## Englewood Public School District

Mathematics
Grade 6

## First Marking Period

## Unit - Positive Numbers and Negative Numbers

Overview: During this unit, students will learn about positive numbers and the number line, negative numbers and the number line and multiplying and dividing fractions and decimals.

Time Frame: Chapter 1 - 12 days, Chapter 2 - 9 days, Chapter 3 - 16 days

## Enduring Understandings:

Whole numbers, fractions and decimals are positive numbers that can be represented in several ways.
Negative numbers are the opposites of positive numbers.
For every positive number, there is a corresponding negative number.
Whole number concepts can be extended to fractions and decimals when more precise calculations are needed.

## Essential Questions:

When is the greatest common factor used?
When is the least common multiple used?
What are the similarities and difference between a factor and a multiple?
How can the distributive property be used to express the sum of two whole numbers?
What is a rational number?
Where is the opposite of a number located on a number line?
How can a visual model of an equation be created to demonstrate the process of division of fractions?
Can the long division standard algorithm be used efficiently?
Where is the decimal point placed when adding, subtracting, multiplying and dividing decimals?

| Standards | Topics and Objectives | Activities | Resources | Assessments |
| :---: | :---: | :---: | :---: | :---: |
| Chapter 1 <br> (Skip 1.4 \& 1.5) |  |  |  |  |
| $\square$ . Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal | Topics <br> Positive numbers and the number line. Prime factorization and common factors and multiples. | 6.NS.B. 4 Factors and Common Factors <br> 6.NS.B. 4 Multiples and Common Multiples | SE-6A: 5-28; 38-41 <br> My HRW - Online access to all Math in Focus materials listed above and Virtual Manipulatives | Unit 1 Benchmark Assessments: <br> Common Formative Assessment <br> Exact Path |

to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36+8$ as $4(9+2)$.
6.NS.C.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(3 ) $=3$, and that 0 is its own opposite.
b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or

Twenty-First Century Themes and Skills include:

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration


## Objectives

The students will be able to:

- Represent whole numbers, fractions and decimals on a number line.
- Interpret and write statements of inequality for two given positive numbers using the symbols $>$ and $<$.
- Express a whole number as a product of its prime factors.
- Find the common factors and the greatest common factor of two whole numbers.
- Find the common multiples and the least common multiple of two whole numbers.
- Reinforce, consolidate, and extend chapter skills and concepts.


## Math Playground

http://www.mathplaygrou nd.com/

Math Fact Practice http://www.playkidsgam es.com/games/mathfact/ mathFact.htm

## Grades 6-8 Math

Fluency Support
https://www.engageny.org /resource/mathematics-
fluency-support-grades-6$\underline{8}$

## Brain Genie

http://braingenie.ck12.org/

## Math Game Time

http://www.mathgametim e.com/

## Everything you need to know about math journals:

https://thecornerstoneforte achers.com/math-journals/ (NJSLSA.R1, NJSLSA.W2, NJSLSA.L1)

Teaching prime numbers and prime factorization - a short movie: https://www.youtube.com/

## Technology Resources

- Math in Focus eBooks
- Math in Focus Teacher Resources CD
- Interactive Whiteboard lessons
- Virtual Manipulatives
- Online Professional Development Videos

North Carolina Dept of Ed.

## Wikispaces:

http://maccss.ncdpi.wikispa ces.net/Middle+School

## Math Goodies - Math

## Lessons

http://www.mathgoodies.co m/

## Standards Solution

Lessons:

- PARCC Lesson 9: Type

I Selected -Response Menu Style Items

- CCSS Lesson Plan: Bunches of Balloons Discovering When to Find the GCF
- CCSS Lesson Plan: Hot Dogs and Buns: Discovering When to Find LCM
- CCSS Lesson Plan:

Statements of Inequality in the Real World

## Formative Assessments:

Math journal
(NJSLSA.R1, NJSLSA.W2,
NJSLSA.L1)
Multiple choice / short answer assessments (CRP8)

Mini quizzes - assess just one topic, or what was done within 1 or 2 days (CRP8)

## Summative Assessments:

## Math in Focus Assessments

SE/TE: pp. 39, 40-41
Assessments Course 1:
Chapter 1
Test A pp. 2-5;
Test B pp. 6-9
ExamView Assessment Suite - Test and Practice Generator

## Alternative Assessments:

Learning centers: each
learning center focuses on a different type of problem (CRP8)
both axes.
c. Find and position integers
and other rational numbers
on a horizontal or vertical
number line diagram; find
and position pairs of
integers and other rational
numbers on a coordinate
plane.
6.NS.C.7. Understand
ordering and absolute value
of rational numbers.
a. Interpret statements of
inequality as statements
about the relative position of
two numbers on a number
line diagram. For example,
interpret $-3>-7$ as a
statement that -3 is located to
the right of -7 on a number
line oriented from left to
right.
Mathematical Practices
MP.1, MP.2, MP.3, MP.4,
MP.6, MP. 8

| $\frac{\text { watch?v=282M_kTxtTM }}{\text { (8.1.8.A.1) }}$ | $6^{\text {th }}$ grade assessments, interactive, videos, games, lessons, homework: | Create posters illustrating the main objectives of the unit |
| :---: | :---: | :---: |
| Prime factorization - | https://www.opened.com/sea | (RH.6-8.7) |
| Lava walk: | rch?area=mathematics\&grad |  |
| https://study.com/academ | e=6\&offset=0\&resource_typ | Create a dictionary |
| y/lesson/prime- | e=interactive-assessment | defining and illustrating |
| factorization-activities- | (CRP2, CRP4, CRP8, | vocabulary terms |
| games.html | 8.1.8.A.1) | (RH.6-8.7) |
| (CRP2, CRP8) |  |  |
|  | $6^{\text {th }}$ grade worksheets, |  |
| Factor trees game: https://www.mathplaygro | games, lessons, activities: <br> https://www.education.com/r | the main objectives of the unit |
| und.com/factortrees.html | esources/math/middle- | (RH.6-8.7) |
| (8.1.8.A.1) | school/ |  |
|  | (CRP2, CRP4, CRP8, | Create displays of prime |
| Factorization forest game: | 8.1.8.A.1) | factorizations (RH.6-8.7) |
| https://www.mrnussbaum. | $6^{\text {th }}$ grade worksheets: |  |
| com/factorization_forest/ | https://www.k5learning.com/ | Games (see activity |
| (8.1.8.A.1) | free-math-worksheets/sixth-grade-6 | section) |
| Hanging out with prime factorization lesson | (CRP2, CRP4, CRP8) |  |
| (complete with | $6^{\text {th }}$ grade common core |  |
| modifications for different | worksheets: |  |
| learners at the bottom of | https://www.ixl.com/math/gr |  |
| the page) | ade-6 |  |
| https://alex.state.al.us/less | (CRP2, CRP4, CRP8 |  |
| on_view.php?id=26277 |  |  |
| (CRP8) | Khan Academy - videos, lessons, assessments |  |
| Additional texts: | www.khanacademy.org |  |
| www.newsela.com | (8.1.8.A.1) |  |
| www.readworks.org |  |  |
| www.commonlit.org |  |  |

## Chapter 2

## 6.NS.C.6. Understand a

 rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-$ 3 ) $=3$, and that 0 is its own opposite.
b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of

Topics
Negative number, the number line, and absolute value.

Twenty-First Century
Themes and Skills include:

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration


## Objectives

The students will be able to:

- Use negative numbers to represent real-world quantities.
- Represent, compare, and order positive and negative numbers on a number line.
- Understand absolute value of a number is its distance from 0 on the number line.
- Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
- Reinforce, consolidate,
6.NS.C. 6 Mile High
6.NS.C. 7 Jumping Flea
6.NS.C.7a Fractions on the Number Line
6.NS.C.7b Comparing

Temperatures

## Math Playground

http://www.mathplaygrou nd.com/

## Math Fact Practice

 http://www.playkidsgam es.com/games/mathfact/ mathFact.htmGrades 6-8 Math
Fluency Support
https://www.engageny.org /resource/mathematics-
fluency-support-grades-68

## Brain Genie

http://braingenie.ck12.org/

## Math Game Time

http://www.mathgametim e.com/

SE-6A: 45-61 Formative Assessments:
Math journal
My HRW - Online access to (NJSLSA.R1, all Math in Focus materials NJSLSA.W2, listed above and Virtual Manipulatives

Technology Resources

- Math in Focus eBooks
- Math in Focus Teacher Resources CD
- Interactive Whiteboard lessons
- Virtual Manipulatives
- Online Professional Development Videos

http://maccss.ncdpi.wikispa ces.net/Middle+School

Math Goodies - Math
Lessons
http://www.mathgoodies.co

## m/

## Standards Solution

## Lessons:

- PARCC Lesson 7:

Simplify Expressions.
Locate on a Number Line

SE/TE: pp. 59, 60-61

## Assessments Course 1:

 Chapter 2Test A pp. 11-13;
Test B pp. 14-16
ExamView Assessment Suite - Test and Practice Generator

| Alternative Assessments: |
| :--- |
| Learning centers: each |
| learning center focuses on |



| statements about order. For example, recognize that an account balance less than 30 dollars represents a debt greater than 30 dollars. <br> Mathematical Practices MP.1, MP.2, MP.4, MP. 7 |  | value-and-oppositeintegers (8.1.8.A.1) <br> Additional texts: www.newsela.com www.readworks.org www.commonlit.org | Khan Academy - videos, lessons, assessments www.khanacademy.org (8.1.8.A.1) <br> A positive approach to teaching negative numbers: https://www.scholastic.com/t eachers/blog-posts/alycia-zimmerman/positive-approach-teaching-negativenumbers/ $\overline{\text { (8.1.8.A.1) }}$ |  |
| :---: | :---: | :---: | :---: | :---: |
| Chapter 3 |  |  |  |  |
| 6.NS.A.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2 / 3) \div(3 / 4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2 / 3) \div(3 / 4)=$ $8 / 9$ because $3 / 4$ of $8 / 9$ is $2 / 3$. (In general, $(a / b) \div(c / d)=$ ad/bc.) How much chocolate will each person get if 3 people share $1 / 2 \mathrm{lb}$ of | Topics <br> Dividing fractions, multiplying decimals and real-world problems with fractions and decimals. <br> Twenty-First Century Themes and Skills include: <br> - Creativity and Innovation <br> - Critical Thinking and Problem Solving <br> - Communication and Collaboration Objectives <br> The students will be able to: <br> - Divide a fraction, whole | 6.NS.A. 1 Traffic Jam <br> 6.NS.B. 3 Reasoning about Multiplication and Division and Place Value, Part 1 <br> Math Playground http://www.mathplaygrou nd.com/ <br> Math Fact Practice http://www.playkidsgam es.com/games/mathfact/ $\underline{\text { mathFact.htm }}$ <br> Grades 6-8 Math Fluency Support https://www.engageny.org | SE-6A: 65-113 <br> My HRW - Online access to all Math in Focus materials listed above and Virtual Manipulatives <br> Technology Resources <br> - Math in Focus eBooks <br> - Math in Focus Teacher Resources CD <br> - Interactive Whiteboard lessons <br> - Virtual Manipulatives <br> - Online Professional Development Videos <br> North Carolina Dept of Ed. Wikispaces: | Formative Assessments: <br> Math journal <br> (NJSLSA.R1, <br> NJSLSA.W2, <br> NJSLSA.L1) <br> Multiple choice / short answer assessments (CRP8) <br> Mini quizzes - assess just one topic, or what was done within 1 or 2 days (CRP8) <br> Summative Assessments: <br> Math in Focus Assessments |




## Key Vocabulary:

## Chapter 1:

Number line, positive number, composite number, prime factor, common factor, greatest common factor, common multiple, least common multiple

## Chapter 2:

Negative number, opposite, absolute value

## Chapter 3:

Reciprocals

## NJ Learning Standards Vocabulary:

## 6.NS.A. 1

Apply and extend previous understanding of multiplication and division to divide fractions by fractions.
reciprocal, multiplicative inverses, visual fraction model

## 6.NS.B. 2

Compute fluently with multi-digit numbers and find common factors and multiples.
multi-digit

## 6.NS.B. 3 \& 4

Compute fluently with multi-digit numbers and find common factors and multiples.
greatest common factor, least common multiple, prime numbers, composite numbers, relatively prime, factors, multiples, distributive property, prime factorization

## 6.NS.C. 6 \& 7

Apply and extend previous understanding of numbers to the system of rational numbers.
Rational numbers, opposites, origin, quadrants, coordinate plane, ordered pairs, x -axis, y -axis, coordinates

## Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered. Additional staff should be included so all students can fully participate in the standards associated with this curriculum.

ELL/ESL students: Students will be supported according to the recommendations for "can do's" as outlined by WIDA -
https://www.wida.us/standards/CAN_DOs/
Students at risk of school failure: Formative and summative data will be used to monitor student success at first signs of failure. Student work will be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations. More time will be made available with a certified instructor to aid students in reaching the standards.

Gifted and Talented Students: Students excelling in mastery of standards will be challenged with complex, high level challenges.
English Language Learners: $\quad$ Special Education: $\quad$ At-Risk

- Teaching modeling
- Peer modeling
- Word walls
- Give directions in small steps and in as few words as


## Special Education:

- Utilize modifications \& accommodations delineated in the students' IEP
- Work with paraprofessional
- Work with a partner


## At-Risk:

- Use visual demonstrations, illustrations and models
- Give directions / instructions verbally and in simple written format


## Gifted and Talented:

- Inquiry based instruction
- Independent study
- Higher order thinking skills
- Adjusting the pace of the
possible
- Provide visual aids
- Group similar problems together
- Repeat directions when necessary
- Provide a vocabulary list with definitions
- Shorten assignments to focus on mastery or key concepts
- Maintain adequate space between desks
- Keep workspaces clear of unrelated materials
- Provide fewer problems to attain passing grades
- Tape a number line to the student's desk
- Create a math journal that they can use during class, on assignments and (if teacher allows) on assessments
- Provide extra time to complete a task when needed
- Provide definitions of different graphs / charts with illustrations
- Allow tests to be taken in a separate room
- Allow students to use a calculator when appropriate
- Divide test into small sections of similar questions or problems -
- Peer support
- Increased one - on - one time
- Teachers may modify instructions by modeling what the student is expected to do
- Instructions may be printed out in large print and hung up for the students to see during the time of the lesson
- Review behavior expectations and make adjustments
- Create a math journal that they can use during class, on assignments and (if teacher allows) on assessments
- Allow students to complete an independent project as an alternative test
lessons
- Real world scenarios
- Student driven instruction
- Allow students to complete an independent project as an alternative test


## Integration of Technology Standards NJSLS:

8.1.8.A.1: Demonstrate knowledge of a real world problem using digital tools.

## $21^{\text {st }}$ Century Standards

9.2.8.B.1: Research careers within the 16 Career Clusters and determine attributes of career success.
9.2.8.B.2: Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational path.
9.2.8.B.3: Evaluate communication, collaboration and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

Career Ready Practices:
CRP2: Apply appropriate academic and technical skills
CRP4: Communicate clearly and effectively and with reason
CRP6: Demonstrate creativity and innovation
CRP8: Utilize critical thinking to make sense of problems and persevere in solving them

Major Supporting Additional (Identified by PARCC Model Content Frameworks)

