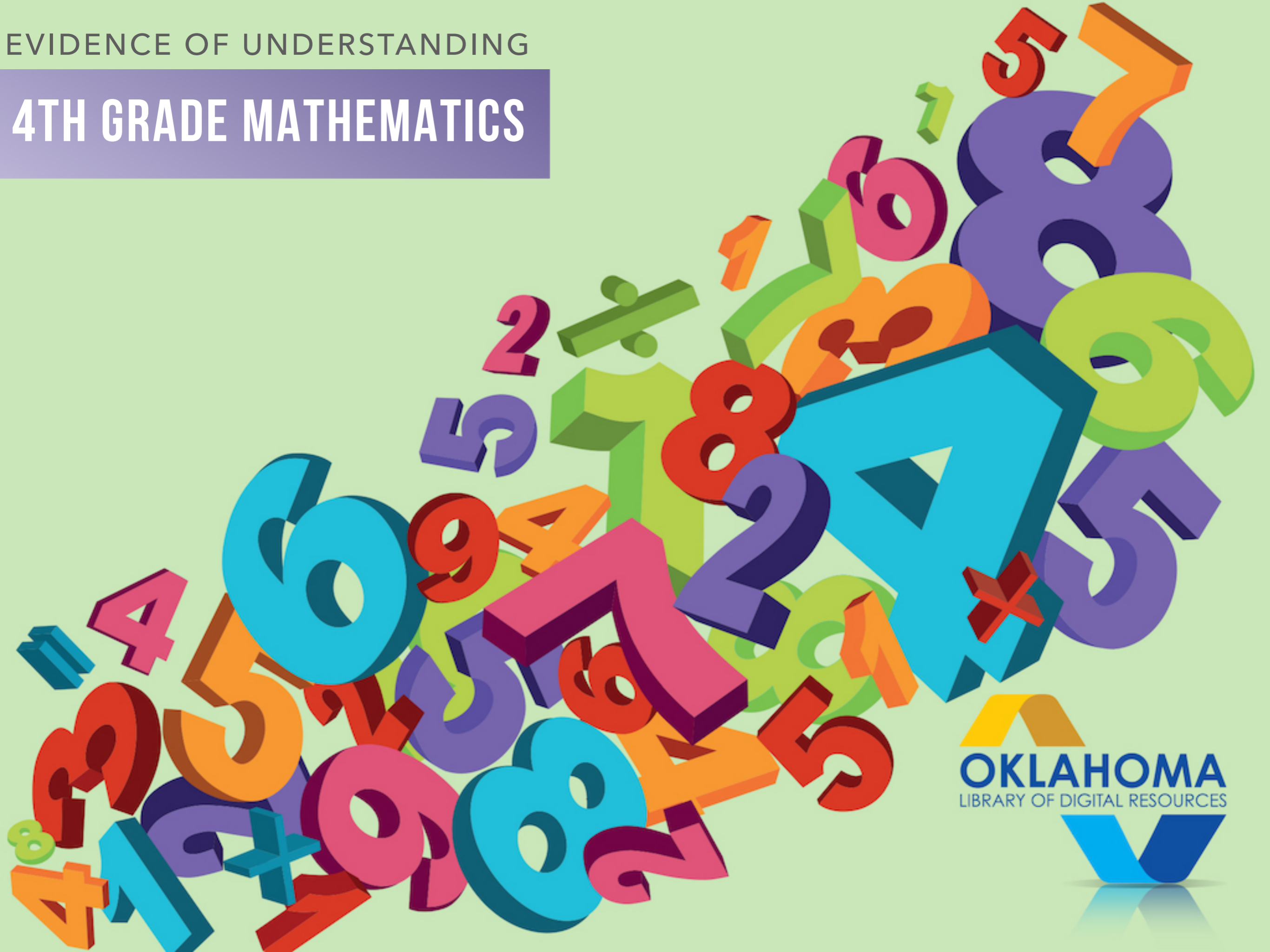


EVIDENCE OF UNDERSTANDING

4TH GRADE MATHEMATICS



The Oklahoma Library of Digital Resources is an innovative initiative to provide Oklahoma educators with high-quality, interactive teaching resources.

We appreciate our sponsors:



Thank you to the following educators for their work in curating digital resources:

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GETTING TO KNOW OKLDR

WHO IS OSSBA?

The Oklahoma State School Boards Association (OSSBA) works to promote quality public education for the children of Oklahoma through training and information services to school board members. The Association is a leader among leaders in Oklahoma education and a visible presence in the local school districts and throughout the state.

The OSSBA was created in 1944 to provide support for local school board members with a variety of information, assistance, and representation services. OSSBA reaches every school board member through training opportunities. It creates and encouraged effective leaders to promote public education and cultivates productive alliances with governing bodies. OSSBA trains school board members to participate in an effective and supportive manner to provide direction for educational innovation and improves public perception of education in Oklahoma by sharing strategies and tools with our member school districts to focus on the success of Oklahoma public education.

OSSBA works with school boards to demonstrate the impact they have on student achievement. We work to provide meaningful two-way communication of advocacy, services, and training activities to local boards of education and their stakeholders. Other services we provide that have a direct impact on student achievement include strategic planning and superintendent searches. Our legal team provides free legal information to the school districts.

WHY OKLDR?

In the summer of 2016, OSSBA set out on a journey assist teachers in the integration of technology into their classrooms. The Oklahoma Library of Digital Resources (OKLDR) became a collection of digital content resources selected by Oklahoma educators to support the Oklahoma Academic Standards. The resources were curated by teachers from school districts across Oklahoma. Each collection contained a variety of learning resources, such as videos, apps, pdf documents, and websites, and are designed so that teachers can then build their lesson plans. The resources helped bridge the digital equity gap among students while helping schools make the most of limited resources.

After collaborating with educators, school and district leaders for a couple of years, OKLDR has been enhanced in the following ways:

- Resources are now an Open Education Resource (OER) “book” format, making it easier to use and accessible on multiple devices.
- Resources map to ESSA expectations for evidence of student understanding and students’ mastery of the academic standards.
- Tools are now agnostic and can be used on multiple devices.
- Lessons are now focused on student engagement through the use of technology. The first OKLDR version focused on teacher resources. This is a major change.
- To prioritize student learning, teacher resources are now located at the back of each book.

HOW TO USE THE BOOK



The Oklahoma Academic Standards for this lesson are grouped together by key topics. Sometimes you will see only one standard, but other times you will see a grouping of standards.



Evidence of Understanding is the key. This is the concept you want your students to master that reinforces the standards. Mastery means deeper understanding, not just “skim the surface” learning.



Digital Tools are the recommended applications and/or tools for the lesson. Think of this element as the “supplies box.”



In Practice is a suggested activity to engage the students to demonstrate mastery of the standard. You will notice that this is just one suggested lesson, and sometimes there might be a second lesson. The suggested lesson, developed by Oklahoma teachers, is meant to give you a starting point. You might decide to use the lesson or it might give you an idea of something else you could do to teach the concept.

MOVING FORWARD

As you can see the OKLDR book has been designed to inspire educators to have students demonstrate their understanding of the Oklahoma Academic Standards through the use of technology as a productivity tool. While educators have limited time in the day to plan and research high quality content, this book is a jumping off point, with suggested peer-reviewed activities and resources.

While you might encounter extra white space in the book, it is intentional for growth. As you integrate the activities into your lessons, you are encouraged to send us student work samples that might be included in the book, as well as additional activities and resources that could be included in future revisions.

Next Steps:

- We would love to add samples of student work to the activities, so please send the work to: okldr@ossba.org.
- If you would like to be involved in future course creation, or know teachers who would like to be involved, please contact us at: okldr@ossba.org.
- See anything that needs to be changed or enhanced? Contact us at: okldr@ossba.org.

NUMBERS AND OPERATIONS

DIVIDE MULTI-DIGIT NUMBERS



4.N.1.1 Demonstrate fluency with multiplication and division facts with factors up to 12.

4.N.1.2 Use an understanding of place value to multiply or divide a number by 10, 100 and 1,000.

4.N.1.3 Multiply 3-digit by 1-digit or a 2-digit by 2-digit whole numbers, using efficient and generalizable procedures and strategies, based on knowledge of place value, including but not limited to standard algorithms.

4.N.1.4 Estimate products of 3-digit by 1-digit or 2-digit by 2-digit whole numbers using rounding, benchmarks and place value to assess the reasonableness of results. Explore larger numbers using technology to investigate patterns.

4.N.1.5 Solve multi-step real-world and mathematical problems requiring the use of addition, subtraction, and multiplication of multi-digit whole numbers. Use various strategies, including the relationship between operations, the use of appropriate technology, and the context of the problem to assess the reasonableness of results.

4.N.1.6 Use strategies and algorithms based on knowledge of place value, equality and properties of operations to divide 3-digit dividend by 1-digit whole number divisors. (e.g., mental strategies, standard algorithms, partial quotients, repeated subtraction, the commutative, associative, and distributive properties).

4.N.1.7 Determine the unknown addend or factor in equivalent and non-equivalent expressions. (e.g., $5 + 6 = 4 + \square$, $3 \times 8 < 3 \times \square$).



Evidence of Understanding

Students will be able solve real world problems using various strategies, including relationship between operations, using a whiteboard application.



Digital Tools

- Story Telling Application - ChatterPix Kids, Shadow Puppets EDU, Book Creator, Seesaw, Pages, Write About This, Google Docs
- *Word Processor* - Pages, Google Docs, Microsoft Word.



In Practice

- Students will research/explore online fast food menu's with a small group and create a ticket with a word processor (table) for an order with an estimated amount of money needed (including multiples of the same item—3 orders of French fries).
- Students will create an itemized ticket with total and item descriptions and use a storyteller application to present their lunch experience comparing estimation and actual cost.

FRACTIONS AND DECIMALS



4.N.2.1 Represent and rename equivalent fractions using fraction models (e.g. parts of a set, area models, fraction strips, number lines).

4.N.2.2 Use benchmark fractions to locate additional fractions on a number line. Use models to order and compare whole numbers and fractions less than and greater than one using comparative language and symbols.

4.N.2.3 Decompose a fraction in more than one way into a sum of fractions with the same denominator using concrete and pictorial models and recording results with symbolic representations

4.N.2.4 Use fraction models to add and subtract fractions with like denominators in real-world and mathematical situations.

4.N.2.5 Represent tenths and hundredths with concrete models, making connections between fractions and decimals.

4.N.2.6 Represent, read and write decimals up to at least the hundredths place in a variety of contexts including money.

4.N.2.7 Compare and order decimals and whole numbers using place value, a number line and models such as grids and base 10 blocks.

4.N.2.8 Compare benchmark fractions and decimals (0.25, 0.50, 0.75) in real-world and mathematical situations.



Evidence of Understanding

Students will be able to demonstrate their knowledge of the relationship between fractions and decimals using a sketch application and meme creator.



Digital Tools

- *Sketch Application*- [Sketches School](#), [Notes](#), [ibis](#), [Absolute Board](#), [Google Draw](#), [Auto Draw](#), [Do-Ink](#), [Paper by 53](#),
- *Meme Creator* - [Kapwing](#), [Meme Generator](#), [Canva](#), [Clideo](#)



In Practice

- Students will use the sketch application to draw an object and divide it into fractions and calculate the equivalent decimal.
- Students will create a meme using a meme creator about comparing fractions and decimals.

MONETARY TRANSACTIONS



4.N.3.1 Given a total cost (whole dollars up to \$20 or coins) and amount paid (whole dollars up to \$20 or coins), find the change required in a variety of ways. Limited to whole dollars up to \$20 or sets of coins.



Evidence of Understanding

Students will be able to use a variety of applications to practice giving total cost and amount paid limited to whole dollars up to \$20.



Digital Tools

- Video Editor- Clips, WeVideo, Flipgrid, iMovie, Loom, Majisto
- *Green Screen Application-* WeVideo, Veescape, Doink Green Screen
- *Content Application-*Turtle Diary - Making Change



In Practice

- Students will work in groups and use a green screen application and video editor to record themselves advertising a carnival and the costs for entrance, rides, food, etc.
- Students will include two scenarios of attending the carnival with \$20, what money was spent on, and how much money they have remaining.

ALGEBRAIC REASONING AND ALGEBRA

NUMERICAL AND GEOMETRIC PATTERNS



4.A.1.1 Create an input/output chart or table to represent or extend a numerical pattern.

4.A.1.2 Describe the single operation rule for a pattern from an input/output table or function machine involving any operation of a whole number.

4.A.1.3 Create growth patterns involving geometric shapes and define the single operation rule of the pattern.



Evidence of Understanding

Students will be able to create a chart or table to represent a numerical pattern and growth patterns involving geometric shapes and define the single operation rule of pattern.



Digital Tools

- *Resource- [Input/Output Video](#)*
- *Word Processor - [Pages](#), [Google Docs](#), [Microsoft Word](#)*
- *Sketch Application- [Sketches School](#), [Notes](#), [ibis](#), [Absolute Board](#), [Google Draw](#), [Auto Draw](#), [Do-Ink](#), [Paper by 53](#),*
- *Comic Maker - [Comic Touch 2](#), [Comic Puppets](#), [Canva Comic Strip Maker](#), [Powtoon](#), [Comic Strip - Comic Maker](#), [Make Beliefs Comix](#), [Toontastic](#), [Pixton EDU](#)*



In Practice

- Students will view the Input/Output video.
- Students will use a word processor or sketch application to create an input/output table while using their own rule for a pattern or operation.
- Students will use a sketch application to draw geometric shapes and create an input/output table while using their own rule for a pattern or operation.
- After creating a table of numbers with a function and shapes with a pattern, students will use a comic maker to create a story about the function and geometric pattern.

CREATE NUMBER SENTENCES



4.A.2.1 Use number sense, properties of multiplication and the relationship between multiplication and division to solve problems and find values for the unknowns represented by letters and symbols that make number sentences true.

4.A.2.2 Solve for unknowns in problems by solving open sentences (equations) and other problems involving addition, subtraction, multiplication, or division with whole numbers. Use real-world situations to represent number sentences and vice versa.



Evidence of Understanding

Students will be able to use number sense and properties of multiplication to solve problems and find values for unknowns to create accurate number sentences and solve for unknowns using real world situations.



Digital Tools

- Story Telling Application - [ChatterPix Kids](#), [Shadow Puppets EDU](#), [Book Creator](#), [Seesaw](#), [Pages](#), [Write About This](#), [Google Docs](#), [Google Story Builder](#)
- Photo Library - [Pics4Learning](#), [Photos 4 Class](#),



In Practice

- Students will identify five real world math problems and use a storytelling application to create a book of a trip they went on. The book must include five real world word problems that they encountered during their trip and include visuals using a photo library that go with their problem.
- Students will be able to justify their work with a peer and solve the problems in each others book.

GEOMETRY AND MEASUREMENT

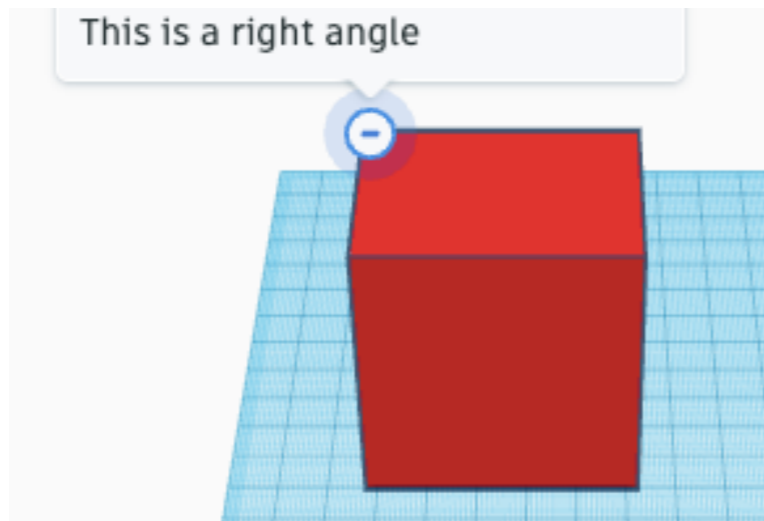
CONSTRUCT THREE DIMENSIONAL FIGURES



4.GM.1.1 Identify points, lines, line segments, rays, angles, endpoints, and parallel and perpendicular lines in various contexts.

4.GM.1.2 Describe, classify, and sketch quadrilaterals, including squares, rectangles, trapezoids, rhombuses, parallelograms, and kites. Recognize quadrilaterals in various contexts.

4.GM.1.3 Given two three-dimensional shapes, identify similarities, and differences.



Tinkercad.com





Evidence of Understanding

Students will be able to identify similarities and differences between two three-dimensional shapes, and identify, describe, classify and sketch quadrilaterals, line segments, rays, angles, parallel and perpendicular lines in various contexts.



Digital Tools

- Design Tool - Tinkercad



In Practice

- Student will use a design tool to create different geometric shapes, lines, points, angles, 2D and 3D shapes based off of teacher rubric.
- Students will label the different attributes for each using a the design tool application or markup tools.

UNDERSTAND MEASURABLE ATTRIBUTES



4.GM.2.1 Measure angles in geometric figures and real-world objects with a protractor or angle ruler.

4.GM.2.2 Find the area of polygons that can be decomposed into rectangles.

4.GM.2.3 Using a variety of tools and strategies, develop the concept that the volume of rectangular prisms with whole-number edge lengths can be found by counting the total number of same-sized unit cubes that fill a shape without gaps or overlaps. Use appropriate measurements such as cm^3 .

4.GM.2.4 Choose an appropriate instrument and measure the length of an object to the nearest whole centimeter or quarter-inch.

4.GM.2.5 Solve problems that deal with measurements of length, when to use liquid volumes, when to use mass, temperatures above zero and money using addition, subtraction, multiplication, or division as appropriate (customary and metric).



Evidence of Understanding

Students will be able to use a video editor and measurement tools to measure angles in geometric figures and real world objects.



Digital Tools

- Camera
- Video Editor- Clips, WeVideo, Flipgrid, iMovie, Loom, Majisto
- *Content Application*-Khan Academy - Measuring Angles



In Practice

- Students will use Khan Academy to watch videos and/or practice measuring angles.
- Students will use the camera application to take pictures of manipulative or various objects within the classroom or school.
- Students will use a ruler/protractor to measure for area, volume, and angles.
- Students will then design using a video editor, a video showing the attributes of each shape (angle, length, width, and area).

CONVERT BETWEEN UNITS OF TIME



4.GM.3.1 Determine elapsed time.

4.GM.3.2 Solve problems involving the conversion of one measure of time to another.



Evidence of Understanding

Students will be able to use a design tool or word processor students to solve problems involving the conversion of one measure of time to another.



Digital Tools

- *Content Application*-Khan Academy - Convert Time
- *Design tools* - Canva, Web Poster Wizard, Collage Maker
- *Word Processor* - Pages, Google Docs, Microsoft Word.
- *Image Resource*- Analog Clock, Digital Clock



In Practice

- Students will practice converting time using the Content Application.
- Students will create an itinerary using a design tool or a word processor.
- Students will use at least five different times and show them on an analog and digital clock using a markup tool.
- Students will use images to create an itinerary using images of the times and activities for each.
- Students will also include in each item the amount of time until the next scheduled event/stop.

DATA AND PROBABILITY

COLLECT, ORGANIZE AND ANALYZE DATA

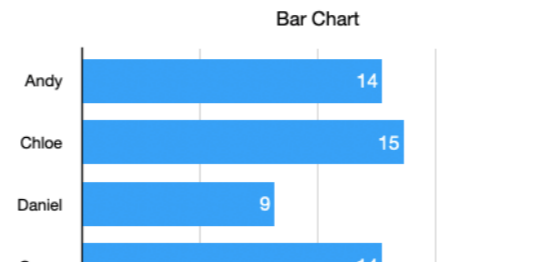
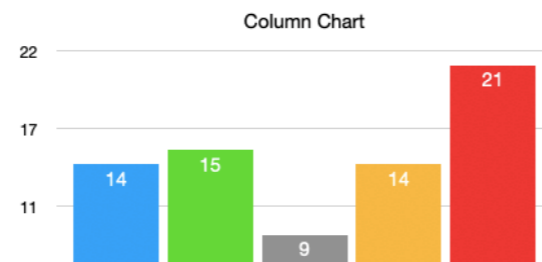


4.D.1.1 Represent data on a frequency table or line plot marked with whole numbers and fractions using appropriate titles, labels, and units.

4.D.1.2 Use tables, bar graphs, timelines, and Venn diagrams to display data sets. The data may include benchmark fractions or decimals

4.D.1.3 Solve one- and two-step problems using data in whole number, decimal, or fraction form in a frequency table and line plot.

Daniel	9
Grace	14
Sophia	21



Evidence of Understanding

Students will be able to create tables, bar graphs, timelines, and Venn diagrams to display data sets.



Digital Tools

- *Spreadsheet- Numbers, Chart Maker Google Sheets, Microsoft Excel*
- *Content Application - Khan Academy - Organizing Data*
- *Content Application - Number Line*
- *Sketch Application- Sketches School, Notes, ibis, Absolute Board, Google Draw, Auto Draw, Do-Ink, Paper by 53,*



In Practice

- Students will practice building frequency tables using a Content Application.
- Students will practice how to label fractions in a number line using the Number Line application.
- Students will use a spreadsheet template to create and organize a graph. Students can graph the number of girls vs. boys in the classroom, favorite animals, favorite food, hair color, etc.
- Students will label and color code the data they receive.
- Students will use a sketch application or the content application to locate fractions and decimals on number lines and label them correctly.

RESOURCES

TEACHER

- [Home School Math - Word Problems](#)
- [Math Wire - Guess My Rule Game](#)
- [ABCYA - Math Quiz](#)
- [Math Games - Number Patterns](#)
- [Math Is Fun - Algebra Open Math Problems](#)
- [Math Games Solve the Variable](#)

STUDENT

- [Standard Measurement for Kids](#)
- [TPT - Elapsed Time Task Cards](#)
- [ABCYA - Measuring](#)
- [Telling Time with Minutes](#)
- [Khan Academy - Time Difference](#)
- [Khan Measurement and Data](#)
- [Juke Box - Frequency Tables](#)