication? How are relationships represented mathematically? How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations? How can data be organized and represented to provide insight into the relationship between quantities? How does the type of data influence the choice of display?*	
Concepts	*Linear Equations*	
Competencies	*Analyze and describe linear relationships between two variables, using slope. Make connections between slope, lines and linear equations. Interpret solutions to a linear equation and systems of two linear equations. Analyze, model and solve linear equations. Analyze and solve pairs of simultaneous equations.*	
Standards/Benchmarks	*CC.2.2.8.B.2 CC.2.2.8.B.3 M08.B-E.2.1.1 M08.B-E.2.1.2 M08.B-E.2.1.3 M08.B-E.3.1.1 M08.B-E.3.1.2 M08.B-E.3.1.3 M08.B-E.3.1.4 M08.B-E.3.1.5*	
Activities & Assessments	• *Homework* • *Collaborative work* • *think-pair-share* • *Quizzes* • *•Written reflection on lesson* • *•Plus/delta* • *•Quick thinks (correct the error, paraphrase…)* • *•Written summary of main points*	

	• *•Discussion* • *•Bell-ringers* • *Observation* • *Collins writing* • *Interviews* • *Performance tasks* • *Exhibitions and demonstrations* • *Portfolios* • *Journals* • *Teacher-created tests* • *Rubrics* • *Self- and peer-evaluation*

Teacher: Black *Course: Pre-Algebra* *Grade Level(s): 8th*

	Unit 4 *Topic(s): Functions*
Content/Big Ideas	*Mathematical relationships among numbers can be represented, compared, and communicated. Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions. Data can be modeled and used to make inferences.*
Essential Questions	*How is mathematics used to quantify, compare, represent, and model numbers? How can mathematics support effective communication? How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations? How can data be organized and represented to provide insight into the relationship between quantities? How can probability and data analysis be used to make predictions?*
Concepts	*Functions*

Competencies	*Define, interpret, and compare functions displayed algebraically, graphically, numerically in tables, or by verbal descriptions. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.*
Standards/Benchmarks	*CC.2.2.8.C.1 CC.2.2.8.C.2 M08.B-F.1.1.1 M08.B-F.1.1.2 M08.B-F.1.1.3 M08.B-F.2.1.1 M08.B-F.2.1.2*
Activities & Assessments	• *Homework* • *Collaborative work* • *think-pair-share* • *Quizzes* • *•Written reflection on lesson* • *•Plus/delta* • *•Quick thinks (correct the error, paraphrase…)* • *•Written summary of main points* • *•Discussion* • *•Bell-ringers* • *Observation* • *Collins writing* • *Interviews* • *Performance tasks* • *Exhibitions and demonstrations* • *Portfolios* • *Journals* • *Teacher-created tests* • *Rubrics* • *Self- and peer-evaluation*

Teacher: Black	*Course: Pre-Algebra*	*Grade Level(s): 8th*
	Unit 5 *Topic(s): Cylinders, Cones, and Spheres*	

Content/Big Ideas	*Patterns exhibit relationships that can be extended, described, and generalized. Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.*
Essential Questions	*How can patterns be used to describe relationships in mathematical situations? How can recognizing repetition or regularity assist in solving problems more efficiently? How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems? How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? How can geometric properties and theorems be used to describe, model, and analyze situations?*
Concepts	*Cylinders, Cones, and Spheres*
Competencies	*Apply concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems.*
Standards/Benchmarks	*CC.2.3.8.A.1 M08.C-G.3.1.1*

Activities & Assessments	• *Homework* • *Collaborative work* • *think-pair-share* • *Quizzes* • *•Written reflection on lesson* • *•Plus/delta* • *•Quick thinks (correct the error, paraphrase…)* • *•Written summary of main points* • *•Discussion* • *•Bell-ringers* • *Observation* • *Collins writing* • *Interviews* • *Performance tasks* • *Exhibitions and demonstrations* • *Portfolios* • *Journals* • *Teacher-created tests* • *Rubrics* • *Self- and peer-evaluation*

Teacher: Black *Course: Pre-Algebra* *Grade Level(s): 8th*

	Unit 6 *Topic(s): Congruence and Similarity*
Content/Big Ideas	*Patterns exhibit relationships that can be extended, described, and generalized.* *Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.*
Essential Questions	*How can patterns be used to describe relationships in mathematical situations? How can recognizing repetition or regularity assist in solving problems more efficiently? How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems? How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? How can geometric properties and theorems be used to describe, model, and analyze situations?*

Concepts	*Congruence and Similarity*
Competencies	*Use transformations to demonstrate congruence and similarity of geometric figures. Use various tools to understand and apply geometric transformations to geometric figures*
Standards/Benchmarks	*CC.2.3.8.A.2 M08.C-G.1.1.1 M08.C-G.1.1.2 M08.C-G.1.1.3 M08.C-G.1.1.4*
Activities & Assessments	• *Homework* • *Collaborative work* • *think-pair-share* • *Quizzes* • *•Written reflection on lesson* • *•Plus/delta* • *•Quick thinks (correct the error, paraphrase…)* • *•Written summary of main points* • *•Discussion* • *•Bell-ringers* • *Observation* • *Collins writing* • *Interviews* • *Performance tasks* • *Exhibitions and demonstrations* • *Portfolios* • *Journals* • *Teacher-created tests* • *Rubrics* • *Self- and peer-evaluation*

Teacher: Black	*Course: Pre-Algebra*	*Grade Level(s): 8th*

	Unit 7 *Topic(s): Pythagorean Theorem*
Content/Big Ideas	*Patterns exhibit relationships that can be extended, described, and generalized. Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.*
Essential Questions	*How can recognizing repetition or regularity assist in solving problems more efficiently? How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems? How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving? How can geometric properties and theorems be used to describe, model, and analyze situations?*
Concepts	*Pythagorean Theorem*
Competencies	*Apply the Pythagorean Theorem and its converse to solve mathematical problems in two and three dimensions.*
Standards/Benchmarks	*CC.2.3.8.A.3 M08.C-G.2.1.1 M08.C-G.2.1.2 M08.C-G.2.1.3*

Activities & Assessments	• *Homework* • *Collaborative work* • *think-pair-share* • *Quizzes* • *•Written reflection on lesson* • *•Plus/delta* • *•Quick thinks (correct the error, paraphrase…)* • *•Written summary of main points* • *•Discussion* • *•Bell-ringers* • *Observation* • *Collins writing* • *Interviews* • *Performance tasks* • *Exhibitions and demonstrations* • *Portfolios* • *Journals* • *Teacher-created tests* • *Rubrics* • *Self- and peer-evaluation*

Teacher: Black	*Course: Pre-Algebra*	*Grade Level(s): 8th*
	Unit 8 *Topic(s): Data and Distributions*	
Content/Big Ideas	*Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions. Data can be modeled and used to make inferences.*	
Essential Questions	*What does it mean to estimate or analyze numerical quantities? What makes a tool and/or strategy appropriate for a given task? How can data be organized and represented to provide insight into the relationship between quantities? How does the type of data influence the choice of display? How can probability and data analysis be used to make predictions?*	

Concepts	*Data and Distributions*
Competencies	*Construct, analyze, and interpret bivariate data displayed in scatter plots. Identify and use linear models to describe bivariate measurement data. Use frequencies to analyze patterns of association seen in bivariate data.*
Standards/Benchmarks	*CC.2.4.8.B.1 CC.2.4.8.B.2 M08.D-S.1.1.1 M08.D-S.1.1.2 M08.D-S.1.1.3 M08.D-S.1.2.1*
Activities & Assessments	• *Homework* • *Collaborative work* • *think-pair-share* • *Quizzes* • *•Written reflection on lesson* • *•Plus/delta* • *•Quick thinks (correct the error, paraphrase…)* • *•Written summary of main points* • *•Discussion* • *•Bell-ringers* • *Observation* • *Collins writing* • *Interviews* • *Performance tasks* • *Exhibitions and demonstrations* • *Portfolios* • *Journals* • *Teacher-created tests* • *Rubrics* • *Self- and peer-evaluation*