# 8th Grade Common Core P

**Curriculum Guide**

**Scranton School District**

**Scranton, PA**

**Common Core 8P Concepts of Algebra**

**Prerequisites:**

- Successful completion of Common Core Math 7P

In addition, the students must meet 2 out of 3 criteria:
- A grade of 80 or higher in a Common Core Math 7P
- Teacher recommendation from the 7th grade math teacher
- Students must perform  proficient on the seventh grade PSSA

Course Description

This course is different from Common Core 8 in that it will cover the topics in more depth and sometimes at a more aggressive rate.

- Students will demonstrate an understanding of the connections between the various branches of mathematics by applying computational skills, mathematical reasoning, and introductory algebraic and geometric principles to model and solve real life problems.
- Students will understand the relationship between lines and linear equations and be able to represent such.
- Students will be able to define, recognize, and evaluate functions.
-  Students will demonstrate a proficient understanding of rational and irrational numbers.
- Students will be able to use and understand the Pythagorean Theorem.
- Students will describe the dilations, translations, reflections, and rotations on two-dimensional figures.
- Use statistics and probability to investigate patterns in bivariate data.
- After successfully completing this course, students will be allowed to enroll in  Algebra 1 K/CC

**Year-at-a-glance**

| Subject: Common Core 8P Concepts of Algebra | Grade Level: 8th | Date Completed: 10/22/14 |
|---|---|---|

1st Quarter

| Topic | Resources | CCSS |
|---|---|---|
| Linear Equations: One Variable | Big Ideas Math Blue, Ch. 1 Lesson 1-4 | 8.EE 7a,b |
| Graphing linear Equations | Big Ideas Math Blue, Ch. 4 Lessons 1-2 | 8. EE 7a |
| Proportional Relationships | Big Ideas Math Blue, Ch. 4 Lessons 3 | 8.EE 5 |
| | | |

2$^{nd}$ Quarter

| Topic | Resources | CCSS |
|---|---|---|
| Slope/ linear Equations | Big Ideas Math Blue, Ch. 4 Lessons 4-7 | 8.EE.6  8.EE.7b  8.F.3 |
| Systems of Equations | Big Ideas Math Blue Ch. 5 lessons 1-4 | 8.EE.8a, 8EE.8b, 8EE. 8bc |
| Functions | Big Ideas Math Blue Ch. 6 lessons 1-2 | 8.F.1, 8.F.2 |

3rd Quarter

| Topic | Resources | CCSS |
|---|---|---|
| Functions & Linear Relationships | Big Ideas Math Blue Ch. 6 lessons 3-5 | 8.F 4,5 |
| Rational & Irrational Numbers, Pythagorean Theorem | Big Ideas Math Blue Ch. 7 Lessons 1-5 | 8.NS 1,2 8.G 6,7,8 |
| Volume | Big Ideas Math Blue Ch. 8  Lessons 1-4 | 8.G 9 |
| Statistics & Probability | Big Ideas Math Blue Ch. 9  Lessons 1-4 | 8.SP 1,2,3,4 |
| Exponents & Scientific Notation | Big Ideas Math Blue Ch. 10  Lessons 1-7 | 8.EE 1,2,3,4 |

4<sup>th</sup> Quarter

| Topic | Resources | CCSS |
|---|---|---|
| Geometry | Big Ideas Math Blue, Ch 2, Lessons 1-7 | 8.G.1, 8.G.2, 8.G.3,8.G.4 |
| Angle Relationship | Big Ideas Math Blue, Ch 3, Lesson 1-4 | 8.G.5 |
| **\*\*All topics above this line should be completed prior to PSSA testing. If time allows, new topics can be added.** | | |
| Linear Equations/Slope (Review) | Big Ideas Math Blue Ch. 4 Lessons 4-7 | 8.EE.6,7b 8.F.3 |
| Systems of Equations (Review) | Big Ideas Math Blue Ch. 5 Lessons 1-4 | 8.EE.8 a,b,c |
| Final Exam Review | Big Ideas Math Blue | All |
| | | |
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\* When Common Core becomes fully implemented, the suggested timeline  should be adjusted accordingly.

| General Topic | Academic Standard(s) | Essential Knowledge, Skills & Vocabulary | Resources & Activities | Best Practices | Suggested Time * |
|---|---|---|---|---|---|
| Solving Linear Equations | 8.EE 7a,b | One-Step, Multi-Step, Variables on Both Sides<br>Solutions<br>● One Solution<br>● Infinite Solutions<br>● No Solutions | ● Big Ideas Math Blue, 1.1-1.4<br>● Bigideasmath.com<br>● Triumph Learning CC Coach<br>● Study Island | Use  of  real-life word problems<br><br>Use partially solved problems.<br><br>Use incorrectly solved problems and compare to correctly solved ones. | 18 days |

| Graphing linear Equations | 8.EE 7a<br>8.EE 5<br>8 EE.6 | • Using the Coordinate Plane<br>• Using an x/y chart to graph<br>• Concept of x-intercept<br>• Concept of y-intercept<br>• Independent and dependent variables<br>• Graphing proportional relationships and comparing relationships in different ways<br>• Unit Rate<br>• Interpreting unit rate as the slope of a graph | • Big Ideas Math Blue, Ch 4 Lessons 1-2<br>• Bigideasmath.com<br>• Study Island | Using graphs<br><br>Naming Coordinates<br><br>x/y charts<br><br>Graphing Calculators on-line | 18 days |
| Proportional Relationships | | | • Chapter 4 Big Ideas Math Blue lesson 4.3 | Study Island Built Tests | 5 days |

| General Topic | Academic Standard(s) | Essential Knowledge, Skills & Vocabulary | Resources & Activities | Assessments | Suggested Time |
|---|---|---|---|---|---|
| **Slope/Linear Equations** | **8.EE 6**<br>**8.EE 7b**<br>**8. F 3** | **Determine slope:**<br>● **Visually**<br>● **Formula: given two points**<br>● **Use to derive** $y = mx + b$<br>● Writing equations in slope-intercept form<br>● Writing equations in Point-Slope form | ● **Big Ideas Math Blue, 4.4-4.7 Promethean Board etc.**<br>● **Bigideasmath.com**<br>● **Study Island**<br>● **Khan Academy** | | **18** |

| General Topic | Academic Standard(s) | Essential Knowledge, Skills & Vocabulary | Resources & Activities | Assessments | Suggested Time |
|---|---|---|---|---|---|
| Systems of Equations | 8.EE 8 a,b,c | Types of Solutions<br>Solve by<br>● Graphing,<br>● Substitution<br>● Elimination<br>Real Life Applications | ● Big Ideas Math Blue, 5.1-5.4<br>● Triumph learning CC Support Coach Lesson 7<br>● Triumph Learning CC Coach Lesson 10<br>● Study Island | | 18 days |
| | | | | | |

| General Topic | Academic Standard(s) | Essential Knowledge, Skills & Vocabulary | Resources & Activities | Assessments | Suggested Time |
|---|---|---|---|---|---|
| **Functions & Linear Relationships** | **8.F 1,2**<br>**8.F 4,5** | **Definition and Graph**<br>**Determine function rule**<br>● **from table of values**<br>● **from a graph**<br>**Rate of Change and Initial Value**<br>**Linear and Non-Linear Functions**<br>● **Increasing/decreasing**<br>● **Linear/nonlinear** | ● **Big Ideas Math Blue, 6.1-6.5**<br>● **Triumphlearning CC Support Coach Lesson8, 9**<br>● **Triumphlearning CC Coach Lesson 13-17**<br>● **Promethean Board etc.**<br>● **Study Island** | | **18 days** |

| General Topic | Academic Standard(s) | Essential Knowledge, Skills & Vocabulary | Resources & Activities | Assessments | Suggested Time |
|---|---|---|---|---|---|
| **Rational & Irrational Numbers** | **8.NS 1,2**<br>**8.G 6,7,8**<br>**8 EE 6** | **Classify real numbers**<br>**Irrational Numbers**<br>● **Estimate the value**<br>● **Comparing and ordering all real numbers**<br>**Square roots & Cube roots**<br>**Pythagorean Theorem**<br>● **Proof and Converse**<br>● **Applications in Two and Three Dimensions**<br>● **Explain slope using similar triangles** | ● **Big Ideas Math Blue, 7.1-7.4**<br>● **Triumphlearning CC Support Coach Lesson 1**<br>● **Crosswalk Coach Lesson 1-4**<br>● **Triumphlearning CC Coach Lesson 1-2**<br>● **Promethean Board etc**<br>● **Study Island** | | **5 days** |
| **Volume** | **8.G 9** | **Volumes of Cones, Cylinders, Spheres**<br>● **Formulas**<br>● **Applications** | ● **Big Ideas Math Blue, 8.1-8.4**<br>● **Triumphlearning CC Support Coach Lesson 17**<br>● **Triumphlearning CC Coach Lesson 28**<br>● **Promethean Board etc.**<br>● **Study Island** | | **5 days** |

| General Topic | Academic Standard(s) | Essential Knowledge, Skills & Vocabulary | Resources & Activities | Assessments | Suggested Time |
|---|---|---|---|---|---|
| Statistics & Probability | 8.SP 1,2,3,4 | Scatter Plots <br>● Construct <br>● Interpret <br>● Lines of best fit <br>ope and Intercept) <br>Stem and Leaf Plots <br>Two Way Tables <br>● Construct <br>● Interpret | ● Big Ideas Math Blue, 9.1-9.3 <br>● Triumphlearning CC Support Coach Lesson 18-20 <br><br>● Triumphlearning CC Coach Lesson 29-32 <br>● Promethean Board etc. <br>● Study Island | | 15 days |
| Exponents & Scientific Notation | 8 EE 1,2,3,4 | Operations involving exponents <br>● Integer (positive/negative) <br>● Radical <br>Scientific Notation <br>● Operations involving scientific notation <br>● Applications | ● Big Ideas Math Blue, 10.1-10.7 <br>● Triumphlearning CC Support Coach <br>sson 2-3 <br>● Triumphlearning CC Coach Lesson 3-6 <br>● Promethean Board etc <br>● Study Island | | 18 days |
| Review of Linear Equations/Slope | 8.EE.6,7b <br>8.F.3 | Review of these topics in preparation for Algebra 1 | ● Big Ideas Math Blue, 4.4-4.7 <br>● Study Island | | 12 days |
| Systems of Equations | 8.EE.8a,b,c | Review of topic in preparation for Algebra 1 | ● Big Ideas Math Blue, 5.1-5.4 <br>● Study Island | | 9 days |
| Final Exam Review | All | Review of all topics for final exam | ● Big Ideas Math Blue <br>● Study Island | | 6 days |