Instructional Learning Series
Grade 8—Expressions and Equations I Playlist

The Digital Library Instructional Learning Series links Smarter Balanced Digital Library resources with content from Interim Assessment Blocks. The Digital Library resources on this list are intended to supplement a teacher's core curriculum and may not address every standard assessed by the Grade 8—Expressions and Equations I Interim Assessment Block. For each resource on this list, a brief description is provided along with the Common Core State Standards (CCSS) of focus and estimated instructional time. Many of the formative assessment practices featured in these resources can be used across grades and content areas.

Learning Goals

Students understand:

- how to work with expressions containing radicals and integer exponents.
- the connections between proportional relationships, lines, and linear equations.
- how to analyze and solve linear equations and pairs of simultaneous linear equations.

Success Criteria

Students can:

- generate equivalent expressions by applying the properties of integer exponents.
- represent solutions to equations of the form $x^2 = p$ using square root symbols and $x^3 = p$ using cube root symbols.
- use scientific notation to estimate very large and very small numbers and perform operations with numbers expressed in scientific notation.
- graph proportional relationships, identify the unit rate as slope, and compare two different proportional relationships represented in different formats.
- find equations of linear graphs from pairs of coordinates, and calculate the slope and y-intercept.
- find the equation $y = mx$ or $y = mx + b$ for a line.
- identify and write examples of linear equations in one variable with one solution, no solutions, or infinitely many solutions.
- solve linear equations in one variable with rational coefficients, including equations with solutions that require expanding expressions using the distributive property and collecting like terms.
- estimate solutions by graphing systems of two linear equations in two variables.
- recognize when a system of two linear equations in two variables has one solution, no solution, or infinitely many solutions.

Resource Title	Resource Overview
Applying Properties of Exponents ⬈ CCSS of focus: 8.EE.A.1 Estimated Instructional Time: 120 min.	This resource includes presentation slides, lesson plans, and materials for student use. It is intended to teach the properties of exponents to generate equivalent numeric expressions, identify and apply appropriate properties, and calculate the numerical value of an expression without using a calculator.
Project Study Guide ⬈ CCSS of focus: 8.NS.A.1, 8.NS.A.2, 8.EE.A.1, 8.EE.A.2, 8.EE.A.3 Estimated Instructional Time: 120 min.	This resource includes directions and a rubric for student use in creating a comprehensive study guide prior to an end-of-unit assessment. The study guide overview document identifies the key concepts that will be assessed and a rubric that describes the required contents and quality of each study guide. This study guide targets grade 8 Number Sense and Expressions and Equations standards, but can easily be modified for other grade levels and content area.
Scientific Notation ⬈ CCSS of focus: 8.EE.A.3, 8.EE.A.4 Estimated Instructional Time: 45 min.	This resource includes a student constructed response document and resources for task readiness and support. The lesson provides students with an opportunity to practice representing large or small numbers while performing basic operations on numbers in scientific notation.
Estimating Length With Scientific Notation ⬈ CCSS of focus: 8.EE.A.3, 8.EE.A.4 Estimated Instructional Time: 110 min.	This resource includes presentation slides, a comprehensive lesson guide, and student materials for learning to estimate lengths of everyday objects, make conversions between decimal and scientific notation, and make comparisons of the size of numbers expressed in both decimal, and scientific notation.
Slippery Slopes ⬈ CCSS of focus: 8.EE.B.5, 8.EE.B.6, 8.F.B.4 Estimated Instructional Time: 60 min.	This resource includes a performance task and rubric with annotated student work. The task provides students with an opportunity to graph proportional relationships and interpret the unit rate as the slope of the line. In addition to deriving the equation $y = mx + b$, students will construct a function to model a linear relationship between two quantities.
Lines, Slopes, and Linear Equations ⬈ CCSS of focus: 8.EE.B.5, 8.EE.B.6 Estimated Instructional Time: 60 min.	This resource includes presentation slides, a comprehensive lesson guide and student materials. Students will learn to find the slope and equations of linear graphs defined by pairs of coordinates, calculate the slope and y-intercept of a straight line, and use this information to derive its equation.
Solving Linear One-Variable Equations	This resource includes a comprehensive lesson plan and student materials intended to teach students how to solve linear equations in one variable with rational number

CCSS of focus: 8.EE.C.7 Estimated Instructional Time: 95 min.	coefficients, collect like terms, expand expressions using the distributive property, and categorize linear equations as having one, none, or infinitely many solutions.
Building and Solving Equations 1 CCSS of focus: 8.EE.C.7 Estimated Instructional Time: 120 min.	This resource includes presentation slides, a comprehensive lesson plan and student materials. The lesson engages students in a variety of tasks to develop their conceptual understanding of building and solving equations. Students are able to work independently, in pairs, and as a whole class. Reasoning is promoted through discussion and addressing misconceptions.