

NDMA 5TH GRADE CURRICULUM

Last updated in December, 2013

The six Transdisciplinary Themes explored throughout the Fifth Grade year include:

WHO WE ARE	HOW THE WORLD WORKS
WHERE WE ARE IN PLACE AND TIME	HOW WE ORGANIZE OURSELVES
HOW WE EXPRESS OURSELVES	SHARING THE PLANET

**See the Programme of Inquiry (POI) for unit specifics.*

Disciplines and IB Strands Include:

Math Strands

- Data Handling
- Measurement
- Shape and Space
- Pattern and Function
- Number

Science Strands

- Living Things
- Earth and Space
- Materials and Matter
- Forces and Energy

Social Studies Strands

- Human Systems and Economic Activities
- Social Organization and Culture
- Continuity and Change Through Time
- Human and Natural Environments
- Resources and Environments

Language Strands

- Oral Language
 - Listening
 - Speaking
- Visual Language
 - Viewing
 - Presenting
- Written Language
 - Reading
 - Writing

Religion

Math

Math Strands

- Data Handling
- Measurement
- Shape and Space
- Pattern and Function
- Number

IB Strand	Objectives
Data Handling	<ul style="list-style-type: none"> • Construct and interpret line, bar and picture graphs • Find and interpret mean and mode for a given set of data • Demonstrate the way graphs represent data in everyday life
Measurement	<ul style="list-style-type: none"> • Know and convert measurement units within a given system (Metric or Standard) • Convert measurements of length, weight, area, volume and time within a given system using easily manipulated numbers • Know the units of measure of volume: cubic centimeter, cubic meter, cubic inches, cubic feet, cubic yards, and use their abbreviations (cm^3, m^3, in^3, ft^3, yd^3) • Represent relationships between areas of rectangles, triangles and parallelograms using models • Describe the way we use measurement and the conversion standards in our daily lives • Understand and know how to use the area formula of a triangle: $A = \frac{1}{2}bh$ (where b is length of the base and h is the height), and represent using models and manipulatives
Shape and Space	<ul style="list-style-type: none"> • Know the meaning of angles and solve problems • Measure angles with a protractor and classify them as acute, right, obtuse or straight • Find unknown angles in problems involving angles on a straight line, angles surrounding a point, and vertical angles • Learn formulas for area, perimeter and circumference of rectangles, triangles, cubes, circles and parallelograms • Describe the ways geometry exists in our daily life • Learn the proper names and definitions of polygons that are 3- to 12-sided • Learn the proper usage of protractors and compasses • Analyze, synthesize and apply geometry principles
Pattern and Function	<u>Algebra</u> <ul style="list-style-type: none"> • Add and subtract positive and negative numbers • Multiply and divide positive and negative numbers • Use letters, with units, to represent quantities in a variety of contexts (e.g. y lbs., k minutes, x cookies) • Intro to slopes • Distinguish between an algebraic expression and an equation • Solve multi-step equations with single variables • Solve equations with variables on both sides • Solve equations using the distributive property • Use standard conventions for writing algebraic expressions (e.g. $2x + 1$ means “two times x, plus 1” and $2(x + 1)$ means “two times the quantity (x + 1)”) <ul style="list-style-type: none"> • Represent information given in words using algebraic expressions and equations • Simplify expressions of the first degree by combining like terms, and evaluate using specific values • Analyze, synthesize and apply algebraic principles

IB Strand	Objectives
Number	<p><u>Number and Operations</u></p> <ul style="list-style-type: none"> • Understand division of whole numbers • Multiply and divide whole numbers and decimals • Estimate with money • Find prime factorizations of whole numbers • Understand meaning of decimal fractions and percentages • Learn the order of operations • Round whole numbers and decimals <p><u>Fractions</u></p> <ul style="list-style-type: none"> • Find lowest common multiple • Determine greatest common factor • Change improper fractions to mixed fractions • Reduce fractions • Understand fractions as division statements; find equivalent fractions • Multiply and divide fractions • Add and subtract fractions using common denominators and unlike denominators • Solve applied problems with fractions • Express, interpret and use ratios; find equivalences • Estimate with mixed fractions • Analyze, synthesize and apply fraction word problems

Science

Science Strands

- Living Things
- Earth and Space
- Materials and Matter
- Forces and Energy

Unit of Study and IB Strands	Objectives
Inquiry Process	<ul style="list-style-type: none"> • Generate scientific questions based on observations, investigations and research • Design and conduct scientific investigations • Use tools and equipment (spring scales, stop watches, meter sticks and tapes, models, hand lens) appropriate to scientific investigations • Construct charts and graphs from data and observations • Identify patterns in data • Design solutions to problems using technology • Identify the need for evidence in making scientific decisions • Demonstrate scientific concepts through various illustrations, performances, models, exhibits and activities • Describe how science and technology have advanced because of the contributions of many people throughout history and across cultures • Analyze, synthesize and apply the Scientific Method
Inquiry Analysis and Communication	<ul style="list-style-type: none"> • Analyze information from data tables and graphs to answer scientific questions • Evaluate data, claims and personal knowledge through collaborative science discourse • Communicate and defend findings of observations and investigations using evidence • Draw conclusions from sets of data from multiple trials of a scientific investigation • Use multiple sources of information to evaluate strengths and weaknesses of claims, arguments or data
Reflection and Social Implications	<ul style="list-style-type: none"> • Evaluate the strengths and weaknesses of claims, arguments and data • Describe limitations in personal and scientific knowledge • Identify the need for evidence in making scientific decisions • Demonstrate scientific concepts through various illustrations, performances, models, exhibits and activities • Design solutions to problems using technology • Describe the effect humans and other organisms have on the natural world • Describe how science and technology have advanced because of the contributions of many people throughout history and across cultures
Earth Systems IB Strand: Earth and Space	<ul style="list-style-type: none"> • Explain what a galaxy is in relation to the universe • Identify the tools for measuring distance in space • Explain the make-up and function of stars • Compare the different types of stars • Explain how planets are formed and why they orbit stars • Identify Earth's place in the solar system

Unit of Study and IB Strands	Objectives
Weather IB Strand: Earth and Space	<ul style="list-style-type: none"> • Develop an understanding of the warming of the Earth by the sun as the major source of energy and how the sun's warming relates to weather, climate, seasons and the water cycle. • Understand how human interaction and use of natural resources affects the environment • Demonstrate and explain seasons using a model • Explain how the revolution of the Earth around the sun defines a year • Explain how the tilt of the Earth causes seasons in different parts of the world • Explain how air pressure causes wind • Explain how high and low pressure systems have an impact on weather • Name the four forms of precipitation • Explain the characteristics of hurricanes and tornadoes • Show on a map areas most often affected by hurricanes • Show on a map the area known as "Tornado Alley" • Name and describe the different types of clouds • Explain how lightning and thunder occurs • Create a safety plan for hazardous weather • Make a portable weather station that measures wind, temperature and barometric pressure
Organization of Living Things IB Strand: Living Things	<ul style="list-style-type: none"> • Develop an understanding that plants and animals (including humans) have basic requirements for maintaining life, which include the need for air, water and a source of energy • Understand that all life forms can be classified as producers, consumers or decomposers, as they all are part of a global food chain where food/energy is supplied by plants that need light to produce food/energy • Explain how animal systems (digestive, circulatory, respiratory, skeletal, muscular, nervous, excretory and reproductive) work together to perform selected activities
Heredity IB Strand: Living Things	<ul style="list-style-type: none"> • Explain what genes are and how they are passed to an offspring • Demonstrate how probability is connected to the gene pool of an offspring • Explain how heredity can increase the likelihood of illnesses like diabetes, cancer and heart disease to an offspring • Make an action plan to decrease the probability of an offspring experiencing a serious disease
Nutrition and exercise IB Strand: Living Things	<ul style="list-style-type: none"> • Identify a balanced diet and its importance • Explain the food pyramid • Make a food journal • Reflect on current eating habits • Explain how exercise can affect the way we metabolize our food • List various aerobic exercises and explain why they can increase metabolism
Memory and the Brain IB Strand: Living Things	<ul style="list-style-type: none"> • Explain the three stages of memory • Learn strategies to focus on information in the working memory • Learn strategies to trigger information from the long term memory • Describe the effects auditory, visual and kinesthetic stimuli have on learning styles • Identifying learning styles • Explain the seven multiple intelligences • Create a learning profile • Identify one readiness level • Make an action plan to use each student's learning style as a strength to improve study skills • Analyze, synthesize and apply individual learning styles

Social Science

Social Studies Strands

- Human Systems and Economic Activities
- Social Organization and Culture
- Continuity and Change Through Time
- Human and Natural Environments
- Resources and Environments

Unit of Study and IB Strands	Objective
Distribution and Migration of People	<ul style="list-style-type: none"> • Understand population density of the world • Understand population distribution • Learn about human migration
Pre-European North America	<ul style="list-style-type: none"> • Explain what Pre-European North America looked like • List major Native American tribes in North America before the arrival of Columbus • List the major Native American tribes in Michigan • Describe the culture of various tribes • Explain why some tribes would form unions of alliance and others would not
Early American History	<ul style="list-style-type: none"> • Identify the effect of Columbus on North America and the political make-up of Europe • Describe early American life in the English colonies • Explain how the French and Indian War changed the landscape of North America • List the Causes of the American Revolution • Explain how the Americans won the Revolutionary War • Explain the contributions of the Founding Fathers • Assess how black Americans were crucial in the war effort and formation of our country • Learn the significance of cultural regions and explore cultural change • Consider the results of cultural intolerance • Discuss the importance of cultural diversity • List how international issues are connected to us all • Explain what a global economy is and how the world is competing for its place in it • Make a map showing the original thirteen colonies • Locate the places of key military battles
The Constitution	<ul style="list-style-type: none"> • Explain the Articles of Confederation and why it was a failure • Explain how the Constitution came to be • Identify and explain the three branches of U.S. government • Explain how the Constitution has impacted other countries • Compare the Constitution to other forms of government in the world • Explain how the Constitution helps to organize us as a people • Examine how the Constitution is a living document • Explain how societies must exercise respect and cooperation to survive • Explain how government styles differ from one country to another • Use analysis and synthesis to describe the advantages and disadvantages of styles of government • Describe the codes of behavior in different cultures

Unit of Study and IB Strands	Objective
Western Expansion	<ul style="list-style-type: none"> • Learn the significance of the Louisiana Purchase • Describe how Lewis and Clark sparked the interest of people to head west • Explain the impact of the War of 1812 (Did it solidify America as a country?) • Explain the positive and negative results of western expansion • Discuss the presidency of Andrew Jackson and its impact on class and race relations in America • Learn about the Trail of Tears and the Oregon Trail • Explain the impact trains had on western expansion • Identify the key elements of “Manifest Destiny” • Explain the idea of the American Dream • Understand the results of Mexican Cession • Locate the area known as the Louisiana Purchase • Locate the Oregon trail • Locate the land obtained from the Mexican Cession
Civil War	<ul style="list-style-type: none"> • List the causes of the Civil War • Describe how Americans viewed themselves before and after the war • Describe major battles of the war • Explain the importance of the Gettysburg Address • Explain why the Civil War is called the “Crossroads of American History” • Demonstrate how being assertive is better than being aggressive • Explore the topics of racism and discrimination • Discuss cultural change • Understand the results of cultural intolerance and importance of cultural diversity • Locate and identify the Northern states • Locate and identify the Southern States • Locate and identify sites of key Civil War battles

Reading

Language Strands

- Oral Language
 - Listening
 - Speaking
- Visual Language
 - Viewing
 - Presenting
- Written Language
 - Reading
 - Writing

Unit of Study	Objectives
Word Recognition	<ul style="list-style-type: none"> • Explain when to use and apply word structure, sentence structure and prediction to aid in decoding words and understanding meanings of words encountered in context • Use structural, syntactic and semantic cues, including letter-sound, rimes, base words, affixes, and syllabication to automatically read frequently encountered words, decode unknown words, and decide meanings, including multiple meaning words • Automatically recognize frequently encountered words in print with the number of words that can be read fluently increasing steadily across the school year • Know the meanings of words encountered frequently in grade-level reading and oral language contexts • Acquire and apply strategies to identify unknown words or word parts, and construct meaning by analyzing derivatives, defining meanings of affixes, and applying knowledge of word origins
Fluency	<ul style="list-style-type: none"> • Fluently read beginning grade-level text and increasingly demanding text as the year proceeds
Vocabulary	<ul style="list-style-type: none"> • In context, determine the meaning of words and phrases, including symbols, idioms, recently coined words, content vocabulary and literary terms using strategies and resources, including analogies, content glossaries and electronic resources
Narrative Text	<ul style="list-style-type: none"> • Analyze how characters and communities reflect life (in positive and negative ways) in classic, multicultural and contemporary literature recognized for quality and literary merit • Analyze the structure, elements, style and purpose of narrative genres, including historical fiction, tall tales, science fiction, fantasy and mystery • Analyze how characters' traits and setting define plot, climax, the role of dialogue and how problems are resolved • Explain how authors use literary devices, including exaggeration and metaphors, to develop characters, themes, plot and functions of heroes, anti-heroes and narrators
Informational Text	<ul style="list-style-type: none"> • Analyze the structure, elements, features, style and purpose of informational genres, including advertising, experiments, editorials and atlases • Identify and describe informational text patterns, including compare/contrast, cause/effect, and problem/solution • Explain how authors use text features, including timelines, graphs, charts, diagrams, table of contents, indices, introductions, summaries and conclusions, to enhance the understanding of key and supporting ideas
Comprehension	<ul style="list-style-type: none"> • Connect personal knowledge, experiences and understanding of the world to themes and perspectives in text through oral and written responses • Retell through concise summarization grade-level narrative and informational text • Analyze global themes, universal truths and principles within and across text to create a deeper understanding by drawing conclusions, making inferences and synthesizing • Apply significant knowledge from grade-level science, social studies and math texts

Unit of Study	Objectives
Metacognition	<ul style="list-style-type: none"> • Self-monitor comprehension when reading or listening to text by automatically applying and discussing the strategies used by mature readers to increase comprehension, including predicting, constructing mental images, visually representing ideas in text, questioning, re-reading or listening again if uncertain about meaning, inferring, summarizing, and engaging in interpretive discussions • Plan, monitor, regulate and evaluate skills, strategies and processes to construct and convey meaning (e.g. decoding unfamiliar words); select an appropriate text type from known genre for particular writing purposes; and use theory/evidence, cause/effect and persuasive organizational patterns
Critical Standards	<ul style="list-style-type: none"> • Develop, discuss and apply individual and shared standards using student/class created rubrics to assess the quality and accuracy of students' own writing and the writing of others • Identify attainment of intended purpose to interpret authors' viewpoints and determine effect on classroom or school-wide audiences

Writing

Unit of Study	Objectives
Writing Genre	<ul style="list-style-type: none"> • Write a cohesive narrative piece such as a mystery, tall tale or historical fiction using time period and setting to enhance the plot; demonstrate roles and functions of heroes, anti-heroes, and narrator; depict conflicts and resolutions • Write poetry based on reading a wide variety of grade-appropriate poetry • Write a position piece that demonstrates understanding of central ideas and supporting details (e.g. position/evidence organizational pattern) using multiple headings and subheadings • Use the writing process to produce and present a research project; use a variety of resources to gather and organize relevant information into central ideas and supporting details for a teacher-approved, narrowed focus question and hypothesis
Writing Process	<ul style="list-style-type: none"> • Set a purpose, consider audience and replicate authors' styles and patterns when writing a narrative or informational piece • Apply a variety of pre-writing strategies for both narrative and informational writing (e.g. graphic organizers such as maps, webs, Venn diagrams) in order to generate, sequence and structure ideas (e.g. role and relationships of characters, settings, ideas, relationship of theory/evidence, compare/contrast) • Draft focused ideas using linguistic structures and textual features needed to clearly communicate information composing coherent, mechanically sound paragraphs when writing compositions • Revise drafts based on constructive and specific oral and written responses to writing by identifying sections of the piece to improve organization and flow of ideas (e.g. position/evidence organizational pattern, craft such as titles, leads, endings and powerful verbs) • Proofread and edit writing using grade-level checklists and other appropriate resources both individually and in groups
Personal Style	<ul style="list-style-type: none"> • Exhibit personal style and voice to enhance the written message in both narrative (e.g. personification, humor, element of surprise) and informational writing (e.g. emotional appeal, strong opinion, credible support)
Grammar and Usage	<ul style="list-style-type: none"> • In the context of writing, correctly use compound subjects and predicates; proper nouns and pronouns; articles; conjunctions; hyphens in compound and number words; commas between two independent clauses to set off direct address, long phrases, clauses; colons to separate hours and minutes and to introduce a list
Spelling	<ul style="list-style-type: none"> • In the context of writing, correctly spell frequently encountered words (e.g. roots, inflections, prefixes, suffixes, multi-syllabic); for less frequently encountered words, use structural cues (e.g. letter/sound, rime, morphemic) and environmental sources (e.g. word walls, word lists, dictionaries, spell checkers)

Religion

	Objective
The Seven Sacraments	<ul style="list-style-type: none"> List the seven sacraments Explain how the sacraments are divided into three groups: initiation, commitment and healing Discuss how and when the sacraments can affect our life Explain how acting out the sacrament of Reconciliation can heal broken relationships
The Bible	<ul style="list-style-type: none"> Identify the importance and purpose of the Old Testament Explain how Jesus in the New Testament is a fulfillment of the Old Testament Learn about the life of Jesus from the four Gospels Discover the spiritual journey of a Christian from Paul's letters Explain the political turmoil between the Romans, priests and common people of Israel during the time of Jesus
Ecumenism	<ul style="list-style-type: none"> Discuss how tolerance brings people together Explore the importance showing love instead of hate towards people of other religions Learn that knowledge of other faiths can strengthen one's own
The Church	<ul style="list-style-type: none"> Explore in brief the history from Jesus's time to today Learn the vestments of the Church Learn about religious vocations Study the Church calendar Learn the Church hierarchy Learn the Stations of the Cross, how to say the Rosary, and parts of the Mass
Personal Growth	<ul style="list-style-type: none"> Discuss how prayer and reflection can make a difference in our lives Make an action plan to grow in faith Discuss how to make the world a better place and how to leave a spiritual imprint of love List the benefits of showing the attributes of good character: respect, trustworthiness, fairness, responsibility and caring
World Religions	<ul style="list-style-type: none"> Discuss origins of major world religions Discover the benefits of diversity and cooperation of all faiths.