Englewood Public School District
Mathematics
Grade 6
Second Marking Period

Unit – Ratio, Rates and Percents

Overview: During this unit, students will learn about ratio, rates, percents and algebraic expressions.

Time Frame: Chapter 4 – 14 days, Chapter 6 – 7 days, Chapter 7 - 15 days

Enduring Understandings:
You can use a ratio to compare two quantities, and you can use ratios to solve problems.
Percent is a concept used to compare quantities expressed per hundred.
Algebraic expressions can be used to describe and solve real-world problems.

Essential Questions:
What is a ratio?
How can a ratio be used to compare two quantities?
How is a table used to show equivalent ratios?
How can you use tables to compare ratios?
How do you convert units of measure using ratios?
How are rates and percents similar?
How do rates and percents differ?
How are verbal models translated into mathematical expressions?
In a given expression, can the mathematical terms be identified?
How is the Order of Operations used in evaluating variable expressions that contain exponents?
How do properties of operations help prove expressions are equivalent?
When are expressions equivalent?

Standards	Topics and Objectives	Activities	Resources	Assessments
Chapter 4				
6.RP.A.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks*	**Topics** Comparing two quantities, equivalent ratios, and real-world problems with ratios.	6.RP.A.1 Games at Recess 6.RP.A.3 Voting for Three, Variation 1 6.RP.A.2 Price per pound	**SE-6A:** 118-153 **My HRW** - Online access to all Math in Focus materials listed above and Virtual Manipulatives	**Unit 2 Benchmark Assessment:** Exact Path **Formative Assessments:** Math journal

in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes." 6.RP.A.3. **Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.** **a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.** **d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.** Supplemental materials are needed to address the following standards since you are skipping Chapter 5. 6.RP.A.2. **Understand the concept of a unit rate a/b**	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: • Write ratios to compare two quantities. • Interpret ratios given in fraction form. • Use a ratio to find what fraction one quantity is of another or how many times as great one is as the other. • Write equivalent ratios. • Write ratios in simplest form. • Compare ratios. • Solve real-world problems involving ratios. • Reinforce, consolidate, and extend chapter skills and concepts.	and pounds per dollar **Math Playground** http://www.mathplayground.com/ **Math Fact Practice** **http://www.playkidsgames.com/games/mathfact/mathFact.htm** **Grades 6-8 Math Fluency Support** https://www.engageny.org/resource/mathematics-fluency-support-grades-6-8 **Brain Genie** http://braingenie.ck12.org/ **Math Game Time** http://www.mathgametime.com/ **Everything you need to know about math journals:** https://thecornerstoneforteachers.com/math-journals/ (NJSLSA.R1, NJSLSA.W2, NJSLSA.L1) **Ratio and proportion lesson (activities bulleted below)**: http://kuna6th.weebly.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.wikispaces.net/Middle+School** **Math Goodies – Math Lessons** **http://www.mathgoodies.com/** **Standards Solution Lessons:** • **PARCC Lesson 14:** Practice PARCC Type I Ratio and Proportional Relationships • **CCSS Lesson Plan:** Inches to Feet to Yards: Using Proportions to Convert Units **6th grade assessments, interactive, videos, games, lessons, homework:** https://www.opened.com/search?area=mathematics&grade=6&offset=0&resource_typ	(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. 151, 152–153 **Assessments Course 1: Chapter 4** Test A pp. 36–38; Test B pp. 39–41 ExamView Assessment Suite – Test and Practice Generator **Alternative Assessments:** Learning centers: each learning center focuses on a different type of problem (CRP8) Create posters illustrating the main objectives of the

associated with a ratio *a*:*b* with *b* ≠ 0, and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."* (Expectations for unit rates in this grade are limited to non-complex fractions.) 6.RP.A.3. **Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.** **b. Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?*** *Mathematical Practices* MP.1, MP.2, MP.3, MP.4 MP.5, MP.6, MP.7, MP.8		/ratio-and-proportion-lessons.html • **Leg task:** http://kuna6th.weebly.com/uploads/1/7/3/2/17324544/legs_task.pdf • Foodbank: http://kuna6th.weebly.com/uploads/1/7/3/2/17324544/foodbank_task.pdf • Grocery store: http://kuna6th.weebly.com/uploads/1/7/3/2/17324544/albertsons_weekly_ads.pdf • Cookie task: http://kuna6th.weebly.com/uploads/1/7/3/2/17324544/cookie_task.pdf • Dog food task: http://kuna6th.weebly.com/uploads/1/7/3/2/17324544/dog_food_task.pdf (CRP2, CRP4, CRP8, NJSLSA.R1, NJSLSA.W2, NJSLSA.L1) **Ratio design challenge:** http://www.scholastic.com/unexpectedmath/ratio-challenge/teachers-guide.htm	e=interactive-assessment (CRP2, CRP4, CRP8, 8.1.8.A.1) **6th grade worksheets, games, lessons, activities:** https://www.education.com/resources/math/middle-school/ (CRP2, CRP4, CRP8, 8.1.8.A.1) **6th grade worksheets:** https://www.k5learning.com/free-math-worksheets/sixth-grade-6 (CRP2, CRP4, CRP8) **6th grade common core worksheets:** https://www.ixl.com/math/grade-6 (CRP2, CRP4, CRP8 **Khan Academy – videos, lessons, assessments** www.khanacademy.org (8.1.8.A.1)	unit (RH.6-8.7) Create a dictionary defining and illustrating vocabulary terms (RH.6-8.7) Create posters illustrating the main objectives of the unit (RH.6-8.7) Create displays of prime factorizations (RH.6-8.7) Ratio design challenge: http://www.scholastic.com/unexpectedmath/ratio-challenge/teachers-guide.htm (CRP2, CRP4, CRP8, RH.6-8.7)

		(CRP2, CRP4, CRP8) **Dunk tank – ratio and proportions:** https://wvia.pbslearningmedia.org/resource/f9dbedd6-b4ed-47b4-bdd1-69ab5c73deae/f9dbedd6-b4ed-47b4-bdd1-69ab5c73deae (8.1.8.A.1) **Additional texts:** www.newsela.com www.readworks.org www.commonlit.org		

Chapter 6 **(Skip 6.4 and 6.5)**				
6.RP.A.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. **c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.**	**Topics** Equivalent fractions, decimals and percents. Finding percent of a number. Twenty-First Century Themes and Skills include: • Creativity and Innovation • Critical Thinking and Problem Solving • Communication and Collaboration **Objectives**	6.RP.A.3c Shirt Sale **Math Playground** http://www.mathplayground.com/ **Math Fact Practice** **http://www.playkidsgames.com/games/mathfact/mathFact.htm** **Grades 6-8 Math Fluency Support** https://www.engageny.org/resource/mathematics-fluency-support-grades-6-	**SE-6A:** 185-197; 214-217 **My HRW** - Online access to all Math in Focus materials listed above and Virtual Manipulatives **Technology Resources** • Math in Focus eBooks • Math in Focus Teacher Resources CD • Interactive Whiteboard lessons • Virtual Manipulatives • Online Professional	**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:**

Mathematical Practices MP.1, MP.2**, MP.3, MP.4** MP.5, MP.6**, MP.7, MP.8**	The students will be able to: • Understand percent notation. • Write equivalent fractions, decimals, and percents. • Write more equivalent fractions, decimals and percents. • Find the percent of a number. • Reinforce, consolidate, and extend chapter skills and concepts.	8 **Brain Genie** http://braingenie.ck12.org/ **Math Game Time** http://www.mathgametime.com/ **Everything you need to know about math journals:** https://thecornerstoneforteachers.com/math-journals/ (NJSLSA.R1, NJSLSA.W2, NJSLSA.L1) **Dunk tank – fractions, decimals and percents:** https://wvia.pbslearningmedia.org/resource/f79f8bb4-ef77-4ca5-afa8-4e5c69211786/f79f8bb4-ef77-4ca5-afa8-4e5c69211786 (8.1.8.A.1) **Conversions rock – lessons and activities:** https://www.scholastic.com/teachers/sponsored-content/unexpected-math/17-18/conversions-rock/ (CRP2, CRP8) **Additional texts:**	Development Videos **North Carolina Dept of Ed. Wikispaces:** **http://maccss.ncdpi.wikispaces.net/Middle+School** **Math Goodies – Math Lessons** **http://www.mathgoodies.com/** **Standards Solution Lessons:** **CCSS Lesson Plan:** Percent: Part of a Whole **6th grade assessments, interactive, videos, games, lessons, homework:** https://www.opened.com/search?area=mathematics&grade=6&offset=0&resource_type=interactive-assessment (CRP2, CRP4, CRP8, 8.1.8.A.1) **6th grade worksheets, games, lessons, activities:** https://www.education.com/resources/math/middle-school/ (CRP2, CRP4, CRP8, 8.1.8.A.1) **6th grade worksheets:** https://www.k5learning.com/free-math-worksheets/sixth-	**Math in Focus Assessments** (**Skip lessons 6.4 & 6.5**) **SE/TE:** pp. 215, 216–217, Items: 1–14, 117–18 **Assessments Course 1: Chapter 6** Test A pp. 51–53, Items: 1–7; Test B pp. 54–56, Items: 1–7 ExamView Assessment Suite – Test and Practice Generator **Alternative Assessments:** Learning centers: each learning center focuses on a different type of problem (CRP8) Create posters illustrating the main objectives of the unit (RH.6-8.7) Create a dictionary defining and illustrating vocabulary terms (RH.6-8.7) Create posters illustrating the main objectives of the

		www.newsela.com www.readworks.org www.commonlit.org	grade-6 (CRP2, CRP4, CRP8) **6th grade common core worksheets:** https://www.ixl.com/math/grade-6 (CRP2, CRP4, CRP8) **Khan Academy – videos, lessons, assessments** www.khanacademy.org (8.1.8.A.1)	unit (RH.6-8.7) Create displays of prime factorizations (RH.6-8.7)

Chapter 7				
6.EE.A.2. Write, read, and evaluate expressions in which letters stand for numbers. **a. Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 – y.*** **b. Identify parts of an expression using mathematical terms (sum, term, product, factor,**	**Topics** Writing, evaluating, simplifying, expanding and factoring algebraic expressions. Solving real-world problems with algebraic expressions. Twenty-First Century Themes and Skills include: • Creativity and Innovation • Critical Thinking and Problem Solving	6.EE.A.2 Rectangle Perimeter 1 6.EE.A.4 Rectangle Perimeter 2 6.EE.A.4 Equivalent Expressions **Math Playground** http://www.mathplayground.com/ **Math Fact Practice** **http://www.playkidsgam**	**SE-6A:** 221-259 **My HRW** - Online access to all Math in Focus materials listed above and Virtual Manipulatives **Technology Resources** • Math in Focus eBooks • Math in Focus Teacher Resources CD • Interactive Whiteboard lessons • Virtual Manipulatives	**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)

quotient, coefficient); view one or more parts of an expression as a single entity. ***For example, describe the expression 2(8+7) as a product of two factors; view (8+7) as both a single entity and a sum of two terms*** **c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).** ***For example, use the formulas $V=s^3$ and $A=6s^2$ to find the volume and surface area of a cube with sides of length s=1/2.*** 6.EE.A.3. **Apply the properties of operations to generate equivalent expressions.** ***For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the***	• Communication and Collaboration **Objectives** The students will be able to: • Use variables to write algebraic expressions. • Evaluate algebraic expressions for given values of the variables. • Simplify algebraic expressions in one variable. • Recognize that the expression obtained after simplifying is equivalent to the original expression. • Expand simple algebraic expressions. • Factor simple algebraic expressions. • Solve real-world problems involving algebraic expressions. • Reinforce, consolidate, and extend chapter skills and concepts.	**es.com/games/mathfact/mathFact.htm** **Grades 6-8 Math Fluency Support** https://www.engageny.org/resource/mathematics-fluency-support-grades-6-8 **Brain Genie** http://braingenie.ck12.org/ **Math Game Time** http://www.mathgametime.com/ **Everything you need to know about math journals:** https://thecornerstoneforteachers.com/math-journals/ (NJSLSA.R1, NJSLSA.W2, NJSLSA.L1) **Activities for algebraic expressions (registration required):** https://www.buzzmath.com/badges/criteria/content-cc6-algebraic-expressions-gold (NJSLSA.W2) **Writing algebraic expressions – lesson and activities:**	• Online Professional Development Videos **North Carolina Dept of Ed. Wikispaces:** **http://maccss.ncdpi.wikispaces.net/Middle+School** **Math Goodies – Math Lessons** **http://www.mathgoodies.com/** **Standards Solution Lessons:** • **PARCC Lesson 8:** Equivalent Expressions • **PARCC Lesson 15:** Performance Based Assessment - Reasoning • **CCSS Lesson Plan:** Equivalent Expression Game • **CCSS Lesson Plan:** Variables in Expressions **6th grade assessments, interactive, videos, games, lessons, homework:** https://www.opened.com/search?area=mathematics&grade=6&offset=0&resource_type=interactive-assessment (CRP2, CRP4, CRP8, 8.1.8.A.1) **6th grade worksheets, games, lessons, activities:**	**Summative Assessments:** **Math in Focus Assessments** **SE/TE**: pp. 108, 109–110, 111–113 **Assessments Course 1: Chapter 7** Test A pp. 59–61; Test B pp. 62–64 **Assessments Course 1: Mid-Course Test A** pp. 65–72; **Mid-Course Test B** pp. 73–80 ExamView Assessment Suite – Test and Practice Generator **Alternative Assessments:** Learning centers: each learning center focuses on a different type of problem (CRP8) Create posters illustrating the main objectives of the unit (RH.6-8.7) Create a dictionary defining and illustrating vocabulary terms (RH.6-8.7)

equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y. **6.EE.A.4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*** **6.EE.B.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.** *Mathematical Practices* MP.1, MP.2, MP.3, MP.4 MP.6, MP.7		https://betterlesson.com/lesson/544062/writing-algebraic-expressions (NJSLSA.W2) **Algebraic expressions and the real world – lesson and activities:** https://betterlesson.com/lesson/544063/algebraic-expressions-and-the-real-world (NJSLSA.W2) **Algebraic expressions with dots:** https://labyrinth.thinkport.org/www/educators/resources/lessons/lounge_grade6.pdf (CRP6, CRP8, NJSLSA.W2) **Additional texts:** www.newsela.com www.readworks.org www.commonlit.org	https://www.education.com/resources/math/middle-school/ (CRP2, CRP4, CRP8, 8.1.8.A.1) **6th grade worksheets:** https://www.k5learning.com/free-math-worksheets/sixth-grade-6 (CRP2, CRP4, CRP8) **6th grade common core worksheets:** https://www.ixl.com/math/grade-6 (CRP2, CRP4, CRP8 **Khan Academy – videos, lessons, assessments** www.khanacademy.org (8.1.8.A.1)	Create posters illustrating the main objectives of the unit (RH.6-8.7) Create displays of prime factorizations (RH.6-8.7) Have students create their own algebraic expressions based on the website below and share them with the class / a partner: https://labyrinth.thinkport.org/www/educators/resources/lessons/lounge_grade6.pdf (RH.6-8.7, CRP6, CRP8)

Key Vocabulary:
Chapter 4:
ratio, term, equivalent ratios, simplest form

Chapter 6:
percent

Chapter 7:
Variable, algebraic expression, terms, evaluate, substitute, simplify, coefficient, like terms, equivalent expressions, expand, factor

NJ Learning Standards Vocabulary:
6.RP.A.1, 2, & 3
Understand ratio concepts and use ratio reasoning to solve problems.
ratio, equivalent ratios, tape diagram, unit rate, part-to-part, part-to-whole, percent

6.EE.A. 2, 3, & 4
Apply and extend previous understanding of arithmetic to algebraic expressions.
exponents, base, numerical expressions, algebraic expressions, evaluate, sum, term, product, factor, quantity, quotient, coefficient, constant, like terms, equivalent expressions, variables

6.EE.B.6
Reason about and solve one-variable equations and inequalities.
inequalities, equations, greater than, >, less than, <, greater than or equal to, ≥, less than or equal to, ≤, profit, exceed

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:	Special Education:	At-Risk:	Gifted and Talented:
• Teaching modeling • Peer modeling • Word walls • Give directions in small steps and in as few words as possible • Provide visual aids • Group similar problems together • Repeat directions when necessary • Provide a vocabulary list with definitions	• Utilize modifications & accommodations delineated in the students' IEP • Work with paraprofessional • Work with a partner • 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	• Use visual demonstrations, illustrations and models • Give directions / instructions verbally and in simple written format • 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	• Inquiry based instruction • Independent study • Higher order thinking skills • Adjusting the pace of the lessons • Real world scenarios • Student driven instruction • Allow students to complete an independent project as an alternative test
Interdisciplinary Connections: ELA			

NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content
NJSLSA.L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking
RH.6-8.7 Integrate visual information (e.g., in charts, graphs, photographs, videos or maps) with other information in print and digital texts

Integration of Technology Standards NJSLS:

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

21st 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)