Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Mathematics

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Elementary Curriculum Maps	Middle Level Curriculum Maps	High School Curriculum Maps
- Kindergarten - 1st Grade - 2nd Grade - 3rd Grade - 4th Grade - 5th Grade	- 6th Grade - 7th Grade - 8th Grade	- 9th Grade- Algebra 1 - 10th Grade- Geometry - 11th Grade- Algebra 2 - 12th Grade- Statistics

How to Read the Curriculum Maps:

Each curriculum map is organized with the same components: Essential Question, Transferable Skill Priority Performance Indicator, Content Priority Performance Indicator, IRIS Priority Performance Indicator, Summative Assessment, and Unit Content Topics. The maps are designed for adaptation and personalization for your own community context, which is why you will see the summative assessment spaces blank. Our goal was not to create a curriculum to be wholesale adopted, but a curriculum to inspire reflection on how to weave together some of the guiding documents used across Vermont while centering educational equity from the beginning of the curricular design process.

What to look out for:

In recognition of the variability of social studies and science opportunities at the elementary levels across Vermont, we mapped out four units for both social studies and science K-5 that are designed to stand alone or be a companion unit to ELA or Math. These units are labeled accordingly within the maps. The Elementary Curriculum Maps are specially designed to align the Transferable Skills and IRIS standards across content areas and grade levels. Each grade/course level's map has a model unit overview linked within the map. Some unit overviews also include a comprehensive unit plan, which has been developed by Vermont educators and will be identified with an asterisk (*). Some units will have updated content Proficiency Scales as they are published by the Vermont Agency of Education.

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Math

Grade(s): K

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 What does it mean to be in a math community?	**1. Clear and Effective Communication G.** Collaborate effectively and respectfully.	**1. Quantitative Reasoning G. Counting and Cardinality:** Know number names and the count sequence. (K.CC.A)	**3. Interconnectedness D.** Contribute to community actualization and an equitable distribution of power.		**Topics:** Number names, counting sequence, recognize and write numbers
#2 How can we use numbers to describe and understand the people and places around us? (Companion with Science Unit 2)	**4. Responsible and Involved Citizenship A.** Participate in and contribute to the enhancement of community life.	**1. Quantitative Reasoning G. Counting and Cardinality:** Count to tell the number of objects. (K.CC.B, K.MD.B)	**1. Identity Development C.** Share their lived experiences, their gifts, dreams, stories and languages, indigeneity, immigration journeys and/or ancestral lineages while honoring the lived experiences of all.		**Topics:** Count groups of objects and Images, connect quantities and numbers, understand cardinality, number order
#3 How do shapes and patterns appear in stories, art, and everyday life?	**5. Informed and Integrative Thinking A.** Apply knowledge from various disciplines	**3. Geometric Reasoning A.** Identify and describe shapes. (K.G.A)	**1. Identity Development. D.** Value storytelling as a way to foster empathy and to understand the		**Topics:** Recognize and name shapes, describe shapes by attributes, make shapes

(Companion with Science Unit 3)	and contexts to real life situations.		importance of mutual interdependence, relationality, and kinship		
#4 How can we use math to tell stories about our lives and the world around us?	**1. Clear and Effective Communication E.** Demonstrate effective, expressive, and receptive communication, including oral, written, multi-media, and performance.	**2. Algebraic Reasoning C.** Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. (K.OA.A)	**3. Interconnectedness A**. Describe the ways that students, families, and communities of color come from generations of peoples who have rich intellectual and cultural traditions		**Topics:** Count to add and subtract, represent and solve story problems, addition and subtraction, expressions
#5 How can we use numbers to make sense of what's happening around us?	**4. Responsible and Involved Citizenship D.** Respect diversity and differing points of view.	**1. Quantitative Reasoning A.** Counting and Cardinality: Compare numbers. (K.CC.C)	**4. Social Responsibility A.** Understand the impact of social movements and the solidarity efforts that fought for the freedom of all peoples, especially for Ethnic Studies Groups		**Topics:** Count and compare groups of objects, count and compare groups of images, compare numbers
#6 In what ways can we use numbers to tell	**5. Informed and Integrative Thinking A.** Apply	**1. Quantitative Reasoning C.** Numeracy in Base	**2. Resisting Racism C.** Research the ways that systems have		**Topics:** compare numbers, groupings of ten,

stories about people, communities, and their histories? (Companion with Science Unit 6)	knowledge from various disciplines and contexts to real life situations.	Ten: Work with numbers 11-19 to gain foundations for place value; Compose and decompose numbers to 20, into tens and ones. (K.NBT.A)	impacted their lives, Ethnic Studies groups, and Vermont		make and break numbers 1-20 apart
#7 How can we use stories and data to design something that helps people feel more connected? (Companion with Science Unit 7)	**1. Clear and Effective Communication E.** Demonstrate effective, expressive, and receptive communication, including oral, written, multi-media, and performance.	**4. Measurement and Data A.** Describe and compare measurable attributes. (K.MD.A)	**1. Identity Development D.** Value storytelling as a way to foster empathy and to understand the importance of mutual interdependence, relationality, and kinship		**Topics:** Compare objects based on measurable attributes, use comparative language to describe objects, sort and group objects according to similar attributes
#8 How can numbers and math help us solve problems in fair and kind ways?	**2. Self-Direction A.** Identify, manage, and assess new opportunities related to learning goals.	**1. Quantitative Reasoning A.** Counting and Cardinality: Compare numbers. (K.CC.C)	**2. Resisting Racism D.** Develop new humanizing systems that value Ethnic Studies Groups		**Topics:** Count and compare numbers, fluency within 5, all about 10

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ICVE Curriculum Map: Math

Grade(s): 1st

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How can we organize and compare information to learn more about people, places, and ideas?	**1. Clear and Effective Communication C.** Integrate information gathered from active speaking and listening.	**4. Measurement and Data B.** Organize data: represent and interpret data, with up to three categories; ask and answer questions regarding total number of data points. (1.MD.C)	**1. Identity Development B.** Explore the historical, contemporary, interdependent, and multidimensional nature of identity (i.e. race, gender, disability, sexual identity, etc.).		**Topics:** Ask questions and collect data, add and subtract within 10, organizing information into categories, creating and interpreting basic charts and graphs
#2 What can we do with numbers to solve problems we see around us? (Companion to Science Unit 2)	**3. Creative and Practical Problem Solving C.** Identify patterns, trends, and relationships that apply to solutions.	**2. Algebraic Reasoning C.** Represent and solve problems involving addition and subtraction. (1.OA.A)	**1. Identity Development D.** Value storytelling as a way to foster empathy and to understand the importance of mutual interdependence, relationality, and kinship.		**Topics:** Add to and take from problems, put together/ take apart problems, compare story problems, creating math problems for stories
#3 How can we use math to support the people we care about and	**3. Creative and Practical Problem Solving G.** Use a range of tools,	**2. Algebraic Reasoning B.** Add and subtract within 20; fluency within 10.	**3. Interconnectedness B.** Challenge deficit-thinking about		**Topics:** Add and subtract within 20, story problems, fluency within 10

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
help our communities stay healthy, happy, and strong? (Companion to Science Unit 3)	including technology, to solve problems.	(1.OA.C) **1. Quantitative Reasoning G.** Extend the counting sequence.	Ethnic Studies Groups.		
#4 How can we use math to notice patterns, make fair decisions, and understand the world around us?	**1. Clear and Effective Communication B.** Use evidence and logic appropriately in communication.	**2. Algebraic Reasoning A.** Understand and apply properties of operations and the relationship between addition and subtraction. (1.OA.B, 1.OA.D)	**1. Identity Development A.** Identify the contributions, cultures, and histories of Ethnic Studies Groups.		**Topics:** Properties of addition and subtraction; write addition and subtraction expressions; use tools like counters, number lines, or educational apps; add and subtract within 20
#5 How can we use place value to understand and compare numbers in the world around us?	**2. Self Direction E.** Demonstrate flexibility, including the ability to learn, unlearn, and relearn.	**1. Quantitative Reasoning F.** Understand place value related to two digit numbers. (1.NBT.B)	**1. Identity Development C.** Share their lived experiences, their gifts, dreams, stories and languages, indigeneity, immigration journeys		**Topics:** Units of ten tens and ones, compare numbers to 99, different ways to make a number

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
			and/or ancestral lineages while honoring the lived experiences of all.		
#6 How do numbers help us share information about our lives, communities, and family histories?	**5. Informed and Integrative Thinking D.** Use evidence and reasoning to justify claims.	**1. Quantitative Reasoning F.** Use place value understanding and properties of operations to add and subtract. (1.NBT.C)	**3. Interconnectedness A.** Describe the ways that students, families, and communities of color come from generations of peoples who have rich intellectual and cultural traditions.		**Topics:** Add without making a ten; make a ten: add 1- and 2-digit numbers; make a ten; add within 100
#7 How can we measure and count the things that are important to us? (Companion to Science Unit 7)	**5. Informed and Integrative Thinking C.** Apply systems thinking to understand the interaction and influence of related parts on each other and on outcomes.	**4. Measurement and Data A.** Measure lengths by estimating, by iterating length units, and by using standard units. (1.MD.A)	**3. Interconnectedness A.** Describe the ways that students, families, and communities of color come from generations of peoples who have rich intellectual and cultural traditions		**Topics:** From direct to indirect comparisons, measure by iterating up to 120 length units, standard vs nonstandard units of measure, all kinds of story problems
#8 How do shapes help us see and	**5. Informed and Integrative**	**3. Geometric Reasoning A**.	**3. Interconnectedness**		**Topics:** Putting pieces together and

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
understand the world in new ways? (Companion to Science Unit 8)	**Thinking C.** Apply systems thinking to understand the interaction and influence of related parts on each other and on outcomes.	Distinguish defining attributes of shapes; compose two and three dimensional shapes; and partition shapes into equal shares. (1.G.A)	**D.** Contribute to community actualization and an equitable distribution of power.		breaking apart shapes, flat and solid shapes, halves and quarters

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ICVE Curriculum Map: Math

Grade(s): 2nd

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How can we use math and teamwork to understand fairness and solve problems in our community?	**2. Self-Direction H.** Persevere in challenging situations.	**2. Algebraic Reasoning A.** Represent and solve problems involving addition and subtraction. (2.OA.A)	**2. Resisting Racism B.** Disrupt negative stereotypes and assumptions of Ethnic Studies Groups.		**Topics:** Add and Subtract, Decompose to Subtract, Represent and Solve Story Problems
#2 How can collaboration and creativity help us make positive changes in our community? (Companion to Science Unit 1)	**2. Self-Direction G.** Collaborate as needed to advance learning.	**1. Quantitative Reasoning F.** Use place value understanding and properties of operations to add, subtract, and compare numbers. (2.NBT.B)	**2. Resisting Racism D.** Develop new humanizing systems that value Ethnic Studies Groups		**Topics:** Place value understanding of 2 and 3 digit numbers, Addition and subtraction to 100, Compare numbers using place value, Properties of operations (commutative, associative and distributive)
#3 How can we use measurement to find out how plants grow in	**3. Creative and Practical Problem Solving B.** Frame questions, make	**4. Measurement and Data A.** Measure and estimate	**3. Interconnectedness A.** Describe the ways that students,		**Topics:** Metric Measurement, Customary Measurement,

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
different conditions? (Companion to Science Unit 2)	predictions, and design data collection and analysis strategies.	lengths in standard units. (2.MD.A)	families, and communities of color come from generations of peoples who have rich intellectual and cultural traditions		Estimate, Line Plots
#4 How can we use math to help us make healthy decisions in our daily lives?	**3. Creative and Practical Problem Solving H.** Persist in solving challenging problems and learn from failure.	**4. Measurement and Data B.** Relate addition and subtraction to length. (2.MD.B)	**Responsible Citizen E.** Demonstrate a commitment to personal and community health and wellness.		**Topics:** The Structure of the Number Line, Add and Subtract on a Number Line
#5 How can understanding numbers and place value help us make better decisions for our community?	**4. Responsible and Involved Citizenship A.** Participate in and contribute to the enhancement of community life.	**1. Quantitative Reasoning D.** Understand place value related to three digit numbers. (2.NBT.A)	**4. Social Responsibility A.** Understand the impact of social movements and the solidarity efforts that fought for the freedom of all peoples, especially for Ethnic Studies Groups		**Topics:** The Values of Three Digit Numbers, Compare and Order Numbers within 1,000
#6 How can	**3. Creative and**	**3. Geometric**	**1. Identity**		**Topics:** Attributes of

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
shapes and materials help us show how our identities grow and change? (Companion to Science Unit 3)	**Practical Problem Solving D.** Analyze, evaluate, and synthesize evidence, arguments, claims, and beliefs.	**Reasoning A.** Recognize and draw shapes having specified attributes; partition shapes into same size pieces. (2.G.A)	**Development B.** Explore the historical, contemporary, interdependent, and multidimensional nature of identity (i.e. race, gender, disability, sexual identity, etc.)		Shapes; Halves, Thirds, and Fourths
#7 How can we represent and interpret data to help us see how systems work together and affect our communities?	**5. Informed and Integrative Thinking C.** Apply systems thinking to understand the interaction and influence of related parts on each other, and on outcomes.	**4. Measurement and Data C.** Generate measurement data; represent and interpret data, with up to four categories (2.MD.D)	**2. Resisting Racism C.** Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont		**Topics:** Various ways to represent data, Collect measurement data, Interpret and compare data
#8 How can counting and grouping help us learn more about our community and who we are?	**5. Informed and Integrative Thinking A.** Apply knowledge from various disciplines and contexts to real life situations.	**2. Algebraic Reasoning B**. Connect equal groups of objects and repeated addition to gain foundations for	**1. Identity Development A.** Identify the contributions, cultures, and histories of Ethnic Studies Groups		**Topics:** Odd and Even, Rectangular Arrays, Repeated addition and multiplication

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
(Companion to Science Unit 8)		multiplication. (2.OA.C)			

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ICVE Curriculum Map: Math

Grade(s): 3rd

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How do patterns help us understand and solve problems? (Companion to Science Unit 1)	**3. Creative and Practical Problem Solving C.** Identify patterns, trends, and relationships that apply to solutions.	**2. Algebraic Reasoning A**. Identify and explain patterns in arithmetic. (3.OA.D)	**1. Identity Development B.** Explore the historical, contemporary, interdependent, and multidimensional nature of identity (i.e. race, gender, disability, sexual identity, etc.)		**Topics:** Add within 1,000, Subtract within 1,000, Round within 1,000, Use a multiplication chart to identify patterns
#2 How do constraints like time, materials, or costs influence the way we design solutions to problems involving space or area?* (Companion to Science Unit 2)	**3. Creative and Practical Problem Solving A**. Observe and evaluate situations in order to define problems.	**3. Geometric reasoning A.** Geometric measurement: understand concepts of area and relate area to multiplication and to addition. (3.MD.C)	**4. Social Responsibility D.** Co-create cultural community spaces that center healing (from the effects of historic and contemporary trauma, harm, and toxicity rooted in racism an intersectional forms of oppression) and wellness for dancing,		**Topics:** Reason with Shapes, Perimeter, Relate Area to Multiplication, Find the Area of a Figure Composed of Rectangles

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
			singing, eating, and enjoying nature–as an art of understanding each other's humanity and our relationship to our earth		
#3 How is math and justice connected?	**1. Clear and Effective Communication B.** Use evidence and logic appropriately in communication.	**2. Algebraic Reasoning C.** Understand properties of multiplication and the relationship between multiplication and division. (3.OA.B)	**4. Social Responsibility C.** Engage in difficult yet humanizing conversations about racism and its intersections with language, class, gender, and disability, etc.		**Topics:** Division, Relate Multiplication and Division, Multiplying Greater Numbers, Dividing Greater Numbers
#4 Can math help us understand our families?	**1. Clear and Effective Communication A.** Demonstrate organized and purposeful communication.	**2. Algebraic Reasoning B.** Represent and solve problems involving multiplication and division. (3.OA.A)	**3. Interconnectedness A.** Describe the ways that students, families, and communities of color come from generations of peoples who have rich intellectual and		**Topics:** Create visual representations of multiplication and division problems, Solve problems using multiplication and division, Create multiplication and division expressions

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
			cultural traditions		and equations
#5 How can we recognize unfair systems and work together to create a more just and fair community?	**2. Self-Direction F.** Analyze the accuracy, bias, and usefulness of information.	**1. Quantitative Reasoning C.** Develop understanding of fractions as numbers. (3.NF.A, 3.G.A.2)	**2. Resisting Racism A.** Examine how systems work to uphold oppression and exclusion (i.e. white supremacy, patriarchy, heteronormativity, ableism, classism, institutional and structural racism, colonialism and imperialism, etc.)		**Topics:** Introduction to Fractions, Fractions on the Number Line, Equivalent Fractions, Fraction Comparisons
#6 How can I use measurement and estimation to identify changes in the environment? (Companion to Science Unit 3)	**5. Informed and Integrative Thinking D.** Use evidence and reasoning to justify claims.	**4. Measurement and Data A.** Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. (3.MD.A)	**2. Resisting Racism C**. Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont		**Topics:** Measurement Data on Line Plots, Weight and Liquid Volume, Problems Involving Time, Measurement Problems in Context
#7 How can we use math	**1. Clear and Effective**	**1. Quantitative Reasoning D**. Use	**1. Identity Development D.**		**Topics:** Adding and subtracting within

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
operations to solve real-world problems that connect to stories and relationships in our communities?	**Communication D.** Adjust communication based on the audience, context, and purpose.	the four operations to solve problems. (3.NBT.A, 3.OA.C)	Value storytelling as a way to foster empathy and to understand the importance of mutual interdependence, relationality, and kinship		1,000, Estimating sums and differences, Multiplying and dividing up to 100, Using visual models
#8 What can weather data teach us about where we come from and where we live? (Companion to Science Unit 4)	**5. Informed and Integrative Thinking B.** Analyze, evaluate, and synthesize information from multiple sources to build on knowledge.	**4. Measurement and Data B.** Represent and interpret data; draw scaled picture and bar graphs with several categories; use data to solve one and two-step problems; generate measurement data to the nearest half and quarter inch. (3.MD.B)	**1. Identity Development C.** Share their lived experiences, their gifts, dreams, stories and languages, indigeneity, immigration journeys and/or ancestral lineages while honoring the lived experiences of all		**Topics:** Interpret and Represent Data in Scaled Graphs, From Graphs to Multiplication, Represent Multiplication with Arrays and the Commutative Property

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Math

Grade(s): 4th

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How can understanding numbers and data help us communicate the impact of social movements and their role in shaping history?	**1. Clear and Effective Communication C.** Integrate information gathered from active speaking and listening.	**1.Quantitative Reasoning D.** Generalize place value understanding for multi-digit whole numbers and use place value understanding and properties of operations to perform multi-digit arithmetic of whole numbers up to 1,000,000. (4.NBT.A/B)	**4. Social Responsibility A.** Understand the impact of social movements and the solidarity efforts that fought for the freedom of all peoples, especially for Ethnic Studies Groups		**Topics:** Understand place value up to 1,000,000, Expand and write numbers in expanded form, Round Multi-digit numbers, Usie models to represent the problems
#2 How do fractions help us measure and compare things we hear and see? **(Companion to**	**5. Informed and Integrative Thinking E.** Develop and use models to explain phenomena.	**1.Quantitative Reasoning F.** Extend understanding of fraction equivalence and ordering. (4.NF.A)	**2. Resisting Racism B.** Disrupt negative stereotypes and assumptions of Ethnic Studies Groups.		**Topics:** Size and Location of Fractions, Equivalent Fractions, Fraction Comparison, Ordering fractions on a numberline

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
Science Unit 1)					
#3 How can we use fractions to understand real-world problems and create fair solutions in our communities?	**4. Responsible and Involved Citizenship A.** Participate in and contribute to the enhancement of community life.	**1.Quantitative Reasoning C.** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. (4.NF.B)	**3. Interconnectedness D.** Contribute to community actualization and an equitable distribution of power		**Topics:** Equal Groups of Fractions, Addition and Subtraction of Fractions, Addition of Tenths and Hundredths, Equal Groups of Fractions
#4 How can numbers help us understand and compare the ways people use energy and care for the Earth? (Companion to Science Unit 2)	**5. Informed and Integrative Thinking F.** Use technology to support and enhance the critical thinking process.	**1.Quantitative Reasoning E.** Understand decimal notation for fractions, and compare decimal fractions. (4.NF.C)	**2. Resisting Racism C.** Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont		**Topics:** Decimals with Tenths and Hundredths, Place Value Relationships through 1,000,000, Compare, Order, and Round, Add and Subtract
#5 How can we use numbers to understand and act on issues of fairness in our	**3. Creative and Practical Problem Solving B.** Frame questions, make predictions, and	**4. Measurement and Data B.** Represent and interpret data; make a line plot to	**4. Social Responsibility C.** Engage in difficult yet humanizing conversations about		**Topics:** Relationship between fractions and whole numbers, Equivalent fractions and comparing

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
communities?	design data collection and analysis strategies.	display data in fractions (one half, one quarter, and one eighth) of a unit; use addition and subtraction of fractions to solve problems. (4.MD.B)	racism and its intersections with language, class, gender, and disability, etc.		fractions, Construct, label and interpret data points on a line plot, Organize and display fractional data
#**6 How can we use mathematical operations to compare and analyze the internal and external structures of organisms that support their survival?** (Companion to Science Unit 3)	**1. Clear and Effective Communication B**. Use evidence and logic appropriately in communication.	**2. Algebraic Reasoning A.** Use the four operations with whole numbers to interpret and solve problems; gain familiarity with factors and multiples. (4.OA.A/B)	**4. Social Responsibility B.** Acknowledge that we have a 4. Social Responsibility to address the ways systemic racism, poverty, and intersectional oppressions have caused harm to all communities.		**Topics:** Understand Factors and Multiples, Find Factor Pairs and Multiples, Use Multiplication, Division, Addition and Subtraction to Solve Problems
#7 How can we use measurement conversations to	**2. Self-Direction C.** Apply knowledge in familiar and new	**4. Measurement and Data A.** Solve problems involving	**2. Resisting Racism D.** Develop new humanizing systems		**Topics**: Measure length, weight, volume, and time,

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
solve energy-related problems? (Companion to Science Unit 4)	contexts.	measurement and conversion of measurements (4.MD.A)	that value Ethnic Studies Groups		Understand the relationship between different units, Convert between units of measurement, Estimate and convert measurements
#8 How can geometry help us recognize and celebrate the histories of diverse communities?	**4. Responsible and Involved Citizenship D.** Respect diversity and differing points of view.	**3. Geometric reasoning B**. Draw and identify lines and angles, and classify shapes by properties of their lines and angles. (4.G.A)	**1. Identity Development A.** Identify the contributions, cultures, and histories of Ethnic Studies Groups		**Topics:** Points, Lines, Segments, Rays, and Angles, Size of an Angle, Side lengths, angles and lines of symmetry, Reason about attributes to solve problems

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Science

Grade(s): 5th

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How can we use space and volume to design places that support healing, connection, and joy in our communities?	**1. Clear and Effective Communication G.** Collaborate effectively and respectfully.	**3. Geometric Reasoning B.** Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. (5.MD.C)	**4. Social Responsibility D.** Co-create cultural community spaces that center healing (from the effects of historic and contemporary trauma, harm, and toxicity rooted in racism an intersectional forms of oppression) and wellness for dancing, singing, eating, and enjoying nature–as an art of understanding each other's humanity and our relationship to our earth		**Topics:** Expressions for Finding Volume, Volumes of Solid Figures, Using multiplication to find the volume of rectangular prisms
#2 How can we use evidence and reasoning in solving fraction	**5. Informed and Integrative Thinking D.** Use evidence and	**1. Quantitative Reasoning F.** Use equivalent fractions as a strategy to add	**4. Social Responsibility C.** Engage in difficult yet humanizing		**Topics:** Define fractions as parts of a whole or a set, Least common

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
problems?	reasoning to justify claims.	and subtract fractions. (5.NF.A)	conversations about racism and its intersections with language, class, gender, and disability, etc.		denominator (LCD) for two or more fractions, Add fractions with like and unlike denominators, Subtract fractions with like and unlike denominators
#3 How can we apply the idea of "division" to break down barriers between communities and "multiplication" to amplify the voices of marginalized groups? OR How can the skills you've learned about fractions help you contribute to creating a more just and collaborative society?	**4. Responsible and Involved Citizenship C.** Demonstrate ethical behavior and the moral courage to sustain it.	**1. Quantitative Reasoning E.** Apply and extend previous understandings of multiplication and division to multiply and divide fractions. (5.NF.B)	**3.Interconnectedness C.** Build one's purpose anchored in an anti-racist, anti-discriminatory, and intercultural solidarity		**Topics:** Multiply fractions, Divide fractions, Multiply fractions by whole numbers, Divide a whole number by a fraction

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#4 How can we use math to explore and evaluate different strategies that communities can use to reduce their environmental impact? (Companion to Science Unit 1)	**2. Self-Direction B.** Integrate knowledge from a variety of sources to set goals and make informed decisions.	**1. Quantitative Reasoning D.** Perform operations with multi -digit whole numbers and with decimals to hundredths. (5.NBT.B)	**2. Resisting Racism A.** Examine how systems work to uphold oppression and exclusion (i.e. white supremacy, patriarchy, heteronormativity, ableism, classism, institutional and structural racism, colonialism and imperialism, etc.)		**Topics:** Addition, subtraction, multiplication and division with multi-digit whole numbers, Operations with decimals to the hundredths, Word problems with decimals and whole numbers, Estimation in multi digit whole numbers
#5 How does the base-ten system help us measure and understand the changes that happen in matter, even when particles are too small to see? (Companion to Science Unit 2)	**5. Informed and Integrative Thinking E.** Develop and use models to explain phenomena.	**1. Quantitative Reasoning C.** Understand the base-ten place value system as powers of ten and/or 1/10 in whole numbers and decimals. (5.NBT.A)	**1. Identity Development D.** Value storytelling as a way to foster empathy and to understand the importance of mutual interdependence, relationality, and kinship		**Topics:** Apply place value understanding to decimals, Represent decimals and whole numbers with decimals visually, Rounding decimals

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#6 How can we use data to share and honor our diverse lived experiences, cultural backgrounds, and stories, and how does understanding fractions help us communicate and solve problems in ways that reflect our unique perspectives?	**4. Responsible and Involved Citizenship B.** Take responsibility for personal decisions and actions.	**4. Measurement and Data A.** Represent and interpret data; make a line plot to display data in fractions (one half, one quarter, and one eighth) of a unit; use all four operations of fractions to solve problems. (5.MD.B)	**1. Identity Development C.** Share their lived experiences, their gifts, dreams, stories and languages, indigeneity, immigration journeys and/or ancestral lineages while honoring the lived experiences of all		**Topics:** Represent and interpret data on a line plot, Compare data on a line plot, Use operations of fractions to solve real world problems, Use fractions in measurement and data
#7 How do mathematical models, like numerical expressions, help us describe and predict the effects of changes in one Earth system on the others?	**5. Informed and Integrative Thinking: E.** Develop and use models to explain phenomena.	**2. Algebraic Reasoning A.** Write and interpret numerical expressions. (5.OA.A)	**2. Resisting Racism C.** Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont		**Topics:** Understand and write numerical expressions, Order of operations (PEMDAS), Interpret and evaluate numerical expressions, Use numerical expressions in real world contexts

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
(Companion to Science Unit 3)					
#8 How can we use graphs and visuals to understand and communicate changes we observe in the world around us? (Companion to Science Unit 4)	**1. Clear and Effective Communication F.** Use technology to further enhance and disseminate communication.	**3. Geometric Reasoning A**. Graph points on the coordinate plane to solve problems. (5.G.A)	**4. Social Responsibility B.** Acknowledge that we have a social responsibility to address the ways systemic racism, poverty, and intersectional oppressions have caused harm to all communities.		**Topics**: Plot points on a coordinate plane, Use coordinate planes to solve problems, Graph lines and simple shapes, Create and interpret graphs

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Science

Grade(s): 6th

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How can we use area, surface area, and volume to design a community space that honors the contributions of diverse ethnic groups?	**4. Responsible and Involved Citizenship F.** Practice responsible digital citizenship.	**3. Geometric Reasoning A.** Solve real-world and mathematical problems involving area, surface area, and volume. (6.G.A)	**3. Interconnectedness B.** Challenge deficit-thinking about Ethnic Studies Groups		**Topics:** Reason to Find Area, Parallelograms,Triangles and Other Polygons, Surface Area, Squares and Cubes
#2 How can understanding ratios help us explore the interconnected and evolving nature of identity?	**5. Informed and Integrative Thinking A**. Apply knowledge from various disciplines and contexts to real life situations.	**1. Quantitative Reasoning C**. Understand ratio concepts and use ratio reasoning to solve problems. (6.RP.A)	**1. Identity Development B.** Explore the historical, contemporary, interdependent, and multidimensional nature of identity (i.e. race, gender, disability, sexual identity, etc.)		**Topics:** Ratios, Equivalent Ratios , Solving Ratio and Rate Problems, Part-Part-Whole Ratios
#3 How can understanding and applying operations with fractions and	**3. Creative and Practical Problem Solving C.** Identify patterns, trends, and relationships that	**1. Quantitative Reasoning D.**Apply and extend previous understandings of four operations;	**4. Social Responsibility B.** Acknowledge that we have a Social Responsibility to		**Topics:** Divide Fractions, Algorithm for Fraction Division, Fractions in Lengths, Areas, and Volumes

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
multi-digit numbers help us recognize patterns of inequality and find solutions to address systemic issues like poverty and racism?	apply to solutions.	divide fractions by fractions and compute fluently with multi-digit numbers. (6.NS.A/B)	address the ways systemic racism, poverty, and intersectional oppressions have caused harm to all communities.		
#4 How can algebraic expressions help us understand the impact of social movements and the perseverance required to create change?	**2. Self-Direction H.** Persevere in challenging situations.	**2. Algebraic Reasoning A.** Apply and extend previous understandings of arithmetic to algebraic expressions. (6.EE.A)	**4. Social Responsibility A.** Understand the impact of social movements and the solidarity efforts that fought for the freedom of all peoples, especially for Ethnic Studies Groups		**Topics:** Expressions and Equations, Identify parts of expressions (terms, coefficients, variables, constants), Numerical expressions and order of operations
#5 How can we use algebraic thinking to explore issues of racism, language, class, gender, and disability?	**5. Informed and Integrative Thinking B.** Analyze, evaluate, and synthesize information from multiple sources to build on knowledge.	**2. Algebraic Reasoning C.**Reason about and solve one-variable equations and inequalities. (6.EE.B)	**4. Social Responsibility C.** Engage in difficult yet humanizing conversations about racism and its intersections with language, class, gender, and disability,		**Topics:** One Variable Equations, Equal and Equivalent Expressions with Exponents, Understand inequalities and their notation

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
			etc.		
#6 How do I uphold systems of oppression and exclusion?	**5. Informed and Integrative Thinking: C.** Apply systems thinking to understand the interaction and influence of related parts on each other, and on outcomes.	**2. Algebraic Reasoning B.** Represent and analyze quantitative relationships between dependent and independent variables. (6.EE.C)	**2. Resisting Racism A.** Examine how systems work to uphold oppression and exclusion (i.e. white supremacy, patriarchy, heteronormativity, ableism, classism, institutional and structural racism, colonialism and imperialism, etc.)		**Topics:** Relationships Between Quantities, Creating input-output tables, Graph relationships on the coordinate plane
#7 How do I promote an equitable distribution of power within our communities?	**4. Responsible and Involved Citizenship A.** Participate in and contribute to the enhancement of community life.	**1. Quantitative Reasoning B.** Apply and extend previous understandings of numbers to the system of rational numbers. (6.NS.C)	**3. Interconnectedness D.** Contribute to community actualization and an equitable distribution of power		**Topics:** Rational Numbers, Negative Numbers and Absolute Value, Common Factors and Common Multiples
#8 How can understanding statistical variability help us	**3. Creative and Practical Problem Solving B.** Frame questions, make	**5. Statistical Reasoning B.** Develop understanding of	**2. Resisting Racism C.** Research the ways that systems have impacted their lives,		**Topics:** Data, Variability, and Statistical Questions, Dot Plots and

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
understand how systems have impacted our lives and the lives of different groups, specifically in Vermont?	predictions, and design data collection and analysis strategies.	statistical variability; summarize and describe distributions. (6.SP.A/B)	Ethnic Studies groups, and Vermont		Histograms, Measures of Center and Variability, Median and IQR

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Science

Grade(s): 7th

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How can using properties of operations help us model and understand how systems have impacted different groups in Vermont?	**5. Informed and Integrative Thinking E.** Develop and use models to explain phenomena.	**2. Algebraic Reasoning A**. Use properties of operations to generate equivalent expressions. (7.EE.A)	**2. Resisting Racism C**. Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont		**Topics:** Like and unlike terms, Inverse properties, Factor out the greatest common factor (GCF), Rewrite expressions in different forms to show relationships
#2 How can we use proportional relationships to understand how systemic inequality manifests numerically?	**4. Responsible and Involved Citizenship B.** Take responsibility for personal decisions and actions.	**1. Quantitative Reasoning D.** Analyze proportional relationships and use them to solve real-world and mathematical problems. (7.RP.A)	**3. Interconnectedness C**. Build one's purpose anchored in an anti-racist, anti-discriminatory, and intercultural solidarity		**Topics:** Represent Proportional Relationships with Graphs, Tables and Equations, Compare Proportional and Nonproportional Relationships, Unit rates and constant of proportionality
#3 How can we challenge stereotypes of different ethnic groups by using	**2. Self-Direction F.** Analyze the accuracy, bias, and usefulness of information.	**5. Statistical Reasoning B.** Draw inferences about a population(s); compare	**2. Resisting Racism B.** Disrupt negative stereotypes and assumptions of Ethnic Studies Groups.		**Topics:** Population vs. a sample, Data collection, Compare measures of center and variability, Box

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
data to compare and draw inferences?		inferences about two populations. (7.SP.A/B)			plots, histograms, and dot plots
#4 How can we use geometry to create a cultural community space that promotes healing and wellness?	**3. Creative and Practical Problem Solving F.** Identify opportunities for innovation and collaboration.	**3. Geometric Reasoning A.** Solve real-life and mathematical problems involving scale, angle measure, area, surface area, and volume. (7.G.A.1, 7.G.B)	**4. Social Responsibility D.** Co-create cultural community spaces that center healing (from the effects of historic and contemporary trauma, harm, and toxicity rooted in racism an intersectional forms of oppression) and wellness for dancing, singing, eating, and enjoying nature–as an art of understanding each other's humanity and our relationship to our earth		**Topics:** Scale Drawings and Copies, Angles, Triangles, and Prisms, Angle Relationships Drawing Polygons with Given Conditions, Solid Geometry
#5 How can we use mathematical	**3. Creative and Practical Problem**	**1. Quantitative Reasoning B.** Apply	**2. Resisting Racism D.** Develop new		**Topics:** Add, Subtract, Multiply

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
operations to analyze and develop an equitable resource allocation system in our school, district or region?	**Solving G**. Use a range of tools, including technology, to solve problems.	and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. (7.NS.A)	humanizing systems that value Ethnic Studies Groups		and Divide Rational Numbers, Represent operations with rational numbers on number lines and coordinate planes, Rational numbers and their placement on the number line
#6 How can we use algebraic expressions and equations to represent and track wellness goals?	**4. Responsible and Involved Citizenship E.** Demonstrate a commitment to personal and community health and wellness.	**2. Algebraic Reasoning C.** Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.B)	**1. Identity Development C.** Share their lived experiences, their gifts, dreams, stories and languages, indigeneity, immigration journeys and/or ancestral lineages while honoring the lived experiences of all		**Topics:** Simplify algebraic expressions using properties, Model real-world situations with equations and inequalities, Write Equivalent Expressions
#7 How can we use probability to evaluate different	**3. Creative and Practical Problem Solving E.** Generate	**5. Statistical Reasoning A.** Investigate chance	**3. Interconnectedness D.** Contribute to		**Topics:** Probability and Sampling, Probabilities of

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
voting systems (equal votes, weighted votes, electoral college) to create a system where all voices are equitable?	a variety of solutions, use evidence to build a case for best responses, critically evaluate the effectiveness of responses, and repeat the process to generate alternate solutions.	processes and develop, use, and evaluate probability models. (7.SP.C)	community actualization and an equitable distribution of power		Single-Step and Multi-step Events, Sampling
#8 How can we use probability to better understand patterns of injustice and design solutions that promote fairness and solidarity across communities?	**3. Creative and Practical Problem Solving. H**. Persist in solving challenging problems and learn from failure.	**5. Statistical Reasoning A.** Investigate chance processes and develop, use, and evaluate probability models. (7.SP.C)	**3.Interconnectedness C.** Build one's purpose anchored in an anti-racist, anti-discriminatory, and intercultural solidarity		**Topics:** Represent probabilities as fractions, decimals, and percents, Determine probabilities of simple events, Develop and use probability models, Simulate chance processes

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Science

Grade(s): 8th

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How can we use transformations to recognize patterns of similarity and difference in the world around us?	**5. Informed and Integrative Thinking F.** Use technology to support and enhance the critical thinking process.	**3. Geometric Reasoning A.** Understand congruence and similarity using physical models, transparencies, or geometry software. (8.G.A)	**3. Interconnectedness A**. Describe the ways that students, families, and communities of color come from generations of peoples who have rich intellectual and cultural traditions		**Topics:** Understand transformations: translations, reflections, rotations, Describe transformations using coordinate, Explore congruence through rigid transformations, Use geometric tools or software to model transformations
#2 How can functions help us recognize and address social inequalities in our communities?	**3. Creative and Practical Problem Solving C.** Identify patterns, trends, and relationships that apply to solutions.	**2. Algebraic Reasoning B**.Use functions to model relationships between quantities. (8.F.B)	**4. Social Responsibility B**. Acknowledge that we have a social responsibility to address the ways systemic racism, poverty, and intersectional oppressions have caused harm to all communities.		**Topics:** Inputs and Outputs, Represent and Interpret Functions, Linear Functions and Rates of Change

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#3 How can proportional relationships and linear equations help us explore and represent the complexities of identity?	**3. Creative and Practical Problem Solving G.** Use a range of tools, including technology, to solve problems.	**2. Algebraic Reasoning D.** Understand the connections between proportional relationships, lines, and linear equations. (8.EE.B)	**1. Identity Development B.** Explore the historical, contemporary, interdependent, and multidimensional nature of identity (i.e. race, gender, disability, sexual identity, etc.)		**Topics:** Equivalent Equations, One Variable Linear Equations, Systems of Linear Equations, Proportional Relationships
#4 How can analyzing patterns in data help us understand and challenge systems of oppression and exclusion?	**5. Informed and Integrative Thinking C.** Apply systems thinking to understand the interaction and influence of related parts on each other and on outcomes.	**5. Statistical Reasoning B.** Investigate patterns of association in bivariate data. (8.SP.A)	**2. Resisting Racism A.** Examine how systems work to uphold oppression and exclusion (i.e. white supremacy, patriarchy, heteronormativity, ableism, classism, institutional and structural racism, colonialism and imperialism, etc.)		**Topics:** Associations in Numerical and Categorical Data, Describe associations (positive, negative, linear, nonlinear, no association), Draw and use lines of best fit, Interpret the slope and intercept of a trend line in context
#5 How can solving linear equations help us	**1. Clear and Effective Communication E.**	**2. Algebraic Reasoning C.** Analyze and solve	**2. Resisting Racism C.** Research the ways that systems have		**Topics:** Representing Linear Relationships,

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
understand and communicate the impact of systems on our lives and communities?	Demonstrate effective, expressive, and receptive communication, including oral, written, multi-media, and performance.	linear equations and pairs of simultaneous linear equations. (8.EE.C)	impacted their lives, Ethnic Studies groups, and Vermont		Finding Slopes, Linear Equations
#6 How can exponents and radicals help us understand and analyze the impact of social movements throughout history?	**5. Informed and Integrative Thinking A.** Apply knowledge from various disciplines and contexts to real life situations.	**1. Quantitative Reasoning A**.Work with radicals and integer exponents. (8.EE.A, 8.NS.A)	**4. Social Responsibility A.** Understand the impact of social movements and the solidarity efforts that fought for the freedom of all peoples, especially for Ethnic Studies Groups		**Topics:** Exponent Rules, More Exponent Rules Large and Small Numbers, Scientific Notation
#7 How can the geometry help us create a more inclusive world?	**4. Responsible and Involved Citizenship A**. Participate in and contribute to the enhancement of community life.	**3. Geometric Reasoning B.** Understand and apply the Pythagorean Theorem. (8.G.B)	**4. Social Responsibility D.** Co-create cultural community spaces that center healing (from the effects of historic and contemporary trauma, harm, and		**Topics:** Side Lengths and Areas of Squares, The Pythagorean Theorem, Side Lengths and Volumes of Cubes, Decimal Representation of

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
			toxicity rooted in racism an intersectional forms of oppression) and wellness for dancing, singing, eating, and enjoying nature–as an art of understanding each other's humanity and our relationship to our earth		Rational and Irrational Numbers
#8 How can we use data to identify and address patterns of inequality in our community?	**3. Creative and Practical Problem Solving A.** Observe and evaluate situations in order to define problems.	**5. Statistical Reasoning B.** Investigate patterns of association in bivariate data. (8.SP.A)	**3. Interconnectedness.D.** Contribute to community actualization and an equitable distribution of power		**Topics:** Use lines of best fit to make predictions, Analyze clustering and outliers, Investigate associations in categorical data using two-way tables, Summarize and interpret relative frequencies in two-way tables

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Science

Grade(s): 9th

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How can you represent fair living wage disparities using equations?*	**5. Informed and Integrative Thinking C.** Apply systems thinking to understand the interaction and influence of related parts on each other and on outcomes.	**2. Algebraic Reasoning B**. Creating Equations- Create equations that describe numbers or relationships. (HSA.CED.A)	**2. Resisting Racism C.** Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont.		**Topics**: Write and model with equations, Manipulate equations , 2 Variable systems of linear equations
#2 How can we study historic landmarks to uplift local native american tribes?	**3. Creative and Practical Problem Solving C.** Identify patterns, trends, and relationships that apply to solutions.	**6. Functional Reasoning B.** Analyzing Functions- Analyze linear and non-linear functions using different representations. (HSF.IF.C)	**3. Interconnectedness A.** Describe the ways that students, families, and communities of color come from generations of peoples who have rich intellectual and cultural traditions.		**Topics:** Quadratic Functions, Working with Quadratic Expressions, Features of graphs of quadratic Functions
#3 How could you use exponential growth to help	**5. Informed and Integrative Thinking A.** Develop	**6. Functional Reasoning B.** Analyzing Functions-	**2. Resisting Racism A.** Examine how systems work		**Topics:** Exponential functions, Percent growth and decay,

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
uncover health inequities?	and use models to explain phenomena.	Analyze linear and non-linear functions using different representations. (HSF.IF.C)	to uphold oppression and exclusion (i.e. white supremacy, patriarchy, heteronormativity, ableism, classism, institutional and structural racism, colonialism and imperialism, etc.)		Compare linear and exponential functions, Curve fitting
#4 How can we understand large numbers when it comes to billionaires and wealth gaps?	**5. Informed and Integrative Thinking C.** Apply systems thinking to understand the interaction and influence of related parts on each other and on outcomes.	**2. Algebraic Reasoning A** .Interpreting Expressions- Interpret the structure of expressions. (HSA.SSE.A)	**4. Social Responsibility B**. Acknowledge that we have a Social Responsibility to address the ways systemic racism, poverty, and intersectional oppressions have caused harm to all communities.		**Topics:** Exponent properties, Exponential growth, Exponential decay
#5 How can we use inequalities on number lines to highlight inequalities in our	**5. Informed and Integrative Thinking E.** Develop and use models to explain phenomena.	**2. Algebraic Reasoning C.** Solving Equations- Solve equations and inequalities in one	**4. Social Responsibility C**. Engage in difficult yet humanizing conversations about		**Topics:** Solve one variable linear inequalities, Graph one variable linear inequalities on a

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
society?		variable. (HSA.REI.B)	racism and its intersections with language, class, gender, and disability, etc.		number line, Equations involving rational coefficients
#6 How can we use systems of inequalities to find missing people?	**3. Creative and Practical Problem-Solving D.** Analyze, evaluate, and synthesize information from multiple sources to build on knowledge	**2. Algebraic Reasoning D.** Graphing Equations- Represent and solve equations and inequalities graphically. (HSA.REI.D)	**1. Identity Development D.** Value storytelling as a way to foster empathy and to understand the importance of mutual interdependence, relationality, and kinship		**Topics:** Solutions for systems of inequalities, Modeling and graphing with systems of inequalities, Shading solution regions for inequalities
#7 How can social media inputs and outputs impact pride in one's identity?	**5. Informed and Integrative Thinking- D.** Use evidence and reasoning to justify claims.	**6. Functional Reasoning A**. Function Notation- Understand the concept of a function and use function notation. (HSF.IF.A)	**3. Interconnectedness C.** Build one's purpose anchored in an anti-racist, anti-discriminatory, and intercultural solidarity.	-	**Topics:** Function notation, Inputs and outputs, Inverse functions
#8 How can we	**3. Creative and**	**6. Functional**	**4. Social**		**Topics:** Linear

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
synthesize all of our learning from the year to predict climate change trends?	**Practical Problem-Solving E.** Generate a variety of solutions, use evidence to build a case for best responses, critically evaluate the effectiveness of responses, and repeat the process to generate alternate solutions.	**Reasoning B.** Analyzing Functions- Analyze linear and non-linear functions using different representations. (HSF.IF.C)	**Responsibility B.** Acknowledge that we have a 4. Social Responsibility to address the ways systemic racism, poverty, and intersectional oppressions have caused harm to all communities.		growth, Exponential growth, Inequalities

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Science

Grade(s): 10th

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How are right triangles and gerrymandering connected?	**5. Informed and Integrative Thinking C**. Apply systems thinking to understand the interaction and influence of related parts on each other and on outcomes.	**3. Geometric Reasoning B.** Right Triangle Trigonometry- Define trigonometric ratios and solve problems involving right triangles. (HSG.SRT.C)	**2. Resisting Racism C.** Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont		**Topics:** Angles and steepness, Trig ratios, Real-world problems involving right triangles
#2 How do we build environmentally sustainable architecture?	**3. Creative and Practical Problem Solving G.** Use a range of tools, including technology, to solve problems.	**3. Geometric Reasoning B.** Right Triangle Trigonometry- Define trigonometric ratios and solve problems involving right triangles. (HSG.SRT.C)	**4. Social Responsibility D.** Co-create cultural community spaces that center healing (from the effects of historic and contemporary trauma, harm, and toxicity rooted in racism an intersectional forms of oppression) and wellness for dancing, singing, eating, and		**Topics:** Cross sections, Scaling, Polyhedrons, Solid Geometry

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
			enjoying nature–as an art of understanding each other's humanity and our relationship to our earth		
#3 How can we recognize, build and transform shapes from Arab countries' flags?	**3. Creative and Practical Problem Solving C.** Identify patterns, trends, and relationships that apply to solutions.	**3. Geometric Reasoning A.** Geometric Theorems Prove geometric theorems. (HSG.CO.C)	**1. Identity Development A.** Identify the contributions, cultures, and histories of Ethnic Studies Groups.		**Topics:** Transformations, Proofs about triangles, Apply geometric theorems
#4 How can we use our knowledge of congruence and quadrilaterals to construct a park?	**2. Self-Direction B.** Integrate knowledge from a variety of sources to set goals and make informed decisions.	**3. Geometric Reasoning A**. Geometric Theorems Prove geometric theorems. (HSG.CO.C)	**2. Resisting Racism D.** Develop new humanizing systems that value Ethnic Studies Groups		**Topics:** Congruence, Constructions, Proofs about quadrilaterals
#5 How can we use our understanding of	**3. Creative and Practical Problem Solving A.** Observe	**3. Geometric Reasoning A** Geometric	**2. Resisting Racism B.** Acknowledge that		**Topics:** Sectors and Arcs, Angles, lines and curves,

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
circles to make wheelchairs more efficient?	and evaluate situations in order to define problems.	Theorems Prove geometric theorems. (HSG.CO.C)	we have a Social Responsibility to address the ways systemic racism, poverty, and intersectional oppressions have caused harm to all communities.		Coordinate geometry and transformations to prove theorems
#6 How can we bring healthy food to the food desert?	**3. Creative and Practical Problem Solving C**. Identify patterns, trends, and relationships that apply to solutions.	**4. Geometric Reasoning A.** Geometric Theorems Prove geometric theorems. (HSG.CO.C)	**4. Social Responsibility C**. Engage in difficult yet humanizing conversations about racism and its intersections with language, class, gender, and disability, etc.		**Topics:** Transformations in the plane, Distances, Proving geometric theorems algebraically
#7 How can we explore ableism through the creation of Paralympic fields and courts?	**2. Self-Direction E.** Demonstrate flexibility, including the ability to learn, unlearn, and relearn.	**4. Geometric Reasoning A.** Geometric Theorems Prove geometric theorems. (HSG.CO.C)	**1. Identity Development B.** Explore the historical, contemporary, interdependent, and multidimensional nature of identity (i.e.		**Topics:** Similarity, Dilations, Center of dilation

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
			race, gender, disability, sexual identity, etc.)		
#8 How can we use Geometry to equitably design a community space?	**1. Clear and Effective Communication A.** Demonstrate organized and purposeful communication.	**4. Geometric Reasoning A** Geometric Theorems Prove geometric theorems. (HSG.CO.C)	**3. Interconnectedness D**. Contribute to community actualization and an equitable distribution of power.		**Topics:** Similarity, Proofs, Sectors, Transformations

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Science

Grade(s): 11th

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How do we measure noise pollution in historically marginalized communities?	**4. Responsible and Involved Citizenship: F.** Practice responsible digital citizenship. Sound and intensity.	**1. Quantitative Reasoning A.** Reasoning Quantitatively- Reason quantitatively and use units to solve problems. (HSN.Q.A)	**2. Resisting Racism C.** Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont		**Topics:** The constant *e,* growth and decay, logarithmic functions
#2 How can you represent racial bias using variance?	**5. Informed and Integrative Thinking C.** Apply systems thinking to understand the interaction and influence of related parts on each other and on outcomes.	**2. Algebraic Reasoning D.** Graphing Equations- Represent and solve equations and inequalities graphically. (HSA.REI.D)	**2. Resisting Racism C.** Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont		**Topics:** Correlation, variance, covariance
#3 How can we ensure our communities are safe from earthquakes?	**3. Creative and Practical Problem Solving E**. Generate a variety of solutions, use evidence to build a case for best responses, critically	**1. Quantitative Reasoning A.** Reasoning Quantitatively- Reason quantitatively and use units to solve	**3. Interconnectedness B.** Challenge deficit-thinking about Ethnic Studies		**Topics:** Logarithmic functions, Richter scale, estimating and assessing the reasonableness of solutions, unit analysis

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
	evaluate the effectiveness of responses, and repeat the process to generate alternate solutions.	problems. (HSN.Q.A)	Groups		
#4 How can we map community resources?	**2. Self-Direction D.** Demonstrate initiative and responsibility for learning.	**6. Functional Reasoning C**. Building Functions- Build a function that models a relationship between two quantities. (HSF.BF.A)	**4. Social Responsibility D.** Co-create cultural community spaces that center healing (from the effects of historic and contemporary trauma, harm, and toxicity rooted in racism an intersectional forms of oppression) and wellness for dancing, singing, eating, and enjoying nature–as an art of understanding each other's humanity and our relationship to our earth.		**Topics:** Trigonometric functions, unit circle, periodic functions

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#5 How can we use rational functions to mirror merengue dancing?	**2. Self-Direction E.** Demonstrate flexibility, including the ability to learn, unlearn, and relearn.	**2. Algebraic Reasoning D. Graphing Equations-** Represent and solve equations and inequalities graphically. (HSA.REI.D)	**1. Identity Development C.** Share their lived experiences, their gifts, dreams, stories and languages, indigeneity, immigration journeys and/or ancestral lineages while honoring the lived experiences of all.		**Topics:** Minimizing surface area, graphing rational functions, end behavior of rational functions
#6 How can we use complex numbers to help us create new realities?	**1. Clear and Effective Communication B.** Use evidence and logic appropriately in communication.	**1. Quantitative Reasoning A. Reasoning Quantitatively-** Reason quantitatively and use units to solve problems. (HSN.Q.A)	**1. Identity Development D.** Value storytelling as a way to foster empathy and to understand the importance of mutual interdependence, relationality, and kinship.		**Topics:** Squares and square roots, cubes and cube roots, Solving radical equations
#7 Does race impact salary?	**3. Creative and Practical Problem Solving C.** Identify patterns, trends, and	**2. Algebraic Reasoning B. Creating Equations-**	**2. Resisting Racism A.** Examine how systems work to uphold oppression		**Topics:** linear, exponential and rational functions, arithmetic vs.

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
	relationships that apply to solutions.	Create equations that describe numbers or relationships. (HSA.CED.A)	and exclusion (i.e. white supremacy, patriarchy, heteronormativity, ableism, classism, institutional and structural racism, colonialism and imperialism, etc.)		geometric, recursive formula, growth vs. decay
#8 Can math make the world a better place?	**3. Creative and Practical Problem Solving A.** Observe and evaluate situations in order to define problems.	**1. Quantitative Reasoning A.** Reasoning Quantitatively- Reason quantitatively and use units to solve problems. (HSN.Q.A)	**3. Interconnectedness C.** Build one's purpose anchored in an anti-racist, anti-discriminatory, and intercultural solidarity.		**Topics:** Apply content from course to identify a problem, analyze data about the problem, and propose a solution using quantitative reasoning.

Integrated Curriculum for Vermont Educators

ICVE Curriculum Map: Science

Grade(s): 12th

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
#1 How can we use linear regressions to highlight systemic health inequities?	**4. Responsible and Involved Citizenship. Demonstrate A.** commitment to personal and community health and wellness.	**6. Functional Reasoning C**. Building Functions- Build a function that models a relation-ship between two quantities. (HSF.BF.A)	**2. Resisting Racism C.** Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont		**Topics:** Scatterplots, Linear regressions, Correlation coefficients
#2 How do we create fair sample proportions of our population?	**5. Informed and Integrative Thinking C.** Apply systems thinking to understand the interaction and influence of related parts on each other and on outcomes.	**5. Statistical Reasoning B.** Summarize Categorical Data- Summarize, represent, and interpret data on two categorical and quantitative variables. (HSS.ID.B.)	**4. Social Responsibility B.** Acknowledge that we have a Social Responsibility to address the ways systemic racism, poverty, and intersectional oppressions have caused harm to all communities.		**Topics:** Distribution shapes, Manipulating data, Two way tables, Bar graphs
#3 How do we humanize the immigration	**3 Creative Problem Solving G.** Use a range of tools,	**5. Statistical Reasoning A.** Single Count Data-	**2. Resisting Racism B.** Disrupt negative stereotypes and		**Topics:** Measures of center, Variability, Standard deviation

Essential Question	Transferable Skill PPI	Content PPI	IRIS PPI	Summative Assessment	Unit content topics
debate?	including technology, to solve problems.	Summarize, represent, and interpret data on a single count or measurement variable. (HSS.ID.A)	assumptions of Ethnic Studies Groups.		
#4 How can we truly be fair and just through randomization?	**5. Informed and Integrative Thinking: F.** Use technology and data to support and enhance the critical thinking process.	**5. Statistical Reasoning A**.Single Count Data-Summarize, represent, and interpret data on a single count or measurement variable. (HSS.ID.A)	**3. Interconnectedness D**. Contribute to community actualization and an equitable distribution of power		**Topics:**Collecting data, Statistical inferences, Randomization in statistics
#5 What is the probability of you getting pulled over in your car?	**5. Informed and Integrative Thinking A.** Apply knowledge from various disciplines and contexts to real life situations.	**5. Statistical Reasoning B.** Summarize Categorical Data-Summarize, represent, and interpret data on two categorical and quantitative variables. (HSS.ID.B.)	**4. Social Responsibility A.** Acknowledge that we have a Social Responsibility to address the ways systemic racism, poverty, and intersectional oppressions have caused harm to all communities.		**Topics:** Theoretical, Experimental, Binomial distribution, Geometric distribution

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#6 How can we model mortgage redlining?	**3. Creative and Practical Problem Solving D**. Analyze, evaluate, and synthesize information from multiple sources to build on knowledge.	**5. Statistical Reasoning B.** Summarize Categorical Data- Summarize, represent, and interpret data on two categorical and quantitative variables. (HSS.ID.B.)	**2. Resisting Racism C.** Research the ways that systems have impacted their lives, Ethnic Studies groups, and Vermont.		**Topics:**Distribution, Scatterplots, Data models to make predictions and evaluate fit
#7 How can we recognize injustice as it pertains to hurricanes in the Caribbean?	**3. Creative and Practical Problem Solving E.** Generate a variety of solutions, use evidence to build a case for best responses, critically evaluate the effectiveness of responses, and repeat the process to generate alternate solutions.	**6. Functional Reasoning C**.Building Functions- Build a function that models a relation-ship between two quantities. (HSF.BF.A)	**1. Identity Development C**. Share their lived experiences, their gifts, dreams, stories and languages, indigeneity, immigration journeys and/or ancestral lineages while honoring the lived experiences of all		**Topics:** Sample survey, Confidence interval, Functions to model linear, quadratic, and exponential relationships
#8 Do postal codes predict test scores?*	**5. Informed and Integrative Thinking E.** Develop	**5. Statistical Reasoning B.** Summarize	**2. Resisting Racism C**. Research the ways		**Topics:** Scatterplots, Linear modeling, Linear regressions,

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	and use models to explain phenomena.	Categorical Data- Summarize, represent, and interpret data on two categorical and quantitative variables. (HSS.ID.B.)	that systems have impacted their lives, Ethnic Studies groups, and Vermont.		Correlation coefficients