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:

Andrea Brock, Moore Public Schools
Becky Archibald, Edmond Public Schools
Shane Aveni, Putnam City Schools
Lori Baggett, Woodward Public Schools
Andrea Brock, Moore Public Schools
Julie Copeland, Cache Public Schools
Samantha Dunne, Broken Arrow Public Schools
Melissa Gunter, Norman Public Schools
Teri Oliver, Wagoner Public Schools
Sarah Peffer, Merritt Public Schools
Anthony Purcell, Stillwater Public Schools
Misti Watson, Weatherford Public Schools
Kerry Weingartner, Broken Arrow Public Schools
Robyn Wright, Sand Springs Public Schools
Taler Broadbent, Merritt Public Schools
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 to 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.
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
REPRESENTING INTEGERS AND RATIONAL NUMBERS

6.N.1.1 Represent integers with counters and on a number line and rational numbers on a number line, recognizing the concepts of opposites, direction, and magnitude; use integers and rational numbers in real-world and mathematical situations, explaining the meaning of 0 in each situation.

6.N.1.2 Compare and order positive rational numbers, represented in various forms, or integers using the symbols <, >, and =

6.N.1.3 Explain that a percent represents parts “out of 100” and ratios “to 100.”

6.N.1.4 Determine equivalencies among fractions, decimals, and percents. Select among these representations to solve problems.

6.N.1.5 Factor whole numbers and express prime and composite numbers as a product of prime factors with exponents

6.N.1.6 Determine the greatest common factors and least common multiples. Use common factors and multiples to calculate with fractions, find equivalent fractions, and express the sum of two-digit numbers with a common factor using the distributive property.
Evidence of Understanding

Students will be able to use a video editor to demonstrate understanding of integers and rational numbers through a created song.

Digital Tools

- Camera
- Video Editor - Clips, WeVideo, Flipgrid, iMovie, Loom, PowerDirector, Clips, Do-Ink, Storyblocks, Majisto, Adobe Spark Video
• Students will work in groups to create song lyrics (i.e. an educational Tiktok, Instagram reel, or Youtube video), demonstrating an understanding of one or more of the following concepts:
  - comparing integers,
  - understanding percents,
  - factoring whole numbers,
  - prime/composite numbers,
  - equivalency,
  - greatest common factor, and
  - least common multiple.

• Students will edit their video using a video editor and integrate subtitles into their video.
ADDING/SUBTRACTING INTEGERS

6.N.2.1 Estimate solutions to addition and subtraction of integers problems in order to assess the reasonableness of results.

6.N.2.2 Illustrate addition and subtraction of integers using a variety of representations.

6.N.2.3 Add and subtract integers; use efficient and generalizable procedures including but not limited to standard algorithms.

Evidence of Understanding

Students will be able to use digital tools to model various ways of adding or subtracting integers using counters, number lines, or other illustrative representations.
Digital Tools

- **Content Application** - Math Learning Center: Number Line
- **Content Application** - Integers Good Guys Vs. Bad Guys
- **Presentation** - Keynote, Microsoft Powerpoint, Google Slides
- **Comic Maker** - Comic Touch 2, Comic Puppets, Canva Comic Strip Maker, Powtoon, Comic Maker, Make Beliefs Comix, Toontastic, Pixton EDU

In Practice

- Students will, using the Math Learning Center: Number Line, create 5 addition & 5 subtraction problems involving integers and model how to calculate the solution. Students must capture images of their work.
- Students will (using the Content Application - Integers Good Guys vs. Bad Guys for reference) use a Comic Maker to transfer their captured images/solutions of the rules of illustrated addition and subtraction problems to create a comic.
RATIOS

6.N.3.1 Identify and use ratios to compare quantities. Recognize that multiplicative comparison and additive comparison are different.

6.N.3.2 Determine the unit rate for ratios.

6.N.3.3 Apply the relationship between ratios, equivalent fractions and percents to solve problems in various contexts, including those involving mixture and concentrations.

6.N.3.4 Use multiplicative reasoning and representations to solve ratio and unit rate problems.

Evidence of Understanding

Students will be able to determine unit rates for 4-5 items found in an online grocery store ad and recreate a grocery ad of their items chosen.
Digital Tools

- **Word Processor** - Pages, Google Docs, Microsoft Word
- **Design Tools** - Canva, Web Poster Wizard, Collage Maker

In Practice

- Students will locate 4-5 items in an online grocery store ad and capture images of the price and weight/volume of each item.
- Using a Word Processor and/or a Design Tool students will create their own grocery ad featuring their chosen 4-5 items. Each grocery store ad must include:
  - the picture of the item
  - a ratio of price to the weight/volume
  - the calculated unit rate of the price per serving
  - an equivalent ratio.
MULTIPLY AND DIVIDE DECIMALS

6.N.4.1 Estimate solutions to problems with whole numbers, decimals, fractions, and mixed numbers and use the estimates to assess the reasonableness of results in the context of the problem.

6.N.4.2 Illustrate multiplication and division of fractions and decimals to show connections to fractions, whole number multiplication, and inverse relationships.

6.N.4.3 Multiply and divide fractions and decimals using efficient and generalizable procedures.

6.N.4.4 Solve and interpret real-world and mathematical problems including those involving money, measurement, geometry, and data requiring arithmetic with decimals, fractions and mixed numbers.

Evidence of Understanding

Students will be able to use a Presentation Tool to demonstrate mastery of multiplying and dividing decimals.
Digital Tools

- Presentation - Keynote, Google Slides, Microsoft PowerPoint
- Work Sample - Car Presentation Sample

In Practice

- Students will choose 3 vehicles; a compact car, a SUV and a truck.
- Students will use a presentation tool create a slide for each vehicle that includes a picture, make, model, mpg, gas tank size and cost of a full tank of gas.
- Students will use the current local gas prices to calculate the cost of a tank of gas.
- Students will calculate the cost of driving the vehicle 1 mile.
- Students will calculate the cost of driving the vehicle to a town nearby and back.
- Students will show calculations for all three vehicles on the slides.
- Students will create a final slide that compares/contrasts the costs.
6.N.4.1 Estimate solutions to problems with whole numbers, decimals, fractions, and mixed numbers and use the estimates to assess the reasonableness of results in the context of the problem.

6.N.4.2 Illustrate multiplication and division of fractions and decimals to show connections to fractions, whole number multiplication, and inverse relationships.

6.N.4.3 Multiply and divide fractions and decimals using efficient and generalizable procedures.

6.N.4.4 Solve and interpret real-world and mathematical problems including those involving money, measurement, geometry, and data requiring arithmetic with decimals, fractions and mixed numbers.

Evidence of Understanding

Students will be able to multiply and divide fractions found in a recipe to demonstrate how to calculate/convert decimals and fractions.
Digital Tools

- **Word Processor** - Pages, Google Docs, Microsoft Word
- **Video Editor** - Clips, WeVideo, Do-Ink, iMovie
- **Sketch Application** - Sketches School, Notes, ibis, Absolute Board, Google Draw, Auto Draw, Do-Ink, Paper by 53, Web Paint

In Practice

- Students will bring/locate a recipe (to be approved by the teacher) and transfer it to a Word Processor application.
- Students will calculate how to multiply the recipe by 4 and divide the original recipe in half and show all recipe modifications utilizing a Sketch Application.
- Using the camera and a video editor, students will perform a pseudo cooking show discussing how they quadrupled their recipe and divided it in half using the calculations previously performed.
ALGEBRAIC REASONING AND ALGEBRA
EVALUATING EQUATIONS AND EXPRESSIONS

6.A.1.1 Plot integer- and rational-valued (limited to halves and fourths) ordered-pairs as coordinates in all four quadrants and recognize the reflective relationships among coordinates that differ only by their signs.

6.A.1.2 Represent relationships between two varying quantities involving no more than two operations with rules, graphs, and tables; translate between any two of these representations.

6.A.1.3 Use and evaluate variables in expressions, equations, and inequalities that arise from various contexts, including determining when or if, for a given value of the variable, an equation or inequality involving a variable is true or false.

6.A.2.1 Generate equivalent expressions and evaluate expressions involving positive rational numbers by applying the commutative, associative, and distributive properties and order of operations to solve real-world and mathematical problems.

6.A.3.1 Represent real-world or mathematical situations using expressions, equations and inequalities involving variables and rational numbers.

6.A.3.2 Use number sense and properties of operations and equality to solve real-world and mathematical problems involving equations in the form \( x + p = q \) and \( px = q \), where \( x, p, \) and \( q \) are nonnegative rational numbers. Graph the solution on a number line, interpret the solution in the original context, and assess the reasonableness of the solution.
In Practice

- Students will use a Mind Mapping Application to illustrate the process of solving equations using the order of operations.
- Students must label each step.
- Students will create an equation and an inequality and, using a Design Tool, create a mini anchor chart for each.

Evidence of Understanding

Students will be able to use a Design Tool to illustrate an equation and inequality and use order of operations calculate the solution.

Digital Tools

- Mind Mapping Application - ReadWriteThink, Popplet, Padlet, Simple Mind+, Mind Mapping, Inspiration Maps, Mindomo, iMindMap Kids.
- Design tools - Canva, Web Poster Wizard, Collage Maker
GEOMETRY AND MEASUREMENT
6th Grade Mathematics

### AREA

6.GM.1.1 Develop and use formulas for the area of squares and parallelograms using a variety of methods including but not limited to the standard algorithm.

6.GM.1.2 Develop and use formulas to determine the area of triangles.

6.GM.1.3 Find the area of right triangles, other triangles, special quadrilaterals, and polygons that can be decomposed into triangles and other shapes to solve real-world and mathematical problems.

### Evidence of Understanding

Students will be able to use content applications, GeoGebra and Tinkercad, to create a floor plan for a house calculating the area of each room.
Digital Tools

- 3D Design Tool- Tinkercad, Floor Plan Creator
- Content Application - Geogebra
- Content Application - Virtual Online Graph Paper

In Practice

- Students will use a Design Tool or a Content Application to create a floor plan of a one story home. The floor plan must include the following: kitchen, living room, three bedrooms and a bathroom.

- The floor plan must not be made of all squares and rectangles and must include slanted/diagonal lines.

- Students will take a screenshot of their floor plan and using a mark up tool, calculate and label the total area of each room.

- The floor plans can then be converted into a cardboard or other 3D model.
6.GM.2.1 Solve problems using the relationships between the angles (vertical, complementary, and supplementary) formed by intersecting lines.

6.GM.2.2 Develop and use the fact that the sum of the interior angles of a triangle is 180° to determine missing angle measures in a triangle.

Evidence of Understanding

Students will be able to, using Google Maps or Apple Maps, identify the relationships between angles that roads make and calculate missing angles.
Digital Tools

- **Mapping** - Apple Maps, Google Maps
- **Design tools** - Canva, Web Poster Wizard, Collage Maker
- **Word Processor** - Pages, Google Docs, Microsoft Word, Notes

In Practice

- Students will, using a Mapping Tool, take a screen shot of a specific section of a city. Students will then use a mark up tool to label the various angles that streets/roads create (vertical, complementary, supplementary).

- Students will use a Word Processor or Design Tool to create a pamphlet (integrating ELA and/or Geography/Social Studies) of the chosen city using links, images, QR codes, timelines, and descriptions. The pamphlet must contain the labeled screen shot of the city and its roads/streets.
6.GM.3.1 Estimate weights, capacities and geometric measurements using benchmarks in customary and metric measurement systems with appropriate units.

6.GM.3.2 Solve problems in various real-world and mathematical contexts that require the conversion of weights, capacities, geometric measurements, and time within the same measurement systems using appropriate units.

Evidence of Understanding

Students will be able to convert metric and customary measurements using memes to compare and contrast two items.
Digital Tools

- Meme Creator - Kapwing, Meme Generator, Canva, Clideo

In Practice

- Students will create and convert two metric unit conversions and two customary unit conversions.
- Students will then create memes comparing two items in each category (ex: weight of an elephant in tons vs. weight of a mouse in ounces then compare them using the same units).
TRANSFORMATION

6.GM.4.1 Predict, describe, and apply translations (slides), reflections (flips), and rotations (turns) to a two-dimensional figure.

6.GM.4.2 Recognize that translations, reflections, and rotations preserve congruency and use them to show that two figures are congruent.

6.GM.4.3 Use distances between two points that are either vertical or horizontal to each other (not requiring the distance formula) to solve real-world and mathematical problems about congruent two-dimensional figures.

6.GM.4.4 Identify and describe the line(s) of symmetry in two-dimensional shapes.

Evidence of Understanding

Students will be able to use a design tool to demonstrate the understanding of translations and lines of symmetry.
Digital Tools

- Content Application- Geoboard
- Video Editor- Clips, WeVideo, Flipgrid, iMovie, Loom, PowerDirector, Clips, Do-Ink, Storyblocks, Majisto, Adobe Spark Video

In Practice

- Students will use the Content Application to create and capture visuals of transformations.
- Students will input their visual images of created transformations and use a Video Editor to annotate the transformations; connecting how they constructed each transformation and explaining the attributes that characterize each.
DATA AND PROBABILITY
ANALYZE DATA

6.D.1.1 Calculate the mean, median, and mode for a set of real-world data.

6.D.1.2 Explain and justify which measure of central tendency (mean, median, or mode) would provide the most descriptive information for a given set of data.

6.D.1.3 Create and analyze box and whisker plots observing how each segment contains one quarter of the data.

Evidence of Understanding

Students will be able to calculate mean, median, mode and range using the various distances of student created paper airplanes; and use a Spreadsheet Application to create a chart or table using the data.
Digital Tools

- **Content Application** - EasyMeasure
- Spreadsheet - Numbers, Google Sheets, Microsoft Excel, Google Chart Maker
- **Video Editor** - Clips, WeVideo, Flipgrid, iMovie, Loom, Clips, Do-Ink, Storyblocks, Majisto, Adobe Spark Video

In Practice

- Students will work in groups to create 4 different models of paper airplanes.
- Students will fly each paper airplane and record distance flown.
- Students will fly each plane 4 times recording distances each time. Students will then input the data into a spreadsheet and calculate mean, median, mode and range for each plane's distance.
- Using a Video Editor students evaluate the data and critique the differences between the distances of each students' paper airplanes.
6.D.2.1 Represent possible outcomes using a probability continuum from impossible to certain.

6.D.2.2 Determine the sample space for a given experiment and determine which members of the sample space are related to certain events. Sample space may be determined by the use of tree diagrams, tables or pictorial representations.

6.D.2.3 Demonstrate simple experiments in which the probabilities are known and compare the resulting relative frequencies with the known probabilities recognizing that there may be differences between the two results.

Evidence of Understanding

Students will be able to use a Mind Mapping Application to create a diagram demonstrating the understanding of probability.
Digital Tools

• Mind Mapping Application - ReadWriteThink, Popplet, Padlet, Simple Mind+ Mind Mapping, Inspiration Maps, Mindomo, iMindMap Kids, GitMind, Lucidchart, Bubbl.us

• Content Application - Tree Diagram Probability Examples

• Video Editor - Clips, WeVideo, Flipgrid, iMovie, Loom, PowerDirector, Clips, Do-Ink, Storyblocks, Majisto, Adobe Spark Video

In Practice

• Students will review the Content Application - Tree Diagram Probability Examples.

• Students be given a required amount of clothing items packed for summer camp: pants and shirts, etc.

• Students will create a diagram using a Mind Mapping Application, illustrating the different possible combinations of outfits that could be worn while at summer camp.

• Students will then explain in a Video Editor application the probability of wearing different outfit combinations (ex: striped pants with polkadot shirt, striped pants) and convert the probability in decimal, percent, and fraction form.
RESOURCES
LearnZillion - Subtract Integers Using Integer Chips
Ordering Integers on a Number Line - worksheets
SoftSchools Integer Number Line Game
Ordering Numbers on Number Line Video
Comparing Rational Numbers Video
BrainPop Battleship Numberline Game
Comparing Rational Numbers Jeopardy Game (1-4 player game)
Identifying Negative Numbers Game
Percents - Math Bites Video - Danica McKellar
The Meaning of Percent - Lesson and Practice - notes and online practice
Percent and Smart Pirates Apple App
What are Percentages? Video - Math Antics
Percentages Math Song Video
Fractions, Decimals, Percents Jeopardy (1-4 Player)
M.A.P. - Translating Between Fractions, Decimals and Percents
VirtualNerd - Prime Factorization Trees
Prime Factorization Mobile Lesson
Prime Factorization Lesson - Math is Fun
Factorization Worksheets
More Factorization Worksheets
Prime Factorization Math Rap
Distributive Property with the Birthday Cake Method Video
Greatest Common Factor (GCF), Least Common Multiple (LCM), Distributive Property Worksheets

Mighty Multiples

Least Common Multiple (LCM) Game - Snowball Fight Game

Greatest Common Factor Video - Anywhere Math

Simplifying Fractions Worksheets

Integer Operations Video

Integers in the Real World Video

Integers Operation Lesson

Modeling Adding and Subtracting Integers Lesson

Adding Integers Game (Individual player)

 Subtracting Positive and Negative Numbers Video

Adding and Subtracting Integers Worksheet

Integer Operations Lesson #2

The Number Line: Rational Numbers Game

Ratios Video - Math Snacks

Determining the Unit Rate for Ratios Project

Virtual Nerd Video - What are Rates and Unit Rates

Rates and Ratios Jeopardy (Individual or Group)

Applying Unit Rates the Real World Video

M.A.P. lesson: Using Proportional Reasoning

Converting Fractions and Decimals Worksheet

Math Snacks Video - Unit Rates and Ratios

Modeling Division of Fractions Lesson

Chicken Coop Fraction Games Apple App

Soccer Shoot-Out Game - Fractions (Partner)

Multiplying Decimals Spectrum Video

Decimal Games
Solving Real World Problems Using Decimals Lesson
Finding Fractions Around You - Activity
Lunch Lady Game - Counting Money
Coordinate Plane Video
Coordinate Picture Graphing Worksheet
Coordinate Grid Interactive - Simple Plot Activity
Graphing - Coordinate Grid - Desmos
A Introduction to Functions (Input and Output) Video
Input Output Tables Builders Activity
Determining the Function from a Table or Graph Video
Equations and Inequalities Lesson
Evaluate Expressions - Video/Lesson Math Planet
Variable Expression Game

Math Properties Video
Properties Worksheets
Commutative Property of Addition - Cool Math Notes
Inequalities Game
Solving Two-Step Inequalities with Multiplication and Division Shmoop Video
Represent and Solve Equations Lesson
Areas of Parallelograms Lesson
Discovering Formulas for Area Lesson
Interactive Math Game on Area of Triangles
Finding Area of Triangles Lesson
Area of Triangles Worksheet
Area and Perimeter of Triangles Lessons
Finding Area with Hands-on Measurement Lesson
Area of a Triangle Math Goodies Lesson
Complementary and Supplementary Angles Video by Shmoop

Working With Angles Lesson

Classifying Angles Jeopardy (1 or more players)

Introduction to Geometry Video

Exploring Parallel Lines Activity

Interior Angles of Triangle Lesson

Geoboard Apple App

Metric and Standard Unit Measurement NASA Video

Converting Measurement Lesson

A Metric System Game

Working With Polygons Lesson

Translations, Reflections, Rotations Video - Turtle Diary

Exploring Tessellations Interactive Activity

Transformations Math is Fun Lesson

Geometric Shapes Apple App

Distance Between Points Interactive Activity

Tutor Guys - Congruent Figures Video

Colin Dodds Video - Transformations Song

Lines of Symmetry Worksheet

Lines of Symmetry Math is Fun Lesson

Lines of Symmetry Video

Measures of Central Tendency Worksheets

Finding Mean, Median, Mode Lesson

Data Analysis Video

Mean, Median, Mode Video

Mean, Median, Mode Video Song

Box and Whisker Plots Video by Smhoop

Box and Whisker Plots Worksheets

Teaching Box and Whisker Plots

Probability Line Math is Fun Lesson

Tree Diagrams - Probability Worksheets
Probability Fair Game
Probability Worksheet
Sample Space Video
Representing the Sample Space Lesson

Tree Diagrams, Sample Space Diagrams, and Table of Outcomes Lesson
Probability Rock, Paper, Scissors Game
Probability Lesson
Function Machine Game
• 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