Englewood Public School District
Mathematics
Grade 3
Second Marking Period

Unit - Measurement

Overview: During this unit, students will learn about metric length, mass and volume, bar graphs and line plots, and fractions.

Time Frame: Chapter 11 – 10 days, Chapter 13 – 10 days, Chapter 14 – 16 days
(Pacing includes 1 day for Chapter Opener pages if needed.)

Enduring Understandings:
Length, mass, and volume can be measured using metric units of measurement.
Bar graphs and line plots help to organize data.
Bar graphs are used to compare data.
Line plots show how data is spread out.
Fractions can be used to describe parts of a region or parts of a set.

Essential Questions:
How do we determine what unit to measure with?
Why do we use graphs and tables?
Where can fractions be found in real life?

Standards	Topics and Objectives	Activities	Resources	Assessments
Chapter 11				
Note: Measurement conversion is a 4th grade standard. **3.MD.A.2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). (Excludes compound units**	**Topics** Using metric units of measurement to measure length, mass and volume. **Twenty-First Century Themes and Skills include:** • Creativity and Innovation • Critical Thinking and	Students will discuss how measurement fits into our daily lives including in different jobs. (9.2.4.A.2) **Math Playground** http://www.mathplayground.com/ **Math Coach – Fact**	**SE-3B:** 35-58 **Workbook 3B:** 23-40 **Common Core Focus Lesson Appendix** **Think Central**: Online access to all Math in Focus materials listed above and Virtual Manipulatives	**Formative Assessments:** • Do Now • Exit Ticket • Math Journal Entries (CRP4) • Math notebook (NJSLSA.W2.) • Calendar skills • Observations • Discussions: in

such as cm^3 and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. Excludes multiplicative comparison problems (problems involving notions of "times as much"; see Table 2 ***Mathematical Practices*** **MP.1, MP.8**	Problem Solving • Communication and Collaboration **Objectives** Students will be able to: • Use meters and centimeters as units of measurement of length. • Estimate and measure length. • Use kilometers and meters as units of measurement of length. • Read scales in kilograms and grams. • Estimate and find actual masses of objects by using different scales. • Estimate and find volume of liquid in liters and milliliters. • Find the volume and capacity of a container	**Fluency** **http://schoolwires.henry.k12.ga.us/Page/21865** **Math Wire – Basic Facts Link** **http://mathwire.com/numbersense/bfactslinks.html** **Math Fact Practice** **http://www.playkidsgames.com/games/mathfact/mathFact.htm** **Critical Thinking and Problem Solving** p.56: Put on Your Thinking Cap! **3rd grade measurement and data activities based on standards (3.MD.A.2 specifically):** https://www.k-5mathteachingresources.com/3rd-grade-measurement-and-data.html (CRP2, CRP4, CRP8) **Children's books:** https://www.the-best-childrens-books.org/math-for-kids.html **More additional texts:** www.newsela.com	**Professional Resources:** The Model Method from the Ministry of Education Singapore and Bar Modeling: A Bar Modeling Tool by Yeap Ban Har, PhD. **Lesson and Component Walkthrough:** www.hmhelearning.com **Technology Resources** • Math in Focus eBooks • Math in Focus Teacher Resources CD **Arizona Flip Book:** http://www.azed.gov/azcommoncore/files/2012/11/3flipbookedited_2.pdf **North Carolina Dept of Ed. Wikispaces:** http://maccss.ncdpi.wikispaces.net/Elementary **Standards Solution Lessons:** • **CCSS Lesson Plan:** Finding Liquid Volume **Worksheets, games, lessons, activities:** **https://www.education.com/resources/third-grade/math/** (CRP2, CRP4, CRP8)	groups, have students explain different ways of solving problems (CRP4) **Summative Assessments:** *Math in Focus Assessments* • Chapter Review/Test – pp 57-58 • Assessments 3 – pp.80-82 • ExamView Assessment Suite – Test and Practice Generator • Performance Task **Benchmark Assessment:** • Exact Path **Alternative Assessments:** • Online assessments: https://www.opened.com/search?area=mathematics&grade=3&resource_type=assessment (CRP2, CRP4, CRP8) • Learning centers: each learning center focuses on a different type of

		www.readworks.org www.commonlit.org	**3rd grade classroom assessments: https://www.opened.com/search?area=mathematics&grade=3&resource_type=assessment** (CRP2, CRP4, CRP8) **3rd grade worksheets: https://www.k5learning.com/free-math-worksheets/third-grade-3** (CRP2, CRP4, CRP8)	problem • Graphic Organizers https://www.understood.org/en/school-learning/learning-at-home/homework-study-skills/download-graphic-organizers-to-help-kids-with-math (8.1.5.A.3) • Student learning stations where students are asked to measure and weigh different objects accurately

Chapter 13				
3.MD.B.3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more"	**Topics** Bar graphs and line plots help to organize data. Line plots show how data is spread out.	**Math Playground** http://www.mathplayground.com/ (8.1.5.D.3) **Math Coach – Fact Fluency**	**SE -3B:** 84-111 **Workbook 3B:** 61-90 **Common Core Focus Lesson Appendix**	**Formative Assessments:** • Do Now • Exit Ticket • Math Journal Entries (CRP4) • Math notebook

and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

3.MD.B.4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

Mathematical Practices
MP.1, MP.2, MP.3, MP.5, MP.6

Twenty-First Century Themes and Skills include:

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

Objectives

Students will be able to:

- Make bar graphs with scales using data in picture graphs and tally charts.
- Read and interpret data from bar graphs.
- Solve problems using bar graphs.
- Make a line plot to represent and interpret data.

http://schoolwires.henry.k12.ga.us/Page/21865

Math Wire – Basic Facts Link
http://mathwire.com/numbersense/bfactslinks.html (8.1.5.D.3)

Math Fact Practice
http://www.playkidsgames.com/games/mathfact/mathFact.htm (8.1.5.D.3)

Critical Thinking and Problem Solving p.105: Put on Your Thinking Cap!

3rd grade measurement and data activities based on standards (3.MD.B.3 and 3.MD.B.4 specifically):
https://www.k-5mathteachingresources.com/3rd-grade-measurement-and-data.html
(CRP2, CRP4, CRP8)

Printable material for grade 3:
https://www.teachervision.com/lesson-planning/graph-chart-teacher-resources#
(CRP2, CRP4, CRP8)

Think Central: Online access to all Math in Focus materials listed above and Virtual Manipulatives

Professional Resources:
The Model Method from the Ministry of Education Singapore and Bar Modeling: A Bar Modeling Tool by Yeap Ban Har, PhD.

Lesson and Component Walkthrough:
www.hmhelearning.com

Technology Resources

- Math in Focus eBooks
- Math in Focus Teacher Resources CD

Arizona Flip Book:
http://www.azed.gov/azcommoncore/files/2012/11/3flipbookedited_2.pdf

North Carolina Dept of Ed. Wikispaces:
http://maccss.ncdpi.wikispaces.net/Elementary

Standards Solution Lessons:

- **PARCC Lesson 8** - Type 1-Selected-Response-Multiple Answers – Scaled Bar Graphs (NJSLSA.W2.)
- Calendar skills
- Observations
- Discussions: in groups, have students explain different ways of solving problems (CRP4)

Summative Assessments:
Math in Focus Assessments

- Chapter Review/Test – pp 108-111
- Assessments 3 – pp.94-99
- ExamView Assessment Suite – Test and Practice Generator
- Performance Task

Alternative Assessments:

- Online assessments: https://www.opened.com/search?area=mathematics&grade=3&resource_type=assessment (CRP2, CRP4, CRP8)
- Learning centers: each learning center focuses on a

		Common core sheets: http://www.commoncoresheets.com/BarGraphs.php (CRP2, CRP4, CRP8) **Children's books:** https://www.the-best-childrens-books.org/math-for-kids.html **More additional texts:** www.newsela.com www.readworks.org www.commonlit.org	• **CCSS Lesson Plan:** Scaled Bar and Picture Graphs • **CCSS Prescriptive Lesson Plan:** Picture and Bar Graphs **Worksheets, games, lessons, activities: https://www.education.com/resources/third-grade/math/** (CRP2, CRP4, CRP8) **3rd grade classroom assessments: https://www.opened.com/search?area=mathematics&grade=3&resource_type=assessment** (CRP2, CRP4, CRP8) **3rd grade worksheets: https://www.k5learning.com/free-math-worksheets/third-grade-3** (CRP2, CRP4, CRP8)	different type of problem • Create graphs, diagrams and charts illustrating their knowledge of the material (NJSLSA RI.7) • Discuss and interpret data from graphs and charts (NJSLSA RI.7)

Chapter 14 (skip 14.5)				
3.G.A.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as ¼ of the area of the shape.*	**Topics** Using fractions to describe parts of a region or parts of a set. Twenty-First Century Themes and Skills include: • Creativity and	**Math Playground** http://www.mathplayground.com/ **Math Coach – Fact Fluency http://schoolwires.henry.k12.ga.us/Page/21865**	**SE-3B:** 117-162 **Workbook 3B:** 91-118 **Common Core Focus Lesson Appendix** **Think Central**: Online access to all Math in Focus materials listed above and	**Formative Assessments:** • Do Now • Exit Ticket • Math Journal Entries (CRP4) • Math notebook (NJSLSA.W2.) • Calendar skills • Observations

3.NF.A.1. **Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.**

3.NF.A.2. **Understand a fraction as a number on the number line; represent fractions on a number line diagram.**

a. Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.

Represent a fraction *a*/*b* on a number line diagram by marking off *a* lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line.

3.NF.A.3. **Explain**

Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

Objectives

Students will be able to:
- Read, write and identify fractions from wholes with more than 4 parts.
- Identify numerator and denominator.
- Use models to identify equivalent fractions.
- Use a number line to identify equivalent fractions.
- Use multiplication and division to find equivalent fractions.
- Write fractions in simplest form.
- Compare and order fractions.
- Show fractions as points or distances on a number line.
- Compare and order fractions using benchmark fractions.
- Read, write and identify fractions of a set.
- Find the number of items in a fraction of a set.

Math Wire – Basic Facts Link
http://mathwire.com/numbersense/bfactslinks.html

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

Critical Thinking and Problem Solving p.156: Put on Your Thinking Cap!

Fraction fun for grades 3-5:
https://www.scholastic.com/parents/school-success/learning-toolkit-blog/fraction-fun-grades-3-5.html

Slice my pizza – enrichment activity for fractions:
http://www.pdesas.org/module/content/resources/27550/view.ashx

Children's books:
https://www.the-best-childrens-books.org/math-for-kids.html

More additional texts:
www.newsela.com

Virtual Manipulatives

Professional Resources:
The Model Method from the Ministry of Education Singapore and Bar Modeling: A Bar Modeling Tool by Yeap Ban Har, PhD.

Lesson and Component Walkthrough:
www.hmhelearning.com

Technology Resources
- Math in Focus eBooks
- Math in Focus Teacher Resources CD

Arizona Flip Book:
http://www.azed.gov/azcommoncore/files/2012/11/3flipbookedited_2.pdf

North Carolina Dept of Ed. Wikispaces:
http://maccss.ncdpi.wikispaces.net/Elementary

Standards Solution Lessons:
- **PARCC Lesson 6-** Type I- Constructed Response – Equivalent Fractions
- **PARCC Lesson 13-** PBA-Introduction-Justification and Modeling
- Discussions: in groups, have students explain different ways of solving problems (CRP4)

Summative Assessments:
Math in Focus Assessments
- Chapter Review/Test – pp 160-162
- Assessments 3 – pp.1002-105
- ExamView Assessment Suite – Test and Practice Generator
- Performance Task

Alternative Assessments:
- Online assessments: https://www.opened.com/search?area=mathematics&grade=3&resource_type=assessment (CRP2, CRP4, CRP8)
- Learning centers: each learning center focuses on a different type of problem
- Graphic

equivalence of fractions in special cases, and compare fractions by reasoning about their size. **a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.** **b. Recognize and generate simple equivalent fractions, e.g., ½ = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.** **c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*** **d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction**		www.readworks.org www.commonlit.org	• **PARCC Lesson 16 –** PBA • **PARCC Lesson 16 –** Type I Practice- NF domain • **CCSS Lesson Plan:** The Basics of Fractions • **CCSS Prescriptive Lesson Plan:** Partitioning Shapes **Worksheets, games, lessons, activities: https://www.education.com/resources/third-grade/math/** (CRP2, CRP4, CRP8) **3rd grade classroom assessments: https://www.opened.com/search?area=mathematics&grade=3&resource_type=assessment** (CRP2, CRP4, CRP8) **3rd grade worksheets: https://www.k5learning.com/free-math-worksheets/third-grade-3** (CRP2, CRP4, CRP8)	Organizers https://www.understood.org/en/school-learning/learning-at-home/homework-study-skills/download-graphic-organizers-to-help-kids-with-math (8.1.5.A.3)

model.

3.MD.B.4. Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

Mathematical Practices
MP.1, MP.2, MP.3, MP.4, MP.5, MP.6, MP.7

Key Vocabulary:
Chapter 11:
meter, centimeter, kilometer, distance, gram, kilogram, liter, milliliter, volume, capacity

Chapter 13:
vertical, horizontal, axis, scale, line plot, survey

Chapter 14:
Whole, equal parts, numerator, denominator, equivalent fractions, number line, simplest form, benchmark, like fractions

NJ Learning Standards Vocabulary:
3.MD.A.1 & 2
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
estimate, time, time intervals, a.m, p.m, digital clock, analog clock, minute, hour, elapsed time, measure, liquid volume, mass, standard units, metric, gram (g), kilogram (kg), liter (L)

3.MD.A.2
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

measure, liquid volume, mass, standard units, metric, gram (g), kilogram (kg), liter (L)

3.MD.B.3& 4
Represent and interpret data.
scale, scaled picture graph, scaled bar graph, line plot, \data

3.G.A.2
Reason with shapes and their attributes.
partition, unit fraction, kite, example and non-example

3.NF.A.1, 2 & 3

Develop understanding of fractions as numbers.
partition(ed), equal parts, fraction, equal distance (intervals), equivalent, equivalence, reasonable, denominator, numerator, comparison, compare, ‹, ›, = , justify, inequality

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	• Utilize modifications & accommodations delineated in the students' IEP • Work with paraprofessional	• Use visual demonstrations, illustrations and models • Give directions / instructions verbally and in simple written format	• Inquiry based instruction • Independent study • Higher order thinking skills

and in as few words as possible • Provide visual aids • Group similar problems together • Repeat directions when necessary • Provide a vocabulary list with definitions	• 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 students 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 made 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	• 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 RI.7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
NJSLSA.L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking

Integration of Technology Standards NJSLS:
8.1.5.D.3 Demonstrate an understanding of the need to practice cyber safety, cyber security, and cyber ethics when using technologies and social media.

21st Century Standards
9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community.

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)