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| **Curriculum Management System** |
| ***PAULSBORO PUBLIC SCHOOLS*** |
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| **Mathematics- Grade 8** |
| **UPDATED JUNE 2016** |
| **For adoption by all regular education programs as specified and for adoption or adaptation by all Special Education Programs in accordance with Board of Education Policy.** | **Board Approved: September 2016** |

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| **Paulsboro Public Schools** |
| ***Dr. Laurie Bandlow, Superintendent******Board of Education***Mr. Thomas Ridinger, PresidentMs. Bonnie Eastlack, Vice PresidentMrs. Barbara DunnMr. Marvin E. Hamilton, Sr.Mr. John Hughes\*Mr. Joseph L. LisaMrs. Lisa L. Lozada-ShawMrs. Lisa PriestMrs. Irma R. StevensonMr. James J. Walter\* Greenwich Township Board of Education Representative***District Administration***Dr. Lucia Pollino, Director of Curriculum & AssessmentMs. Jennifer Johnson, Business Administrator/Board SecretaryMr. John Giovannitti, Director of Special ServicesMr. Paul Bracciante, Principal, grades Pre-K to 2Mr. Matthew J. Browne, Principal, grades 3-6Mrs. Mildred Tolbert, Principal, grades 7-8Mr. Paul Morina, Principal, grades 9-12***Curriculum Writing Team***Ms. Christine Lindenmuth, Curriculum Facilitator |
| **Paulsboro Public Schools** |
| **MissionStatement**The mission of the Paulsboro School District is to provide each student the educational opportunities to assist in attaining their full potential in a democratic society. Our instructional programs will take place in a responsive, community based school system that fosters respect among all people.Our expectation is that all students will achieve the New Jersey Core Curriculum Content Standards (NJCCCS) at every grade level. |

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|  New Jersey State Department of Education21st Century College and Career Readiness Standards**The 12 Career Ready Practices**These practices outline the skills that all individuals need to have to truly be adaptable, reflective, and proactive in life and careers. These are researched practices that are essential to career readiness.CRP1. Act as a responsible and contributing citizen and employee. CRP2. Apply appropriate academic and technical skills. CRP3. Attend to personal health and financial well-being. CRP4. Communicate clearly and effectively and with reason. CRP5. Consider the environmental, social and economic impacts of decisions. CRP6. Demonstrate creativity and innovation. CRP7. Employ valid and reliable research strategies.CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP9. Model integrity, ethical leadership and effective management. CRP10. Plan education and career paths aligned to personal goals.CRP11. Use technology to enhance productivity. CRP12. Work productively in teams while using cultural global competence.Reading and Writing Standards[CCSS.ELA-LITERACY.RL.8.1](http://www.corestandards.org/ELA-Literacy/RL/7/#CCSS.ELA-Literacy.RL.7.1) - 8.10[CCSS.ELA-LITERACY.RI.8.1](http://www.corestandards.org/ELA-Literacy/RI/7/#CCSS.ELA-Literacy.RI.7.1) – 8.10[CCSS.ELA-LITERACY.W.8.1](http://www.corestandards.org/ELA-Literacy/W/7/#CCSS.ELA-Literacy.W.7.1) – 8.10 |
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**COMMON CORE STATE STANDARDS**

Standards for Mathematical Practice

**MP.1** Make sense of problems and persevere in solving them.

**MP.2** Reason abstractly and quantitatively.

**MP.3** Construct viable arguments and critique the reasoning of others.

**MP.4** Model with mathematics.

**MP.5** Use appropriate tools strategically.

**MP.6** Attend to precision.

**MP.7** Look for and make use of structure.

**MP.8** Look for and express regularity in repeated reasoning.

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| **Scope and Sequence** |
| **Quarter 1 – Grade \_\_8\_** |
| **Big Idea**Topic 1 – Real Numbers  | **Big Idea:**  Topic 2 – Analyze and Solve Linear Equations |

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| **Scope and Sequence** |
| **Quarter 2 – Grade \_8\_** |
| **Big Idea:** Topic 3 – Use Functions to Model Relationships | **Big Idea**Topic 5 – Analyze and Solve Systems of Linear Equations |

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| **Scope and Sequence** |
| **Quarter 3 – Grade \_8\_** |
| **Big Idea:** Topic 6 – Congruence and Similarity | **Big Idea**Topic 7 – Understand and Apply the Pythagorean Theorem |

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| **Scope and Sequence** |
| **Quarter 4 – Grade \_8\_\_** |
| **Big Idea:** Topic 8 – Solve Problems Involving Surface Area and Volume | **Big Idea:** Topic 4 – Investigate Bivariate Data |

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| **QUARTER 1 – Big Idea: Real Numbers****Topic: Comparing, ordering, evaluating rational and irrational numbers, square roots, cube roots and solving equations involving them.** |
| **Standards:** **NJ Student Learning Standards**8.NS.A.18.NS.A.28.EE.A.18.EE.A.28.EE.A.38.EE.A.4**Career Ready Practices**CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP12. Work productively in teams while using cultural global competence. | **GOAL** |
| SWBAT identify and interpret real numbers. |
| **Essential Questions Assessments** |
| 1. What are real numbers and how are they used to solve problems?
2. How can you write decimals as fractions?
3. How is an irrational number different from a rational number?
4. How can you compare and order rational and irrational numbers?
5. How do you evaluate cube roots and square roots?
6. How can you solve equations with squares and cubes?
7. How do properties of integer exponents help you write equivalent expressions?
8. When would you use a power of 10 to estimate a quantity?
9. What is scientific notation and when, why and how is it used?
 | Text Practice & Problem Solving worksheetsMid-Topic Checkpoint and Performance TaskTeacher created worksheetsFluency Practice ActivityTopic Assessment and/or Performance AssessmentSTEM Project |
| **Enduring Understanding Resources** |
| 1. How do we use radical and integer exponents to rewrite and solve expressions?
2. How are rational numbers used to approximate irrational numbers?
 | enVision Math 2.0PearsonRealize.comVirtualnerd.com |
| **QUARTER 1 –Big Idea: Analyze and Solve Linear Equations** **Topic: Solve various types of equations, including special case scenarios and to understand and analyze linear equations.** |
| **Standards:** **NJ Student Learning Standards**8.EE.C.7a8.EE.C.7b8.EE.B.58.EE.B.6 | **GOAL** |
| SWBAT analyze and solve linear equations. |
| **Essential Questions Assessments** |
| 1. How do you solve equations that contain like terms?
2. How do you use inverse operations to solve equations with variables on both sides?
3. How can you use the Distributive Property to solve multistep equations?
4. Will a one-variable equation always have only one solution?
5. How can you compare proportional relationships represented in different ways?
6. What is slope and how does it relate to the equation for a proportional relationship?
7. What is the y-intercept and what does it indicate?
8. What is the equation of a line for a non-proportional relationship?
 | Text Practice & Problem Solving worksheetsMid-Topic Checkpoint and Performance TaskTeacher created worksheetsFluency Practice ActivityTopic Assessment and/or Performance AssessmentSTEM Project |
| **Enduring Understanding Resources** |
| 1. What connections can be made between proportional relationships, lines, and linear equations?
2. How do we analyze and solve linear equations and pairs of simultaneous linear equations?
 | enVision Math 2.0PearsonRealize.comVirtualnerd.com |
| **QUARTER 2 –Big Idea: Use Functions to Model Relationships****Topic: Understand and make connections between and among relations and functions, compare linear and nonlinear functions, construct functions to model linear relationships and sketch from verbal descriptions, determine intervals of increase and decrease.** |
| **Standards:** **NJ Student Learning Standards**8.SP.A.18.SP.A.28.SP.A.38.SP.A.48.F.A.38.F.B.4**Career Ready Practices**CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP12. Work productively in teams while using cultural global competence. | **GOAL** |
| SWBAT use functions to model relationships. |
| **Essential Questions Assessments** |
| 1. When is a relation a function?
2. What are different representations of a function?
3. How do you compare two functions?
4. How can you use a function to represent a linear relationship?
5. How does a qualitative graph describe the relationship between quantities?
6. How does the sketch of a graph of a function help describe its behavior?
 | Text Practice & Problem Solving worksheetsMid-Topic Checkpoint and Performance TaskTeacher created worksheetsFluency Practice ActivityTopic Assessment and/or Performance AssessmentSTEM Project |
| **Enduring Understanding Resources** |
| 1. How do we define, evaluate and compare functions?
2. How can functions be used to model relationships between quantities?
 | enVision Math 2.0PearsonRealize.comVirtualnerd.com |
| **QUARTER 2 – Big Idea: Analyze and Solve Systems of Linear Equations****Topic: Estimate solutions by inspection, solving systems by graphing, substitution, and elimation.** |
| **Standards:** **NJ Student Learning Standards**8.EE.C.8a8.EE.C.8b8.EE.C.8c | **GOAL** |
| SWBAT analyze and solve systems of linear equations. |
| **Essential Questions Assessments** |
| 1. How are slopes and y-intercepts related to the number of solutions of a system of linear equations?
2. How does the graph of a system of linear equations represent its solution?
3. When is substitution a useful method for solving systems of equations?
4. How are the properties of equality used to solve systems of linear equations?
 | Text Practice & Problem Solving worksheetsMid-Topic Checkpoint and Performance TaskTeacher created worksheetsFluency Practice ActivityTopic Assessment and/or Performance AssessmentSTEM Project |
| **Enduring Understanding Resources** |
| 1. What are the ways we can analyze and solve linear equations and pairs of simultaneous linear equations?
 | enVision Math 2.0PearsonRealize.comVirtualnerd.com |
| **QUARTER 3– Big Idea: Congruence and Similarity****Topic: Analyze and compose translations, reflections, rotations, dilations, understand congruent and similar figures, anlges, lines, transversals and reson about parallel lines. Inerior and exterior anagles of triangles and angle-angle- triangle similarity.**  |
| **Standards:** **NJ Student Learning Standards**8.G.A.18.G.A.1a8.G.A.1b8.G.A.1c8.G.A.28.G.A.38.G.A.48.G.A.5**Career Ready Practices**CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP12. Work productively in teams while using cultural global competence. | **GOAL** |
| SWBAT compare congruence and similarity. |
| **Essential Questions Assessments** |
| 1. How does a translation affect the properties of a two-dimensional figure?
2. How does a reflection affect the properties of a two-dimensional figure?
3. How does a rotation affect the properties of two-dimensional figure?
4. How can you use a sequence of transformations to map a pre-image to its image?
5. How does a sequence of translations, reflections, and rotations result in congruent figures?
6. What if the relationship between a pre-image and its image after a dilation?
7. How are similar figures related by a sequence of transformations?
8. What are the relationships among angles that are created when a line intersects two parallel lines?
9. How are the interior and exterior angles of a triangle related?
10. How can you use angle measures to determine whether two triangles are similar?
 | Text Practice & Problem Solving worksheetsMid-Topic Checkpoint and Performance TaskTeacher created worksheetsFluency Practice ActivityTopic Assessment and/or Performance AssessmentSTEM Project |
| **Enduring Understanding Resources** |
| 1. How can you show that two figures are either congruent or similar to one another?
 | enVision Math 2.0PearsonRealize.comVirtualnerd.com |
| **QUARTER 3 – Big Idea: Understand and Apply the Pythagorean Theorem****Topic: Understand the Pythagorean Theorem and its converse, apply the Pythagoren Theorem to solve problems and find the distance in the coordinate plane.** |
| **Standards:** **NJ Student Learning Standards**8.G.B.68.G.B.78.G.B.8 | **GOAL** |
| SWBAT understand and apply the Pythagorean theorem. |
| **Essential Questions Assessments** |
| 1. How does the Pythagorean Theorem relate the s ide lengths of a right triangle?
2. How can you determine whether a triangle is a right triangle?
3. What types of problems can be solved using the Pythagorean Theorem?
4. How can you use the Pythagorean Theorem to find the distance between two points?
 | Text Practice & Problem Solving worksheetsMid-Topic Checkpoint and Performance TaskTeacher created worksheetsFluency Practice ActivityTopic Assessment and/or Performance AssessmentSTEM Project |
| **Enduring Understanding Resources** |
| 1. How can you use the Pythagorean Theorem to solve problems?
 | enVision Math 2.0PearsonRealize.comVirtualnerd.com |
| **QUARTER 4 – Big Idea: Solve Problems Involving Surface Area and Volume****Topic: Find the surface area of 3-dimensional figures, find the volume of cylinders, cones and spheres.**  |
| **Standards:** **NJ Student Learning Standards**8.G.C.9**Career Ready Practices**CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP12. Work productively in teams while using cultural global competence. | **GOAL** |
| SWBAT solve problems involving surface area and volume. |
| **Essential Questions Assessments** |
| 1. How are the areas of polygons used to find the surface area formulas for 3-dimensional figures?
2. How is the volume of a cylinder related to the volume of a rectangular prism?
3. How is the volume of a cone related to the volume of cylinder?
4. How is the volume of a sphere related to the volume of a cone?
 | Text Practice & Problem Solving worksheetsMid-Topic Checkpoint and Performance TaskTeacher created worksheetsFluency Practice ActivityTopic Assessment and/or Performance AssessmentSTEM Project |
| **Enduring Understanding Resources** |
| 1. How can you find the volumes and surface areas of three-dimensional figures?
 | enVision Math 2.0PearsonRealize.comVirtualnerd.com |
| **QUARTER 4 – Big Idea: Investigate Bivariate Data****Topic: Construct and interpret scatter plots, analyze linear associaions, use linear models to make predictions, interpret two-way frequency and relative frequency tables.** |
| **Standards:** **NJ Student Learning Standards**8.SP.A.18.SP.A.28.SP.A.38.SP.A.48.F.A.38.F.B.4 | **GOAL** |
| SWBAT investigate Bivariate data. |
| **Essential Questions Assessments** |
| 1. How does a scatter plot show the relationship between paired data?
2. How can you describe the association of two data sets?
3. How do linear models help you to make a prediction?
4. How does a two-way frequency table show the relationships between sets of paired data?
5. What is the advantage of a two-way relative frequency table for showing relationships between sets of paired data?
 | Text Practice & Problem Solving worksheetsMid-Topic Checkpoint and Performance TaskTeacher created worksheetsFluency Practice ActivityTopic Assessment and/or Performance AssessmentSTEM Project |
| **Enduring Understanding Resources** |
| 1. How can you represent the relationship between paired data and use the representation to make predictions?
 | enVision Math 2.0PearsonRealize.comVirtualnerd.com |