Riverside Middle School

Mrs. Black dvblack@greenvilleschools.us
Room G-112 phone (864) 355-8075 **Math 8**

2017-2018 Course Syllabus

Course Description

Math 8 includes algebra concepts and skills that set high expectations for all students. It makes provisions for enrichment and acceleration for advanced students and remediation for students who need more assistance. The course emphasizes algebraic thinking and applies it to other aspects of mathematics including geometry, measurement, probability, and statistics. It helps students meet state guidelines and also prepares them for high school algebra.

Problem solving (word problems), review of basic arithmetic skills, the use of technology (calculators), and math study skills will be integral components in each of those areas.

- The SC College and Career Ready Standards for Mathematics is available here.
- The text for this course is Holt McDougal Mathematics Grade 8, Common Core Edition ©2012.

Grading Procedures

Grading will be done in a manner so that it is interpreted as a measure of learning and will not include controllable nonacademic factors as extra points for signatures, loss of points for writing in ink, etc. My purpose for grading is to communicate how much learning and success has been accomplished.

Coursework
10%.....Practice
40%.....Minor
47%.....Major
3%.....Benchmark
Extra credit will only be presented as bonus opportunities on tests. Do not expect that every test will have bonus opportunities.

Greenville County Scale
90 ≤ A ≤ 100
80 ≤ B ≤ 89
70 ≤ C ≤ 79
60 ≤ D ≤ 69
50 ≤ F ≤ 59

MATERIALS

Each student needs a pocket folder, loose-leaf notebook paper, a pack of graph paper, pencils (with lead for mechanical pencils), and colored pencils (for checking his/her work in class) and a couple college ruled notebooks which we will use as interactive notebooks. Colored pens or colored markers would work also. Students enrolled in Math 8 do not need to have a graphing calculator but need a scientific calculator. Students are required to keep all loose-leaf notebook paper, the pack of graph paper, class notes, assignments, quizzes, daily starters, test reviews, and any other papers given to them or returned to them (graded papers) in their pocket folders.

SC's ATTENDANCE POLICY

Any student may be denied credit for this course if she/he has been absent for more than ten (10) days.

RMS's TARDY POLICY

Students have three (3) minutes between classes. Consequences for tardiness follow:
First tardy – no penalty, warning
Second tardy – no penalty, contact parent by phone
Third tardy – referral to office, detention, contact parent by phone
Fourth tardy – detention
Fifth tardy –parental conference and other action as necessary to correct tardy problem

MAKE-UP WORK POLICY

Before students return to school from an absence, they are expected to visit the Google classroom and my website for addressing missed information. Also when students return to school from an absence, it is their responsibility to check in with me and submit missing tasks in a timely manner. Generally, tests and quizzes that need to be

made up will not be done during class time. Please arrange to make-up quizzes or tests at 7:45am. All make-up work must be completed within five (5) days of the return to school.

CLASSROOM EXPECTATIONS

Students are expected to do their best and comply with the social contract. All materials need to be brought to class. Students need to be on time. I also expect my students to complete all assignments neatly and to have a positive attitude in class. **I expect all students to collaborate and cooperate with me and each other** with a minimum amount of disruption to maximize the learning experiences for all.

CONSEQUENCES

Students violating classroom expectations will receive the following consequences: warning, parent contact, and referral. Please know that any severe misbehavior may result in immediate removal from class and an office referral. I believe that when a student chooses his behavior, he/she has also chosen his/her consequences.

Procedures for Non-instructional Routines:

1. Upon arrival to class, students are to begin work on the day's starter problems until the teacher is ready to begin. The students keep the starter problems in their college ruled notebooks each day.
2. Practice assignments will be checked periodically for completion only, either during their warm-up time or through collection. All practice assignments are to be completed to the best ability of the student.
3. Students will keep all practice work, notes, handouts, syllabus, and starter problems in their pocket folders. These will be collected upon the return of the unit tests and kept in the mathematics classroom.
4. Tests will be on file in the classroom and will remain in the classroom throughout the year.
5. All work turned into the teacher for grading will have the first and last name of the student, the date, period, and assignment. It is to be written in pencil only unless otherwise informed. Assignments written in ink must be re-written in pencil by the student.
6. At the end of class, student will be dismissed with the permission of the teacher, not solely by the sound of the bell.
7. Assignments distributed via GCSD email and Google Classroom must be submitted as instructed.
8. Students are encouraged to participate in the BYOT (bring your own technology) program. However all students must operate within the GCSD's Acceptable Use policy (see student handbook).
9. Students will need a note from an administrator or another teacher to be excused for tardiness.
10. Pencils may be sharpened at any time. However I hope that good judgement is used to decide when to leave your seat to sharpen your pencil.
11. Bathroom breaks will not be permitted during class unless there is an emergency. The hall pass must be filled out in its entirety and should not be ripped from their student handbook.
12. Behavioral expectancies in the computer lab and media center are synonymous to those defined for the classroom.
13. Fire drills take place without advance notice. *Fire Exit* diagrams are posted in every classroom. During a fire (or drill), students exit the classroom in an orderly fashion. Once outside, students are to line up in alphabetical order for attendance purposes. Students will become familiar with these procedures through the practice of fire drills.
14. Tornado drills are practiced once each year. Students will follow the state guidelines during this drill. Teachers will advise students on proper procedure.

FOR PARENTS:

Contact will be made on a regular basis through email and Google Classroom. The grade book, which is available on the parent portal, is kept up to date. Please make sure you have a password and are able to access this valuable information. The syllabus, assignments, and other important information will be posted on my website and my Google Classroom page. Please make sure to email me as soon as you have a question concerning your child or my classroom. I am here to help!

TENTATIVE OUTLINE OF THE COURSE

Because our primary goal is to maximize student achievement, material may be added, deleted, and/or substituted at the teacher's discretion based on the individual needs, levels, and learning styles of each class. Creative projects, written assignments, and supplemental materials may be included also throughout the year as opportunities arise. Please keep in mind that the dates listed are fluid and are subject to change due to school activities, inclement weather, or customizing the pace of the units to the students' needs. This is intended as a guide only.

First Quarter

Unit	Title	Suggested Time
1	Transformations, Congruence & Similarity	Week 1 – Week 5
	Fall Math MAP test	2 days
2	Exponents	Week 6 – Week 11
	Review/Benchmark Test	3 days

Second Quarter

3	Geometric Applications of Exponents	Week 12 – Week 16
4	Functions	Week 17 – Week 19
	Review/Benchmark Test	3 days

Third Quarter

5	Linear Functions	Week 20 – Week 24
6	Liner Models and Tables	Week 25 – Week 30
	Spring Math MAP test	2 days

Fourth Quarter

7	Solving Systems of Linear Equations	Week 31 – Week 35
8	Show What You Know	Week 36 – Week 39
Standardized testing	Review	5 days
	Review/Final exam	3 days

In each unit of study, students are expected to do the following:

Unit 1. Transformations, Congruence & Similarity

a. Use physical models, transparencies, patty paper, or geometry software to verify experimentally that the rigid transformations of translation, reflection, and rotation preserve segment length and angle measure.
b. Use physical models, transparencies, patty paper, or geometry software to verify experimentally that the rigid transformations of translation, reflection, and rotation take lines to lines and parallel lines to parallel lines.
c. Use physical models, transparencies, patty paper, or geometry software to verify experimentally that dilations preserve angle measures resulting in proportional side lengths.
d. Given vertices of a polygon, apply a scale factor to graph a dilation of the figure.
e. Given two similar figures, calculate the scale factor (constant of proportionality) for the dilation.
f. Using the origin as the center, apply a rotation to a geometric figure to determine the coordinates of the new image.
g. Using the x and y-axes as the lines of reflection, apply a reflection to a geometric figure in the coordinate plane to determine the coordinates of the new image.
h. Apply a translation to a geometric figure to determine the coordinates of the new image.
i. Describe the effect of any transformation on a two-dimensional figure using a verbal description and coordinates.
j. Construct a figure using a sequence of any two or more transformations.
k. Define congruence and similarity of geometric shapes.
l. Describe and justify the sequence of transformations that determines similarity between two figures.
m. Describe and justify the sequence of transformations that determines congruence between two figures.
n. Identify by name the angles formed (vertical, adjacent) by two intersecting lines.
o. Give an informal argument to explain why vertical angles are congruent and adjacent angles are supplementary.
p. Identify by name the angles formed (corresponding, alternate interior, alternate exterior, same side interior) when two parallel lines are intersected by a transversal.
q. Using the postulate that corresponding angles are congruent, give informal arguments to explain the relationships between the pairs of angles formed (alternate interior, alternate exterior, same side interior) when two parallel lines are intersected by a transversal.
r. Determine unknown angle measures in problems involving parallel and intersecting lines using the relationships among known angle measures.
s. Give an informal argument to explain that the sum of the measures of the interior angles of a triangle is 180. (Triangle Sum Theorem)

t. Give an informal argument to explain that the measure of an exterior angle of a triangle is equal to the sum of the measures of the two remote interior angles.(Exterior Angle Theorem)
u. Apply the Triangle Sum Theorem to solve problems involving the unknown angle measures in a triangle.
v. Apply the Exterior Angle Theorem to solve problems involving the unknown angle measures in a triangle.

Unit 2. Exponents

a. Identify rational numbers as those whose decimal expansions either terminate or repeat and as numbers that can be written as a fraction where numerator and denominator are integers. (denominator not equal to 0)
b. Classify real numbers as either rational or irrational.
c. Convert a repeating decimal number to its fractional form.
d. Give a rational estimation of the value of irrational numbers expressed as square and cube roots.
e. Compare and order rational and irrational numbers.
f. Locate rational and irrational numbers on the real number line.
g. Give examples of real world situations using both rational and irrational numbers
h. Evaluate square roots of small perfect squares up to 625 and cube roots of small perfect cubes up to 1000.
i. Solve simple equations in the form of $x^2 = p$ and $x^3 = p$ using square and cube roots.
j. Determine the properties of integer exponents by exploring patterns and applying this understanding of properties to whole number exponents.
k. Explain the meaning of zero and negative exponents.
l. Apply the laws of exponents to generate equivalent numerical expressions involving integer exponents, including multiplying or dividing an expression with the same base and raising a power to a power.
m. Express and interpret (as an estimate) numbers in scientific notation and choose units of appropriate size for measurements in mathematical and real-world context.
n. Convert between scientific notation and standard notation.
o. Compare numbers in scientific notation to express how many times larger one number is than the other.
p. Perform operations (add, subtract, multiply and divide) with numbers in scientific notation, including problems where both decimal and scientific notation are used in real-world problems.
q. Identify and interpret the various ways scientific notation has been generated by technology (calculators and computer software).
r. Define the variable and write a multi-step algebraic equation or inequalities in one variable to represent a mathematical or real-world situation.
s. Apply procedures to solve multi-step linear equation and inequalities in one variable, including those with rational coefficients, parentheses, like terms, and variables on both sides.
t. Determine the conditions under which an equation and an inequality will have one solution, many solutions (identity), or no solutions.
u. Give examples of linear equations and inequalities in one variable with one solution, infinitely many solutions, and no solution.

Unit 3. Geometric Applications of Exponents

a. Explain a proof of the Pythagorean Theorem.
b. Apply the Pythagorean Theorem to determine side lengths in right triangles in real world and mathematical problems in two and three dimensions.
c. Apply the converse of the Pythagorean Theorem to determine whether or not a triangle is a right triangle.
d. Apply the Pythagorean Theorem to find the distance between two points on a coordinate plane in both mathematical and real-world problems.
e. Identify key dimensions of cylinders, cones, and spheres.
f. Apply the appropriate formula to calculate the surface area of a cylinder in a real world context.
g. Apply the appropriate formula to calculate the volumes of cylinders, cones, and spheres, including problems with real-world applications, using approximate and exact pi.
h. Describe the relationship between the volume of a cone and the volume of cylinder.
i. Find an unknown dimension for a cone, cylinder, or sphere when the volume is known.
j. Describe the effect on volume when one or more dimensions is changed.
k. Solve problems that involve comparing volumes of two or more figures or changing one or more dimensions of a 3-D figure.

Unit 4. Functions

a. Illustrate the definition of a function using mappings and function machines, including examples and non-examples.
b. Determine if a relation is a function from a variety of representations (set of ordered pairs, graph, table, equation).
c. Create a graph, table, or function rule to represent a relationship between two quantities that co-vary.
d. Describe qualitatively (increasing, decreasing, relative steepness, continuous, discrete) the functional relationship between two quantities by analyzing a given graph.
e. Translate among multiple representations of a function, including mappings, tables, graphs, equations, and verbal descriptions.
f. Given a graph that models a real-world situation, describe how one quantity changes with respect to the other quantity in the situation.

g. Create a graph to model a given verbal description of a real-world situation.
h. Represent a function using function notation.
i. Evaluate a function for a given input from its domain.

Unit 5. Linear Functions

a. Determine whether a linear relationship is proportional or non-proportional.
b. Graph proportional relationships and interpret the unit rate as slope.
c. Determine from a table, equation, graph or verbal description whether a function is linear (constant rate of change) or non-linear.
d. Give examples of linear relationships and examples of non-linear relationships.
e. Determine rate of change from a table, equation, graph or verbal description.
f. Use similar triangles to explain why the slope is the same between two distinct points on a non-vertical line in the coordinate plane.
g. Determine slope from a table, a graph, and an equation or by using the slope formula.
h. Determine the x- and y-intercepts from a table, a graph, or an equation.
i. Draw the graph of a line using a table of values, slope and y-intercept, and x- and y-intercepts.
j. Convert an equation given in standard form to slope-intercept form.
k. Create an equation to model a linear relationship from a graph, a table of values, or a verbal description for a situation.
l. Interpret the slope, x-intercept, and y-intercept of a linear function in terms of the context it models.
m. Compare characteristics of two functions (including proportional relationships) each represented in a different way, such as by a table, graph, or equation. (eg., Determine which function has a greater rate of change.)
n. Give qualitative descriptions of a relationship between two quantities by analyzing the graph using terms such as increasing, decreasing, linear, non-linear, continuous, or discrete.
o. Sketch a graph that matches qualitative features given in a verbal description of a real-world scenario.

Unit 6. Linear Models and Tables

a. Construct a scatterplot for bivariate measurement data.
b. Describe patterns of association of bivariate data displayed in a scatterplot including clustering, outliers, positive or negative association, linear association, and non-linear association.
c. Sketch (informally fit) a line of best fit (trend line) to data for a given scatterplot.
d. Assess the "goodness of fit" by judging the closeness of the data points to the points on the trend line.
e. Create the equation for a line of best fit (trend line).
f. Interpret the meaning of slope and y-intercept for given trend line in the context of the problem situation.
g. Solve problems and make predictions in real world situations using the trend line.
h. Construct a two-way frequency table summarizing categorical data for a given situation.
i. Calculate relative and cumulative frequencies for data in a two-way frequency table.
j. Describe possible associations between the two variables using relative frequencies from the two-way table.
k. Make predictions in real world situations given data in a two-way frequency table..
l. Organize real world data in matrices.
m. Add and subtract matrices of the same size
n. Multiply matrix by a scalar.
o. Sketch the graph of a function from a verbal description.
p. Write a verbal description for a graph of a function with or without scales.
q. Analyze multiple representations of functions.
r. Describe and analyze attributes of graphs of functions.

Unit 7. Solving Systems of Linear Equations

a. Classify systems of equations, given algebraically or graphically, by the number of solutions:
   - ♦ Intersecting lines have one solution.
   - ♦ Collinear lines have infinitely many solutions.
   - ♦ Parallel lines have no solutions.
b. Classify systems of equations by type of system:
   - ♦ Inconsistent
   - ♦ Consistent and independent
   - ♦ Consistent and dependent.
c. Determine whether a given ordered pair is a solution to a given system of equations by verifying that it satisfies both equations.
d. Estimate the solution for a system of two linear equations in two variables by graphing, with and without technology.
e. Solve systems of two linear equations in two variables algebraically using substitution.
f. Solve systems of two linear equations in two variables algebraically using elimination.
g. Solve simple cases of systems by inspection (eg., $3x + 2y = 5$ and $3x + 2y = 6$ have no solution because $3x + 2y$ cannot simultaneously be 5 and 6).
h. Define two variables with appropriate units and use them to create a system of two equations to represent the relationships between quantities given in a verbal description of a real-world situation.

i. Solve a variety of real world and mathematical problems by modeling them with two linear equations in two variables, interpreting the solution (with appropriate units) in the context of the problem.

Mrs. Black's Contact Information

Email address: dvblack@greenvilleschools.us.
Voice mail is **(864) 355-8075**.
Website: https://sites.google.com/a/greenvilleschools.us/mrs-black-s-math

***Extra help is available before/after school by appointment.*
***Math help is also available before school at 7:30 (no pass needed) in my class or where I am assigned on duty.*