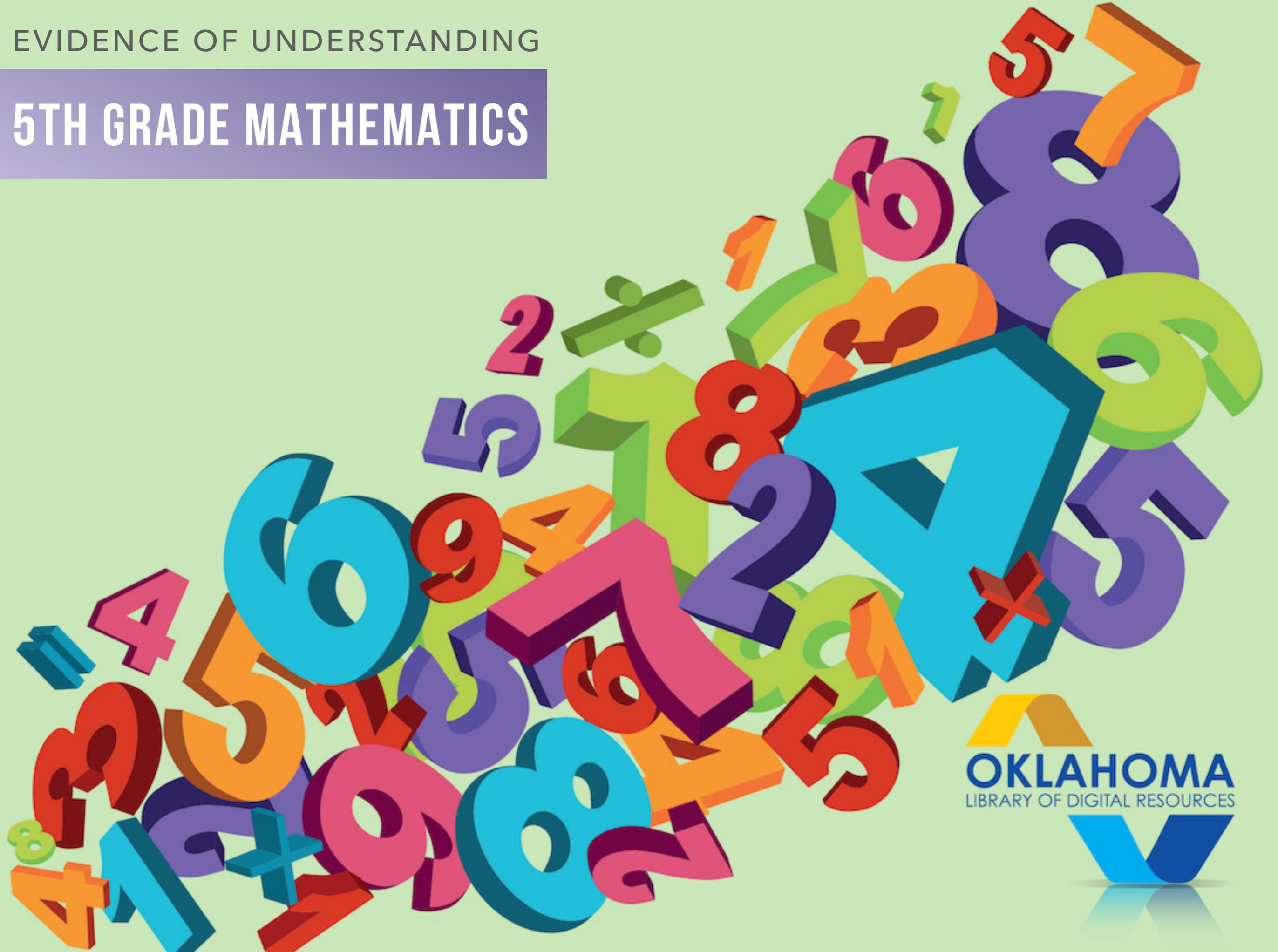


EVIDENCE OF UNDERSTANDING

# 5TH 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:

Anne Beck, OSSBA  
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# GETTING TO KNOW OKLDR

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# WHO IS OSSBA?

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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?

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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 THIS BOOK

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**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

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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](mailto: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](mailto:okldr@ossba.org).
- See anything that needs to be changed or enhanced? Contact us at: [okldr@ossba.org](mailto:okldr@ossba.org).

# NUMBERS AND OPERATIONS

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# DIVIDE MULTI-DIGIT NUMBERS

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5.N.1.1 Estimate solutions to division problems in order to assess the reasonableness of results.

5.N.1.2 Divide multi-digit numbers, by one- and two-digit divisors, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.

5.N.1.3 Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal and consider the context in which a problem is situated to select and interpret the most useful form of the quotient for the solution.

5.N.1.4 Solve real-world and mathematical problems requiring addition, subtraction, multiplication, and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.



## Evidence of Understanding

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Students will use a video editor and word processor to practice division of multi-digit numbers, estimate solutions to division problems, and recognize that quotients can be represented in a variety of ways.

Students will demonstrate their ability to divide multi-digit numbers.



## Digital Tools

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- *Spreadsheet- Numbers, Google Sheets, Microsoft Excel*
- *Video Editor- Clips*



## In Practice

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- Students will use a video editor to create a video in which they will need to use mathematical operations (addition, subtraction, multiplication, and division) in a real world situation.
- Students will also use a word processor to show the steps to the answer.

# FRACTIONS AND DECIMALS

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5.N.2.1 Represent decimal fractions (e.g.,  $\frac{1}{10}$ ,  $\frac{1}{100}$ ) using a variety of models (e.g., 10 by 10 grids, rational number wheel, base-ten blocks, meter stick) and make connections between fractions and decimals.

5.N.2.2 Represent, read and write decimals using place value to describe decimal numbers including fractional numbers as small as thousandths and whole numbers as large as millions.

5.N.2.3 Compare and order fractions and decimals, including mixed numbers and fractions less than one, and locate on a number line.

5.N.2.4 Recognize and generate equivalent decimals, fractions, mixed numbers, and fractions less than one in various contexts.



## Evidence of Understanding

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Students will use a word processor to represent decimal fractions by creating a variety of models and make connections between fractions and decimals.

Students will recognize and generate equivalent decimals, fractions, mixed numbers, and fractions less than one by using content applications, Fractions - Brainiac, Fractions - The Math Learning Center, and Number Line.



## Digital Tools

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- *Word Processor* - [Pages](#), [Microsoft Word](#), [Google Docs](#)
- *Content Application* - [Fractions - Brainiaccamp](#)
- *Content Application* - [Fractions Math Learning Center](#)
- *Content Application* - [Number Line Math Learning Center](#)



## In Practice

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- Students will practice making models of decimals and fractions using Fractions Brainiaccamp and Fractions- The Math Learning Center.
- Students will use Number Line to generate equivalent decimals, fractions, mixed numbers, and fractions less than one.
- Students will use a word processor to create grids that may be used to model a variety of ways, decimals can be represented as fractions.
- Students will compare and contrast their models of decimal fractions and have the students find ways to make their fractions equivalent by using a word processor.

# DENOMINATORS

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5.N.3.1 Estimate sums and differences of fractions with like and unlike denominators, mixed numbers, and decimals to assess the reasonableness of the results.

5.N.3.2 Illustrate addition and subtraction of fractions with like and unlike denominators, mixed numbers, and decimals using a variety of representations (e.g., fraction strips, area models, number lines, fraction rods).

5.N.3.3 Add and subtract fractions with like and unlike denominators, mixed numbers, and decimals, using efficient and generalizable procedures, including but not limited to standard algorithms in order to solve real-world and mathematical problems including those involving money, measurement, geometry, and data.

5.N.3.4 Find 0.1 more than a number and 0.1 less than a number. Find 0.01 more than a number and 0.01 less than a number. Find 0.001 more than a number and 0.001 less than a number.



## Evidence of Understanding

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Students will use an Interactive whiteboard to practice adding and subtracting fractions using like and unlike denominators.

Students will use a word processor to write an explanation to assess the reasonableness of the results.



## Digital Tools

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- *Interactive Whiteboard- [Educreations](#)*
- *Word Processor - [Pages](#), [Microsoft Word](#), [Google Docs](#)*



## In Practice

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- Provide students with a set of fractions with like denominators.
- Students will use an interactive whiteboard to illustrate adding and subtracting fractions with like denominators, have the students screenshot their work and save the image.
- Provide students with a set of fractions with unlike denominators.
- Students will use an interactive whiteboard to illustrate adding and subtracting fractions with unlike denominator, have the students screenshot their work and save the image.
- Students will use a word processor to import their work and write an explanation about the results and the process.

# ALGEBRAIC REASONING AND ALGEBRA

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# NUMERICAL PATTERNS

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5.A.1.1 Use tables and rules of up to two operations to describe patterns of change and make predictions and generalizations about real-world and mathematical problems.

5.A.1.2 Use a rule or table to represent ordered pairs of whole numbers and graph these ordered pairs on a coordinate plane, identifying the origin and axes in relation to the coordinates..



## Evidence of Understanding

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Students will practice generating equivalent numerical expressions and solve problems by applying the communicative, associative, and distributive properties and order of operations using a spreadsheet.

Students will be able to practice determining whether an equation with a variable is true or false using a word processor.



## Digital Tools

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- *Spreadsheet*- Numbers, Google Sheets, Microsoft Excel
- *Word Processor* - Pages, Microsoft Word, Google Docs
- *Video Editor* - Clips



## In Practice

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- Students will use a word processor to solve numerical expressions provided by the teacher.
- Students will use a video editor to record themselves solving and explaining the communicative, associative, and distributive properties.
- Students will use a spreadsheet to show solutions to a problems and determine whether a variable is true or false in an equation.

# INTERPRET EXPRESSION EQUATIONS

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5.A.2.1 Generate equivalent numerical expressions and solve problems involving whole numbers by applying the commutative, associative, and distributive properties and order of operations (no exponents).

5.A.2.2 Determine whether an equation or inequality involving a variable is true or false for a given value of the variable.

5.A.2.3 Evaluate expressions involving variables when values for the variables are given.



## Evidence of Understanding

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Students will use tables and rules to describe patterns of change and predictions about real-world and mathematical using a spreadsheet.

Students will use a rule or table to represent ordered pairs of whole numbers and graph them on a coordinate plane.



## Digital Tools

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- *Spreadsheet*- [Numbers](#), [Google Sheets](#), [Microsoft Excel](#)
- *Word Processor* - [Pages](#), [Microsoft Word](#), [Google Docs](#)
- *Sketch Application*- [Tayasui Sketches School](#)



## In Practice

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- Students will use a spreadsheet to create tables and rules to describe patterns and predictions of real-world mathematical problems.
  - Sample challenge: How much it would cost if Katie paid fifty cents for an ice cream sandwich? What if she had to buy eight sandwiches what would the total be all together?
- Students will use word processor or spreadsheet to create a table of ordered pairs.
- Students will take a photo of coordinate plane using a camera and put in a sketch application to graph the ordered pairs they created.

# GEOMETRY AND MEASUREMENT

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# TWO AND THREE DIMENSIONAL FIGURES

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5.GM.1.1 Describe, classify and construct triangles, including equilateral, right, scalene, and isosceles triangles. Recognize triangles in various contexts.

5.GM.1.2 Describe and classify three-dimensional figures including cubes, rectangular prisms, and pyramids by the number of edges, faces or vertices as well as the shapes of faces.

5.GM.1.3 Recognize and draw a net for a three-dimensional figure (e.g., cubes, rectangular prisms, pyramids)..



## Evidence of Understanding

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Students will use content applications to practice describing, classifying and constructing triangles, including equilateral, right scalene, and isosceles triangles, as well as three-dimensional figures (cubes, rectangular prisms, and pyramids.)

Students will be able to recognize and draw a net for a three-dimensional figure using a sketch application and video editor.



## Digital Tools

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- *Content Application - [Geoboard](#)*
- *Content Application - [Platonic AR](#)*
- *Video Editor - [Clips](#)*
- *Sketch Application- [Sketches School](#)*



## In Practice

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- Students will practice recognizing the volume of rectangular prisms, surface area of three dimensional figures, and find the perimeters of polygons using Platonic AR or GeoBoard. Platonic AR.
- Students are able to measure and manipulate the measurement through these applications.
- Students will then be able to use their knowledge of volume and area to create their own figures using a sketch application and explain their sketch using a video editor.

# VOLUME AND SURFACE AREA

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5.GM.2.1 Recognize that the volume of rectangular prisms can be determined by the number of cubes ( $n$ ) and by the product of the dimensions of the prism ( $a \times b \times c = n$ ). Know that rectangular prisms of different dimensions ( $p$ ,  $q$ , and  $r$ ) can have the same volume if  $a \times b \times c = p \times q \times r = n$ .

5.GM.2.2 Recognize that the surface area of a three-dimensional figure with rectangular faces with whole numbered edges can be found by finding the area of each component of the net of that figure. Know that three-dimensional shapes of different dimensions can have the same surface area.

5.GM.2.3 Find the perimeter of polygons and create arguments for reasonable values for the perimeter of shapes that include curves.



## Evidence of Understanding

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Students will use the camera and video editor to recognize volume of rectangular prisms, area of three-dimensional figures and perimeter of polygons.



## Digital Tools

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- Camera
- *Video Editor- Clips*



## In Practice

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- Students will use a camera to take pictures of various angles within the classroom or school.
- Students will then choose the appropriate instrument to measure the angle and use a video editor to demonstrate how to measure.
- Students will also use a video editor to video themselves finding angles in the classroom or school, and use a ruler to measure the angles with inches, feet, yards, millimeters, centimeters, and meters.

# ANGLE AND LENGTH

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5.GM.3.1 Measure and compare angles according to size.

5.GM.3.2 Choose an appropriate instrument and measure the length of an object to the nearest whole centimeter or 1/16-inch.

5.GM.3.3 Recognize and use the relationship between inches, feet, and yards to measure and compare objects.

5.GM.3.4 Recognize and use the relationship between millimeters, centimeters, and meters to measure and compare objects.



## Evidence of Understanding

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Students will practice measuring and comparing angles according to size and choose instruments to measure length of any object using Turtle Diary and ABCYA.

Students will practice recognizing and use the relationship between inches, feet, and yards to measure and compare objects, as well as millimeters, centimeters, and meters using a video editor.



## Digital Tools

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- Camera
- *Content Application-[Khan Academy - Convert Time](#)*
- *Content Application-[Sheppard Software - Time Elapsed](#)*
- *Sketch Application- [Sketches School](#), Notes*



## In Practice

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- Students will practice measuring and comparing angles using Turtle Diary and ABCYA-Measuring Angles.
- Students will watch the informational vide on YouTube to build on their knowledge of angles.
- Students will use a video editor to show themselves locating different geometric shapes within the classroom, or school.
- Students will label the different attributes of each shape using a word processor or sketch application.

# DATA AND PROBABILITY

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# MEASURES OF CENTRAL TENDENCY

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5.D.1.1 Find the measures of central tendency (mean, median, or mode) and range of a set of data. Understand that the mean is a “leveling out” or central balance point of the data.

5.D.1.2 Create and analyze line and double-bar graphs with whole numbers, fractions, and decimals increments.



## Evidence of Understanding

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Students will be able to find mean, median, mode, and range of a set of data and indicate solution using a spreadsheet.

Students will create and analyze line and double-bar graphs with whole numbers, fractions, and decimals using a whiteboard.



## Digital Tools

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- *Spreadsheet- [Numbers](#), [Google Sheets](#), [Microsoft Excel](#)*
- *Interactive Whiteboard - [Educreations](#)*



## In Practice

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- Students will use a spreadsheet to record data gathered (ex: favorite candy, animal, etc) and use the information gathered to find the mean, median, mode and range.  
Students will use a whiteboard to create graphs. They will also record themselves analyzing the data they gathered.

# RESOURCES

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# TEACHER

- Better Lessons - Sum of Fractions
  - Home School Math - Word Problems
  - Math Wire - Guess My Rule Game
  - ABCYA - Math Quiz
  - Sheppard Software - Matching Addition
  - Math Playground - Math Monster
  - ABCYA - Math Quiz
- Sheppard Software - Matching Addition
  - Math Playground - Math Monster
  - Helping With Math - Algebra Patterns
  - Math Games - Number Patterns
  - Math Is Fun - Algebra Open Math Problems
  - Math Games Solve the Variable

# STUDENT

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