

NEW Unit 5: Expressions & Equations (8th Grade Content)

Content Area: **Mathematics**
Course(s): **Generic Course, Accelerated Math 7**
Time Period: **3rd Marking Period**
Length: **6 weeks**
Status: **Published**

Unit Overview

Work with linear relationships in grade 8 builds on earlier work with rates and proportional relationships in grade 7, and grade 8 work with geometry. At the end of the previous unit on dilations, students learned the terms “slope” and “slope triangle,” used the similarity of slope triangles on the same line to understand that any two distinct points on a line determine the same slope, and found an equation for a line with a positive slope and vertical intercept. In this unit, students gain experience with linear relationships and their representations as graphs, tables, and equations through activities designed and sequenced to allow them to make sense of problems and persevere in solving them (MP1). Because of this dependency, this unit and the previous one should be done in order.

In this unit, students build on their grade 6 work. Students review exponential expressions, including work with exponential expressions with bases 2 and $1/2$. Students examine powers of 10, formulating rules and considering the value of 10^0 . They expand their work to numerical bases other than 10, using exponent rules with products of exponentials with the same base and contrasting it with products of exponentials with different bases.

Transfer

Students will be able to independently use their learning to solve real world problems involving...

- proportional relationships (graphs, tables, and equations)
- the role of the constant of proportionality in different representations and how it may be interpreted in context
- graphing of two equations in two unknowns and finding and interpreting their solutions
- examining the powers of 10
- application of exponent rules in context
- consideration of differences in magnitude of powers of 10
- using powers of 10 and multiples of powers of 10 to describe magnitudes of quantities

Use mathematical expressions, equations, inequalities and graphs to represent and solve real world problems.

For more information, read the following article by Grant Wiggins.

http://www.authenticeducation.org/ae_bigideas/article.lasso?artid=60

Meaning

Understandings

Students will understand ...

- There are multiple models to show proportional relationships (graphs, tables, and equations)
- the role of the constant of proportionality in different representations and how it may be interpreted in context
- scientific notation is used to represent very large/small numbers in an efficient manner
- application of exponent rules in context
- consideration of differences in magnitude of powers of 10
- using powers of 10 and multiples of powers of 10 to describe magnitudes of quantities

Essential Questions

Students will keep considering...

- How are linear and proportional relationships similar?
- How are linear and proportional relationships different?
- What is meant by the slope of a line, and how can knowing a line's slope help to graph a line and find parallel and perpendicular lines?
- How can the value of an unknown variable be found?
- What is meant by the slope of a line, and how can knowing a line's slope help to graph a line and identify proportional relationships?
- How do powers of 10 relate to each other?
- Why does $10^0 = 1$?
- How is scientific notation used?

Application of Knowledge and Skill

Students will know. . .

- how to graph proportional relationships
- graph lines and writing equations
- how slope relates to changes in a situation
- how to calculate powers of powers
- the meaning of zero as an exponent
- how to apply exponent rules
- rules of scientific notation
- how to distinguish expressions that are equivalent to exponential expressions
- how to compare quantities expressed in scientific notation

Students will be skilled at...

Representing

- situations involving proportional relationships
- constants of proportionality in different ways
- slope using expressions
- linear relationships using graphs, tables, equations, and verbal descriptions
- situations using negative slopes and slopes of zero
- situations by graphing lines and writing equations
- situations involving linear relationships
- situations using exponents
- large and small numbers using number lines, exponents, and decimals
- situations comparing quantities expressed in scientific notation

Generalizing

- categories for graphs
- about equations and linear relationships
- in order to make predictions about the slope of lines

Explaining

- how to graph proportional relationships
- how to use a graph to determine information about a linear situation
- how to graph linear relationships
- how slope relates to changes in a situation

Critiquing

- reasoning about powers of powers
- reasoning about zero exponents
- applications of exponent rules

- reasoning about scientific notation

Justifying

- reasoning about multiplying powers of 10
- reasoning about powers of powers
- reasoning about dividing powers of 10
- whether or not expressions are equivalent to exponential expressions
- reasoning about situations comparing powers of 10

Academic Vocabulary

base (of an exponent)

billion

combination

constant of proportionality

constant rate

constraint

equation

evaluate

expanded

exponent

factor

horizontal intercept

horizontal line

initial (value or amount)

integer

-intercept

intersection point

label

linear relationship

multiple of

negative exponent

positive exponent

power

powers of 10

powers of powers

rate of change

reciprocal

relate

repeated multiplication

represent

scale

scientific notation

set of solutions

slope

solution to an equation with two variables

square (of a number)

trillion
variable
vertical intercept
vertical line
zero exponent

Learning Goal 1

Gain experience with linear relationships and their representations as graphs, tables, and equations through activities designed and sequenced to allow them to make sense of problems and persevere in solving them.

Target #1.1 -- DOK: 2 Skill/Concept

SWBAT

- graph a proportional relationship from a story.
- use the constant of proportionality to compare the pace of different animals.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.

Target #1.2 -- DOK: 2 Skill/Concept

SWBAT

- graph a proportional relationship from an equation.
- tell when two graphs are of the same proportional relationship even if the scales are different.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.

MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

Target #1.3 -- DOK: 2 Skill/Concept

SWBAT

- scale and label a coordinate axes in order to graph a proportional relationship.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

Target #1.4 -- DOK: 2 Skill/Concept

SWBAT

- compare proportional relationships represented in different ways.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.6	Attend to precision.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.
MA.K-12.8	Look for and express regularity in repeated reasoning.

Target #1.5 -- DOK: 3 Strategic Thinking

SWBAT

- find the rate of change of a linear relationship by figuring out the slope of the line representing the relationship.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.6	Attend to precision.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.

Target #1.6 -- DOK: 2 Skills/Concept and 3 Strategic Thinking

SWBAT

- interpret the vertical intercept of a graph of a real-world situation.
- match graphs to the real-world situations they represent by identifying the slope and the vertical intercept.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

Target #1.7 -- DOK: 2 Skill/Concept and 3 Strategic Thinking

SWBAT

- use patterns to write a linear equation to represent a situation.
- write an equation for the relationship between the total volume in a graduated cylinder and the number of objects added to the graduated cylinder.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.

MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.EE.B.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .

Target #1.8 -- DOK: 2 Skill/Concept

SWBAT

- explain where to find the slope and vertical intercept in both an equation and its graph.
- write equations of lines using $y=mx+b$.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.6	Attend to precision.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.G.A.1	Verify experimentally the properties of rotations, reflections, and translations:

Learning Goal 2

Consider the graphs of lines with a negative y -intercept and equations that might represent it. Consider situations represented by linear relationships with negative rates of change, graph these, and interpret coordinates of points on the graphs in context.

Target #2.1 -- DOK: 2 Skill/Concept

SWBAT

- give an example of a situation that would have a negative slope when graphed.
- look at a graph and tell if the slope is positive or negative and justify/explain.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.6	Attend to precision.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.

Target #2.2 -- DOK: 2 Skill/Concept

SWBAT

- calculate positive and negative slopes given two points on the line.
- describe a line precisely enough that another student can draw it.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.EE.B.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .

Target #2.3 DOK: 2 Skill/Concept

SWBAT

- write equations of lines that have a positive or a negative slope.
- write equations of vertical and horizontal lines.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.K-12.6	Attend to precision.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.EE.B.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .

Target #2.4-- DOK: 2 Skill/Concept

SWBAT

- know that the graph of an equation is a visual representation of all the solutions to the equation.
- understand what the solution to an equation in two variables is.

MA.K-12.1	Make sense of problems and persevere in solving them.
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MA.K-12.2	Reason abstractly and quantitatively.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

Target #2.5 -- DOK: 2 Skill/Concept

SWBAT

- find solutions (x,y) to linear equations given either the x or the y value to start from.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.8.EE.C	Analyze and solve linear equations and pairs of simultaneous linear equations.
MA.8.EE.C.8a	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

Target #2.6 -- DOK: 3 Strategic Thinking

SWBAT

- write linear equations to reason about real-world situations.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.4	Model with mathematics.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.
MA.8.EE.B	Understand the connections between proportional relationships, lines, and linear equations.
MA.8.EE.B.5	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.
MA.8.EE.B.6	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b .
MA.8.EE.C.8a	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

Learning Goal 3

Review exponential expressions, including work with exponential expressions with bases 2 and 1/2. Examine powers of 10, formulating the rules $10^n \cdot 10^m = 10^{n+m}$, $(10^n)^m = 10^{nm}$, and, for $n > m$, $10^n \cdot 10^m = 10^{n-m}$ where n and m are positive integers.

Target #3.1 -- DOK: 2 Skill/Concept

SWBAT

- explain and use a rule for multiplying powers of 10.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.

Target #3.2 -- DOK: 2 Skill/Concept

SWBAT

- explain and use a rule for raising a power of 10 to a power.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.5	Use appropriate tools strategically.

Target #3.3 -- DOK: 2 Skill/Concept

SWBAT

- evaluate 10^0 and explain why it makes sense.
- explain and use a rule for dividing powers of 10.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.

MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.6	Attend to precision.

Target #3.4 -- DOK: 2 Skill/Concept

SWBAT

- use the exponent rules with negative exponents.
- know what it means if 10 is raised to a negative power.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.

Target #3.5 DOK: 2 Skill/Concept

SWBAT

- use the exponent rules for bases other than 10.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.

Target #3.6 DOK: 2 Skill/Concept

SWBAT

- change an expression with a negative exponent into an equivalent expression with a positive exponent.
- choose an appropriate exponent rule to rewrite an expression to have a single exponent.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.

MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.6	Attend to precision.
MA.K-12.7	Look for and make use of structure.

Target #3.7 DOK: 3 Strategic Thinking

SWBAT

- use and explain a rule for multiplying terms that have different bases but the same exponent.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.
MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.7	Look for and make use of structure.

Learning Goal 4

Write estimates of quantities in terms of integer or non-integer multiples of powers of 10 and use knowledge of exponential expressions to solve problems. Introduction of the term “scientific notation,” followed by practice distinguishing scientific from other notation. Use scientific notation (with no more than three significant figures) in order to make additive and multiplicative comparisons of pairs of quantities; compute sums, differences, products, and quotients of numbers written in scientific notation (some with as many as four significant figures), using such calculations to estimate quantities.

Target #4.1 DOK: 2 Skill/Concept

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.6	Attend to precision.
MA.8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.
MA.K-12.7	Look for and make use of structure.

Target #4.3 DOK: 2 Skill/Concept

SWBAT

- plot a multiple of a power of 10 on such a number line.
- subdivide and label a number line between 0 and a power of 10 with a negative exponent into 10 equal intervals.
- write a small number as a multiple of a power of 10.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.6	Attend to precision.
MA.8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.
MA.8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
MA.K-12.7	Look for and make use of structure.

Target #4.4 DOK: 3 Strategic Thinking

SWBAT

- apply what I learned about powers of 10 to answer questions about real-world situations.

Target #4.5 DOK: 2 Skill/Concept

SWBAT

- tell whether or not a number is written in scientific notation.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.6	Attend to precision.
MA.8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
MA.K-12.7	Look for and make use of structure.

Target #4.6 DOK: 2 Skill/Concept

SWBAT

- multiply and divide numbers given in scientific notation.
- use scientific notation and estimation to compare very large or very small numbers.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.6	Attend to precision.
MA.8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.
MA.8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
MA.K-12.7	Look for and make use of structure.

Target #4.7 DOK: 2 Skill/Concept

SWBAT

- add and subtract numbers given in scientific notation.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.6	Attend to precision.
MA.8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
MA.K-12.7	Look for and make use of structure.

Target #4.8 DOK: 4 Extended Thinking

SWBAT

- use scientific notation to compare different amounts and answer questions about real-world situations.

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.2	Reason abstractly and quantitatively.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.K-12.4	Model with mathematics.

MA.K-12.5	Use appropriate tools strategically.
MA.K-12.6	Attend to precision.
MA.8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.
MA.8.EE.A.4	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
MA.K-12.7	Look for and make use of structure.

Formative Assessment and Performance Opportunities

- cK-12 Adaptive Practice
- Exit/Admit ticket
- Kahoot
- My Favorite No
- Strategic questioning
- Student-Teacher conference
- Think-Pair-Share

Summative Assessment

- End of Unit Test
- LinkIt!
- Portfolio
- Pre-Unit Diagnostic Test
- Project
- Quiz

21st Century Life and Careers and Technology

CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP3	Attend to personal health and financial well-being.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.
TECH.8.1.8.E.CS1	Plan strategies to guide inquiry.
TECH.8.1.8.E.CS4	Process data and report results.
TECH.8.1.8.F.CS3	Collect and analyze data to identify solutions and/or make informed decisions.

Accommodations & Modifications

- Adaptive Practice (cK-12 modality)
- Algebra tiles
- Base-10 blocks
- Calculator/Graphing calculator
- Centers
- Fraction Tiles
- Modifications as per IEP/504
- PLIX (cK-12 modality)
- Small group instruction
- To challenge students, ask them to write expressions with multiple levels of parentheses that can be simplified using the distributive property

Unit Resources

See also: Illustrative Math Tasks Folder in Curriculum Portal

ALEKS

[cK-12 Accelerated 7th Grade Book](#)

Mr. Morgan's Math Help

[Unit 8.3 Linear Relationships](#)

[Unit 8.7 Exponents & Scientific Notation](#)

NJCTL (New Jersey Center for Teaching and Learning)

[Equations with Roots and Radicals](#)

[Solving Equations](#)

cK-12 PLIX:

Powers of tens: [The Rule for Tens](#)

Scientific Notation: [Richter Scale Exponents](#)

Forms of Linear Equations: [Forms of Linear Equations](#)

Checking solutions to equations: [Taxi Cab Calculations](#)

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Desmos activities:

Scientific notation: [Balance the Scale](#)

Linear Relationships: [Lego Prices](#)

Linear equation vocabulary: [Two Truths and a Lie](#)

Comparing linear functions: [Card Sort: Linear Functions](#)

Interdisciplinary Connections

Real world applications where the creation of equations/functions is necessary to determine financial gains and losses. (MA.8.F.A.2)

PFL.9.1.8.B.2

Construct a simple personal savings and spending plan based on various sources of income.

PFL.9.1.8.B.8

Develop a system for keeping and using financial records.