Unit #1 Number Sense, Equations and inequalities

Content Area: **Math**
Course(s):
Time Period: **September**
Length: **6 weeks**
Status: **Published**

State Mandated Topics Addressed in this Unit

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N/A	N/A

Number Sense, Equations and inequalities

Learning Objectives

- Objective 1 - Apply scales to graphs, origin of graph and data displays.
- Objective 10 - Interpret parts of expressions including terms, factors, and coefficients.
- Objective 11 - Interpret expressions in terms of context.
- Objective 12 - Use the structure of an expression to identify ways to rewrite it. For example, see x4 – y 4 as (x2) 2 – (y2) 2 , thus recognizing it as a difference of squares, that can be factored as (x2 – y 2)(x2 + y2).
- Objective 13 - Interpret parts of an expression in context, such as terms, factors, and coefficients.
- Objective 14 - Create and solve equations.
- Objective 15 - Create and solve inequalities.
- Objective 16 - Create equation that represents relationships between quantities.
- Objective 16 - Interpret complicated expressions by viewing its parts as a single entity.
- Objective 17 - Graph equations on axes with labels and scales.
- Objective 18- Factor expressions.
- Objective 19- Identify structure to rewrite expressions.
- Objective 2 - Use units to make sense of solutions.
- Objective 20- Rewrite using difference of squares.
- Objective 21- Rewrite expressions using difference of cubes. Rewrite expressions using sum of cubes.
- Objective 22- Choose an equivalent form of an expression.
- Objective 23- Produce an equivalent form of an expression.
- Objective 24- Explain the properties of the quantity represented by an expression

- Objective 25 - Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law V = IR to highlight resistance R.
- Objective 26 - Explain the steps to solving an equation.
- Objective 27 - *Factor a quadratic expression to reveal its zeros
- Objective 27 - Construct a viable argument to justify a solution method.
- Objective 28 - Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
- Objective 29 - Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies).
- Objective 3 - Apply scales to multi-step problems and formulas.
- Objective 30 - Evaluate numerical expressions
- Objective 31 - Apply distributive property and simplify algebraic expressions
- Objective 32 - Combine like terms
- Objective 33 - Translate word expressions into mathematical expression
- Objective 34 - Translate word expressions into mathematical equations
- Objective 35- Solve proportions
- Objective 36 - Variables on both sides
- Objective 4 - Interpret units in formulas.
- Objective 5 - Choose units in formulas.
- Objective 6 - Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
- Objective 7 - Define quantities for descriptive modeling problems. (Incorporate appropriate units)
- Objective 8 - Choose limits on measurements when reporting quantities.
- Objective 9- Choose the level of accuracy.

Essential Skills

- Essentail Skill 20 - Artists will be able to factor a quadratic expression to reveal its zeros.
- Essential Skill 1 - The artist will apply scales to graphs, origin of graph and data displays.
- Essential Skill 10 - The artist will interpret expressions in terms of context.
- Essential Skill 11 - The artist will interpret complicated expressions by viewing its parts as a single entity.
- Essential Skill 12 - Artists will be able to factor expressions.
- Essential Skill 13 - Artists will be able to identify structure to rewrite expressions.
- Essential Skill 14 - Artists will be able to rewrite using difference of squares.
- Essential Skill 15 - Artists will be able to rewrite expressions using difference of cubes.
- Essential Skill 16 - Artists will be able to rewrite expressions using sum of cubes.
- Essential Skill 17 - Artists will choose an equivalent form of an expression.
- Essential Skill 18 - Artists will produce an equivalent form of an expression.
- Essential Skill 19 - Artists will be able to explain the properties of the quantity represented by an

expression.

- Essential Skill 2 - The artist will use units to make sense of solutions.
- Essential Skill 21 - Artists will be able to create and solve equations.
- Essential Skill 22 - Artists will be able to create and solve inequalities.
- Essential Skill 23 - Artists will be able to create an equation that represents relationships between quantities.
- Essential Skill 24 - Artists will be able to graph equations on axes with labels and scales.
- Essential Skill 25 - The artist will rearrange formulas to highlight a quantity of interest.
- Essential Skill 26 - The artist will explain the steps to solving an equation.
- Essential Skill 27 - The artist will be able to construct a viable argument to justify a solution method.
- Essential Skill 28 - Artists will be able to solve equations and inequalities in one variable (including equations with coefficients represented by letters).
- Essential Skill 29 - Artists will be able to summarize data in a two-way frequency table.
- Essential Skill 3 - The artist will apply scales to multi-step problems and formulas.
- Essential Skill 30 - Artists will be able to interpret the relative frequencies including joint, marginal and conditional relative frequencies.
- Essential Skill 31 - Artists will be able to recognize possible trends and associations in the data.
- Essential Skill 32 - Artists will be able to replace the variable for their corresponding numerical value.
- Essential Skill 36 - Recognize key words that represent a mathematical operation
- Essential Skill 4 - The artist will interpret units in formulas.
- Essential Skill 5 - The artist will choose units in formulas.
- Essential Skill 6 - The artist will define quantities for descriptive modeling problems. (Incorporate appropriate units)
- Essential Skill 7 - The artist will choose limits on measurements when reporting quantities.
- Essential Skill 8 - The artist will choose the level of accuracy.
- Essential Skill 9 - The artist will interpret parts of expressions including terms, factors, and coefficients.
- Essential Skills 33 - Artists will be able to differentiate variable terms from numerical terms.
- Essential Skills 34 - Artists will be able to apply distributive property
- Essential Skills 35 - Artists will be able to simplify an algebraic expression
- Essential Skills 36 - Artists will be able to solve proportions.
- Essential Skills 37 - Artists will be able to solve one and two-step equations
- Essential Skills 38 - Artists will be able to solve equations/inequalities with variables on both sides.

Standards

MATH.9-12.N.Q.A.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.
MATH.9-12.N.Q.A.2	Define appropriate quantities for the purpose of descriptive modeling.
MATH.9-12.N.Q.A.3	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
MATH.9-12.A.CED.A.1	Create equations and inequalities in one variable and use them to solve problems. Include

	equations arising from linear and quadratic functions, and simple rational and exponential functions.
MATH.9-12.A.CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
MATH.9-12.A.CED.A.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
MATH.9-12.A.REI.A.1	Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
MATH.9-12.A.REI.B.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
MATH.9-12.A.SSE.A.1	Interpret expressions that represent a quantity in terms of its context.
MATH.9-12.A.SSE.A.1.a	Interpret parts of an expression, such as terms, factors, and coefficients.
MATH.9-12.A.SSE.A.1.b	Interpret complicated expressions by viewing one or more of their parts as a single entity.
MATH.9-12.A.SSE.A.2	Use the structure of an expression to identify ways to rewrite it.
MATH.9-12.A.SSE.B.3.a	Factor a quadratic expression to reveal the zeros of the function it defines.
MATH.9-12.A.SSE.B.3.b	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.
MATH.9-12.A.SSE.B.3.c	Use the properties of exponents to transform expressions for exponential functions.
MATH.9-12.F.LE.B.5	Interpret the parameters in a linear or exponential function in terms of a context.

Instructional Tasks/Activities

- Academic games & Competitions
- Arts inspired projects
- Combining like terms using color cups.
- Formative Assessments
- Graphic organizer on solving exponents (Algebraic and numerical).
- Graphic Organizers
- Inequalities - make up work
- Inequalities - Review
- Interactive activity in Quizizz using a checklist (Questionnaire)
- Interactive notes or notebooks
- Ladder Activity
- Quiz
- Quiz on Evaluating algebraic expressions
- Quiz on inequalities
- Retake quiz, extra credit, complete missing assignments
- Review Quiz, makeup assignments, complete missing assignments, absent work
- Review two-step equations and QUIZ
- Stations or rotational activities
- Worksheet on Combining like terms using color coding.

- Worksheet on combining like terms.
- Worksheet on distributive property (distributing constants and variables)
- Worksheet on equations with variables on both sides
- Worksheet on evaluating algebraic expressions.
- Worksheet on graphing Inequalities
- Worksheet on Intro to Inequalities
- Worksheet on Introduction to Inequalities
- Worksheet on one step inequalities
- Worksheet on Solving proportions
- Worksheet on Two-step equations: Complete the questionnaire about the steps and procedures, then solve the equation (practice)
- Worksheet on Two-step equations: Complete the questionnaire about the steps and procedures, then solve the equation.
- Worksheet on Two-step equations: Complete the questionnaire about the steps and procedures.
- worksheet on Two-step equations: solve equations completing blank boxes
- Worksheet on Two-step equations: Using highlighters to identify the constant that needs to be removed for step 1 and apply step 1. Then apply step 2.
- Worksheet on Two-step inequalities (using negative coefficients)
- Worksheet on Two-step inequalities (using positive coefficients)
- Worksheet reviewing order of operations using PEMDAS
- Worksheets

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay
- Exit Ticket/Entrance Ticket/Do Now
- Journal / Student Reflection
- Kahoot
- Other named in lesson
- Peer Review
- Performance
- Problem Correction
- Project
- Quiz
- Quiz Review
- Rubric
- Teacher Collected Data

- Test
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Power Point
- Quizizz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- large print
- modified quiz as needed
- modified test as needed
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline
- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

Resources

- www.KhanAcademy.com