Unit 12 Reveal Grade 5

Content Area: **Math**
Course(s): **Math**
Time Period: **May**
Length: **2 weeks**
Status: **Published**

Unit overview

UNIT 12 PLANNER

Measurement and Data

PACING: 9 days

LESSON	MATH OBJECTIVE	LANGUAGE OBJECTIVE	SOCIAL AND EMOTIONAL LEARNING OBJECTIVE	LESSON	KEY VOCABULARY
Unit Opener IGNITE! Which Sums Occur Least and Most? Students roll a pair of number cubes and explore how often each sum occurs. The data can be visualized with a line plot later in the module.					
12-1 Convert Customary Units	Students use the relationship between customary units of measurement to convert measurements. Students use the relationship between units of time to convert measurements.	Students discuss the relationship between customary units of measurement and time to convert measurements using the verb *decide*.	Students foster personal curiosity about mathematics by relating a mathematical concept to their own lives and interests.	12-1	Math Terms capacity convert customary system length weight
12-2 Convert Metric Units	Students use the relationship between metric units of measurement to convert measurements.	Students discuss the relationship between metric units of measurements to convert measurements using the verb *help*.	Students explain their thinking for how they solved a mathematical problem, including how a correct solution was found or what caused confusion and why.	12-2	capacity convert length mass metric system
12-3 Solve Multi-Step Problems Involving Measurement Units	Students solve multi-step problems by identifying and answering a hidden question and using that answer to solve the initial problem.	Students discuss solving multi-step problems by identifying and answering a hidden question to solve the initial problem using *make sense of* and *determine*.	Students describe the logic and reasoning used to make a mathematical decision.	12-3	convert
12-4 Represent Measurement Data on a Line Plot	Students create a line plot to display a data set involving measurement. Students interpret line plots.	Students discuss line plots using the modals *might*, *can*, and *could*.	Students recognize and build upon personal mathematical strengths of self and others within the classroom math community.	12-4	data line plot outlier
12-5 Solve Problems Involving Measurement Data on Line Plots	Students solve problems using data in a line plot and performing operations on the data.	Students discuss solving problems using operations and line plot data using *amount* and the superlatives *greatest* and *least*.	Students acknowledge different representations that can be used to complete a mathematical task, and reflect on the value of the similarities and differences.	12-5	data line plot
Math Probe Line Plots Students interpret a line plot with fractional data.					
Unit Review **Fluency Practice**					
Unit Assessment **Performance Task**					

165A Unit 12 • Measurement and Data

Enduring Understandings

See Above.

Essential Questions

See Above.

Instructional Strategies and Learning Activities

LESSON 12-1

Convert Customary Units

Learning Targets

- I can convert customary units of measure and time.
- I can explain which operation to use when converting.

Standards ◦ Major △ Supporting ○ Additional

Content

△ **5.MD.A** Convert like measurement units within a given measurement system.

△ **5.MD.A.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Math Practices and Processes

MPP Make sense of problems and persevere in solving them.

MPP Use appropriate tools strategically.

Focus

Content Objectives	Language Objectives	SEL Objective
• Students use the relationship between customary units of measurement to convert measurements. • Students use the relationship between units of time to convert measurements.	• Students discuss the relationship between customary units of measurement and time to convert measurements using *decide*. • To support maximizing cognitive and linguistic meta-awareness, ELs participate in MLR8: Discussion Supports.	• Students foster personal curiosity about mathematics by relating a mathematical concept to their own lives and interests.

Coherence

Previous	Now	Next
• Students converted measurements within a single system of measurement (Grade 4).	• Students use the relationships between customary units of measurement and units of time to convert measurements.	• Students use the relationships between metric units of mass, length, or capacity to convert measurements (Unit 12).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students use understanding of multiplication and division with fractions to convert among customary units of measure. *Conceptual understanding is not a targeted element of rigor for this standard.*	• Students develop proficiency with multiplying and dividing to convert among customary units of measure.	• Students apply knowledge of multiplying and dividing with fractions to convert among customary units of measure.

LESSON 12-2

Convert Metric Units

Learning Targets

- I can convert metric units of measure.
- I can explain which operation to use when converting.

Standards ◇ Major △ Supporting ○ Additional

Content

△ **5.MD.A** Convert like measurement units within a given measurement system.

△ **5.MD.A.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Math Practices and Processes

MPP Make sense of problems and persevere in solving them.

MPP Model with mathematics.

Focus

Content Objective	Language Objectives	SEL Objective
• Students use the relationship between metric units of measurement to convert measurements.	• Students discuss the relationship between metric units of measurements to convert measurements using *help*. • To support optimizing output, ELs participate in MLR7: Compare and Connect.	• Students explain their thinking for how they solved a mathematical problem, including how a correct solution was found or what caused confusion and why.

Coherence

Previous	Now	Next
• Students converted measurements within a single system of measurement (Grade 4). • Students used the relationships between customary units of measurement and units of time to convert measurements (Unit 12).	• Students use the relationships between metric units of mass, length, or capacity to convert measurements.	• Students solve multi-step problems involving metric and customary unit conversions (Unit 12).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students use multiplication and division to convert among metric units of measure. *Conceptual understanding is not a targeted element of rigor for this standard.*	• Students develop proficiency with multiplying and dividing to convert among metric units of measure.	• Students apply knowledge of multiplying and dividing with fractions to convert among metric units of measure.

LESSON 12-3

Solve Multi-Step Problems Involving Measurement Units

Learning Target

- I can solve multi-step problems by identifying and answering a hidden question and using that answer to solve the initial problem.

Standards ◆ Major △ Supporting ○ Additional

Content

△ **5.MD.A** Convert like measurement units within a given measurement system.

△ **5.MD.A.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Math Practices and Processes

MPP Make sense of problems and persevere in solving them.

MPP Look for and express regularity in repeated reasoning.

Focus

Content Objective	Language Objectives	SEL Objective
• Students solve multi-step problems by identifying and answering a hidden question and using that answer to solve the initial problem.	• Students discuss solving multi-step problems using *make sense of* and *determine*. • To support sense-making, ELs participate in MLR2: Collect and Display.	• Students describe the logic and reasoning used to make a mathematical decision.

Coherence

Previous	Now	Next
• Students used the four operations to solve word problems involving measurement units (Grade 4). • Students used the relationships between metric units of mass, length, or capacity to convert measurements (Unit 12).	• Students solve multi-step problems involving metric and customary unit conversions.	• Students represent and interpret measurement data to eighths of a unit on a line plot (Unit 12).

Rigor

Conceptual Understanding	Procedural Skill & Fluency	Application
• Students deepen their understanding of multiplying fractions and converting units of measurement. *Conceptual Understanding is not a specific element of rigor for this standard.*	• Students build their proficiency with multiplication involving whole numbers and fractions, and in converting units of measurement.	• Students apply knowledge of relative size of unit of measurement and multiplication and division to solve problems with real-world contexts.

LESSON 12-4

Represent Measurement Data on a Line Plot

Learning Targets

- I can create line plots of data sets involving measurement data.
- I can interpret line plots.

Standards ◦ Major △ Supporting ○ Additional

Content

△ **5.MD.B** Represent and interpret data.

△ **5.MD.B.2** Make a line plot to display a data set of measurements in fractions of a unit $\left(\frac{1}{2}, \frac{1}{4}, \frac{1}{8}\right)$. Use operations on fractions for this grade to solve problems involving information presented in line plots.

Math Practices and Processes

MPP Model with mathematics.

MPP Use appropriate tools strategically.

Focus

Content Objectives

- Students create a line plot to display a data set involving measurement.
- Students interpret line plots.

Language Objectives

- Students discuss line plots using the modals *might*, *can*, and *could*.
- To support optimizing output, ELs participate in MLR1: Stronger and Clearer Each Time.

SEL Objective

- Students recognize and build upon personal mathematical strengths of self and others within the classroom math community.

Coherence

Previous

- Students displayed a data set of measurements in fractions of a unit on line plots and solved problems by using information presented in line plots (Grade 4).
- Students solved multi-step problems involving unit conversions (Unit 12).

Now

- Students represent and interpret measurement data to eighths of a unit on a line plot.

Next

- Students solve real-world problems with data in fractional measurements on a line plot using operations (Unit 12).
- Students develop understanding of statistical variability and summarize and describe distributions (Grade 6).

Rigor

Conceptual Understanding

- Students use understanding of relationships between fractional values and how various statistical representations are used to better understand a data set.

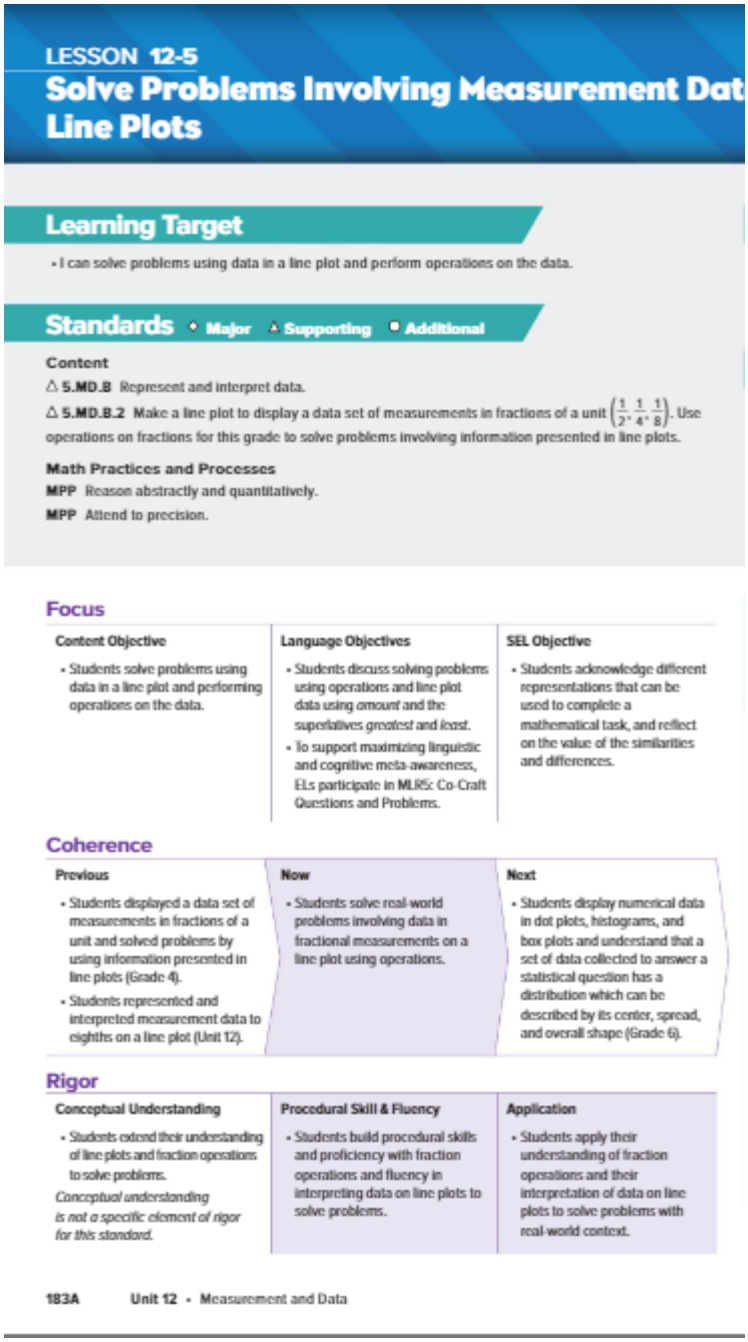
Conceptual understanding is not a specific element or rigor for this standard.

Procedural Skill & Fluency

- Students represent measurement data by labeling a number line and placing an X to represent each data value above the number line.

Application

- Students apply measurement concepts and number sense to organize, represent, and interpret data within real-world contexts.



LESSON 12-5

Solve Problems Involving Measurement Dat Line Plots

Learning Target

- I can solve problems using data in a line plot and perform operations on the data.

Standards ◆ Major △ Supporting ■ Additional

Content

△ **5.MD.B** Represent and interpret data.

△ **5.MD.B.2** Make a line plot to display a data set of measurements in fractions of a unit $\left(\frac{1}{2}, \frac{1}{4}, \frac{1}{8}\right)$. Use operations on fractions for this grade to solve problems involving information presented in line plots.

Math Practices and Processes

MPP Reason abstractly and quantitatively.

MPP Attend to precision.

Focus

Content Objective

- Students solve problems using data in a line plot and performing operations on the data.

Language Objectives

- Students discuss solving problems using operations and line plot data using *amount* and the superlatives *greatest* and *least*.
- To support maximizing linguistic and cognitive meta-awareness, ELs participate in MLR5: Co-Craft Questions and Problems.

SEL Objective

- Students acknowledge different representations that can be used to complete a mathematical task, and reflect on the value of the similarities and differences.

Coherence

Previous

- Students displayed a data set of measurements in fractions of a unit and solved problems by using information presented in line plots (Grade 4).
- Students represented and interpreted measurement data to eighths on a line plot (Unit 12).

Now

- Students solve real-world problems involving data in fractional measurements on a line plot using operations.

Next

- Students display numerical data in dot plots, histograms, and box plots and understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape (Grade 6).

Rigor

Conceptual Understanding

- Students extend their understanding of line plots and fraction operations to solve problems.

Conceptual understanding is not a specific element of rigor for this standard.

Procedural Skill & Fluency

- Students build procedural skills and proficiency with fraction operations and fluency in interpreting data on line plots to solve problems.

Application

- Students apply their understanding of fraction operations and their interpretation of data on line plots to solve problems with real-world context.

183A Unit 12 • Measurement and Data

Integration of Career Readiness, Life Literacies and Key Skills

9.4.8.CI.1	Assess data gathered on varying perspectives on causes of climate change (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).
9.2.5.CAP.1	Evaluate personal likes and dislikes and identify careers that might be suited to personal likes.
9.2.5.CAP.2	Identify how you might like to earn an income.
9.2.5.CAP.3	Identify qualifications needed to pursue traditional and non-traditional careers and occupations.

9.4.8.CI.4	Explore the role of creativity and innovation in career pathways and industries.
9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.
9.1.2. FI.1	Differentiate the various forms of money and how they are used (e.g., coins, bills, checks, debit and credit cards).
9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).
9.4.8.CT.3	Compare past problem-solving solutions to local, national, or global issues and analyze the factors that led to a positive or negative outcome.
9.4.8.DC.2	Provide appropriate citation and attribution elements when creating media products (e.g., W.6.8).
9.1.2.PB.2	Explain why an individual would choose to save money.
9.4.8.DC.4	Explain how information shared digitally is public and can be searched, copied, and potentially seen by public audiences.
9.4.8.DC.5	Manage digital identity and practice positive online behavior to avoid inappropriate forms of self-disclosure.
9.4.8.DC.8	Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities).
9.4.8.GCA.1	Model how to navigate cultural differences with sensitivity and respect (e.g., 1.5.8.C1a).
9.4.8.GCA.2	Demonstrate openness to diverse ideas and perspectives through active discussions to achieve a group goal.
9.4.8.IML.2	Identify specific examples of distortion, exaggeration, or misrepresentation of information.
9.4.8.IML.3	Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping (e.g., 6.SP.B.4, 7.SP.B.8b).
9.4.8.IML.4	Ask insightful questions to organize different types of data and create meaningful visualizations.
9.4.8.IML.5	Analyze and interpret local or public data sets to summarize and effectively communicate the data.
9.4.8.IML.7	Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8.CivicsDP.4.b, 7.1.NH. IPRET.8).
9.4.8.IML.12	Use relevant tools to produce, publish, and deliver information supported with evidence for an authentic audience.
9.4.8.TL.1	Construct a spreadsheet in order to analyze multiple data sets, identify relationships, and facilitate data-based decision-making.
9.4.8.TL.2	Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4).
9.4.8.TL.3	Select appropriate tools to organize and present information digitally.
9.4.8.TL.5	Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration.
9.4.8.TL.6	Collaborate to develop and publish work that provides perspectives on a real-world problem.

Technology and Design Thinking

8.1.5.CS.3	Identify potential solutions for simple hardware and software problems using common troubleshooting strategies.
	Data can be organized, displayed, and presented to highlight relationships.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
8.1.5.DA.3	Organize and present collected data visually to communicate insights gained from different views of the data.
8.1.5.DA.4	Organize and present climate change data visually to highlight relationships or support a claim.

Interdisciplinary Connections

LA.RI.5.1	Quote accurately from a text and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.
LA.RI.5.2	Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
LA.RI.5.3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
LA.RI.5.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
LA.RI.5.5	Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.
LA.RI.5.6	Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.
LA.RI.5.7	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
LA.RI.5.8	Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).
LA.RI.5.9	Integrate and reflect on (e.g., practical knowledge, historical/cultural context, and background knowledge) information from several texts on the same topic in order to write or speak about the subject knowledgeably.
LA.RI.5.10	By the end of year, read and comprehend literary nonfiction at grade level text-complexity or above, with scaffolding as needed.
LA.W.5.4	Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LA.SL.5.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
LA.L.5.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
LA.L.5.2	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

Differentiation

- Understand that gifted students, just like all students, come to school to learn and be challenged.
- Pre-assess your students. Find out their areas of strength as well as those areas you may need to address before students move on.
- Consider grouping gifted students together for at least part of the school day.
- Plan for differentiation. Consider pre-assessments, extension activities, and compacting the curriculum.
- Use phrases like "You've shown you don't need more practice" or "You need more practice" instead of words like "qualify" or "eligible" when referring to extension work.
- Encourage high-ability students to take on challenges. Because they're often used to getting good grades, gifted students may be risk averse.

- **Definitions of Differentiation Components**:

    - Content – the specific information that is to be taught in the lesson/unit/course of instruction.
    - Process – how the student will acquire the content information.
    - Product – how the student will demonstrate understanding of the content.
    - Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

Use Differentiation guide in Teacher's manual for each unit

Modifications and Accommodations

Refer to QSAC EXCEL SMALL SPED ACCOMMOCATIONS spreadsheet in this discipline.

Modifications and Accommodations used in this unit:

Benchmark Assessments

Benchmark Assessments are given periodically (e.g., at the end of every quarter or as frequently as once per month) throughout a school year to establish baseline achievement data and measure progress toward a standard or set of academic standards and goals.

Schoolwide Benchmark assessments:

Aimsweb benchmarks 3X a year

Linkit Benchmarks 3X a year

DRA

Additional Benchmarks used in this unit:

End of Unit assessments

Formative Assessments

Assessment allows both instructor and student to monitor progress towards achieving learning objectives, and can be approached in a variety of ways. **Formative assessment** refers to tools that identify misconceptions, struggles, and learning gaps along the way and assess how to close those gaps. It includes effective tools for helping to shape learning, and can even bolster students' abilities to take ownership of their learning when they understand that the goal is to improve learning, not apply final marks (Trumbull and Lash, 2013). It can include students assessing themselves, peers, or even the instructor, through writing, quizzes, conversation, and more. In short, formative assessment occurs throughout a class or course, and seeks to improve student achievement of learning objectives through approaches that can support specific student needs (Theal and Franklin, 2010, p. 151).

Formative Assessments used in this unit:

Teacher Observations

Checklists

Questions and Discussions

Quizzes

Summative Assessments

Summative assessments evaluate student learning, knowledge, proficiency, or success at the conclusion of an instructional period, like a unit, course, or program. Summative assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

Summative assessments for this unit:

End of Unit Assessments

Instructional Materials

See Above

Standards

5.M	Measurement
5.M.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.