Green Infrastructure Toolkit For Schools

Engagement and Resources for Integrating Green Infrastructure into the Classroom

OMAHA STORMWATER PROGRAM

UNIVERSITY OF Nebraska Lincoln

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Green Infrastructure 101

As our population grows, natural landscapes are replaced with cities, farms and roads. When it rains, rainwater falls onto hard surfaces in these areas like parking lots, buildings, and driveways. The natural landscapes could easily absorb water into the soil. The hard, impermeable surfaces don't allow water to be absorbed into the soil, causing stormwater to runoff, which picks up pollutants, chemicals and debris as it flows, eventually draining into our rivers, lakes and drinking water sources.

Green Infrastructure (GI) is a way to use nature (soil and plants) to Slow down, Sink into the ground and Spread out stormwater runoff, the 3 S's. GI can be used in all areas of our community. The result is cleaner, healthier water, for humans and animals.

UNO Welcome Center Bioretention Gardens

The Green Infrastructure Education Network

Project Summary

The goal of the Green Infrastructure (GI) Education Network is to connect with community organizations and schools to provide high-quality education and outreach on water and green infrastructure to Omaha metro students, citizens, and the local workforce. These great organizations and schools each bring something to the table that the others can benefit from, such as meeting spaces, experienced professionals, publications, building materials, equipment, people, ability to spread the word, etc. In addition to sharing resources, the network can also share knowledge on stormwater issues and green infrastructure principles and practices. The GI Education Network will allow consistent information and experiences to be shared among everyone to improve the overall understanding and management of stormwater and green infrastructure. This project has been created through funding by the US Environmental Protection Agency's (EPA) Urban Water Program.

Benson West Elementary

Northwest High School

Creighton Prep

GI is an effective way to reduce pollution being discharged into the Missouri River and Papillion Creek and provides many additional benefits to Omaha and all the communities within the watershed. GI practices are being designed and installed more frequently every day; having a strong, knowledgeable community to support these practices is critical. Below are three areas of focus for the network. Join in on the fun with the Green Infrastructure Education Network!

Green Infrastructure in School

Many great green infrastructure projects have been installed across the Omaha metro area, including at schools. The network will seek to connect near-by schools with these projects so they can be utilized in & out of the classroom.

Goal

- Support the development of curriculum and lessons that relate to the Nebraska State Education Standards
- Provide field trip opportunities, class presentations, and other resources to support green infrastructure use in schools

Prairie Lane Park

Local Workforce

The installation and maintenance of green infrastructure practices are critical for its success. The network will provide practical training and hands-on experiences with GI principles and practices, with a strong focus on small and emerging businesses.

Goal

- Develop practical materials and hands-on training opportunities for local businesses and individuals
- Arrange educational workshops or activities for the public
- Train-the-trainer on stormwater and green infrastructure topics

Saddle Hills Park

Underserved Communities

All areas have stormwater issues, including low and moderate-income neighborhoods. The network will have a strong presence in these communities to support their efforts.

Goal

- Provide targeted outreach activities to these areas
- Receive feedback and adapt to the needs of the community

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Thank you for taking the time to learn a little about the Green Infrastructure Education Network!

The purpose of the Omaha Green Infrastructure Education Network is to provide learning institutions and the community with resources and opportunities to connect with others to help foster community support for better stormwater management through the use of green infrastructure principles and practices.

In addition to protecting our water and enhancing our community, green infrastructure can provide many opportunities for schools to get kids outside and using them as a resource to teach. As part of creating this Network, the Nebraska Department of Education's Standards have been reviewed to see which specific standards can be met by using green infrastructure principles and practices. This has been completed for science and math standards, and additional standards will be reviewed in the future and incorporated into this toolkit. Every school and teacher is unique, so this toolkit is not prescriptive in nature. Instead, the intent with the Network and this guide is to create awareness of green infrastructure principles and practices and connect the schools and community with real-world applications on school grounds or nearby. Resources created and shared by the Network are aimed to be actively used, shared, and adapted by others for their own use. Examples of resources include lesson plans, fact sheets, activities, etc…

This guide will also assist you in creating buy-in from neighbors and the greater Omaha community for schoolyard green infrastructure principles and practices. The Omaha Green Infrastructure Education Network is a resource for you to create and implement projects for students, provide information and messages to the community, and to answer questions along the way.

Thank you for your contributions to this endeavor and look forward to great collaborations in the future!

Green Infrastructure is an environmentally friendly way to manage stormwater so that we prevent pollution, flooding, and erosion. A rain barrel is a popular green infrastructure tool. The barrel is placed under a downspout and collects rainwater for various outside activities.

What is Stormwater and Green Infrastructure?

In cities, like Omaha, buildings, pavement and other hard surfaces prevent rain and snow from soaking into the ground. Instead, this water runs off, often flowing directly to streams, rivers, and other water bodies. This is stormwater runoff and it can carry pollutants like oil, chemicals, pet waste and lawn fertilizers. The quantity and speed of flow can also cause erosion, flooding, and damage to aquatic habitat and property.

Green infrastructure (GI) manages stormwater near where it falls to prevent these issues and provides additional benefits for the community. In short, GI practices use nature (soil and plants) to **S**low, **S**ink into the ground, and **S**pread stormwater runoff, the **3 S**'s.

- ✓ SMALL SCALE GI
  at home with a rain barrel
- ✓ NEIGHBORHOOD SCALE GI
  a green streets project
- ✓ LARGE SCALE GI
  a city-wide urban tree planting project

So, why do we love Green Infrastructure

COST SAVINGS

GI is often less expensive than traditional stormwater infrastructure because it uses less gray infrastructure (concrete pipes, storm drains, and pavement)and maintenance costs less over time. The best day for gray infrastructure is the first day and then it wears out over time. GI is resilient and creates many additional benefits above and beyond just moving and storing stormwater, i.e. improving property values, minimizing degradation in the natural environment, improved air quality, cooler temperatures in urban areas, etc…

EDUCATIONAL VALUE

GI on school grounds and in near-by areas will provide a multitude of learning experiences for students while making the schoolyard a beautiful place for students, teachers, staff, and neighbors.

The opportunities to use the GI in your schoolyard are limitless. All subjects can use outdoor elements to explore a concept or demonstrate a competency. Use the GI at your school or in near-by areas as a learning tool. Try one new lesson outdoors each year and discover how engaged students can be when nature is the learning laboratory.

School lessons are boundless with GI!

- Discuss the water cycle
- Identify plants
- Learn about soils
- Run/Walk/Jump
- Determine garden area & volume
- Learn about edible plants
- Observe insects
- Research local government water policies
- Explore Native American medicinal plants
- Write poetry
- Create art
- Discover shapes
- Categorize colors
- Plot plant types in GIS
- Label plant parts
- Calculate runoff
- Track a biodiversity index

Green Infrastructure. Countless Benefits.

ENVIRONMENTAL BENEFITS

Green Infrastructure not only cleans up the Missouri River and Papillion Creek, but also has positive impacts in your neighborhood

- Reduced flooding, pollution, and erosion
- Recharging groundwater supplies
- Increases wildlife habitat

ECONOMIC BENEFITS

Who doesn't want to live and work in a city with less pavement and more trees, flowers, and greenspace?

- Increases property value
- Attracts residents and commercial investment
- Encourages redevelopment

SOCIAL BENEFITS

Green Infrastructure projects give cities something unique and special, and help create a sense of place

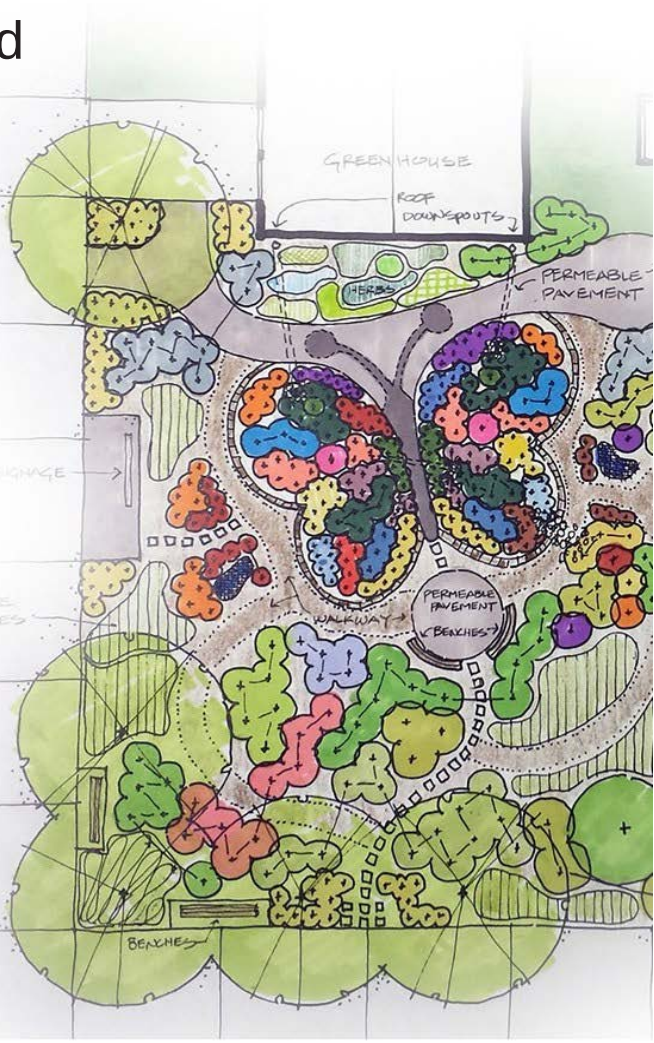
- Increases recreational opportunities to improve health
- Experiences in nature can reduce stress
- Increases community pride

Permeable pavement is a Green Infrastructure practice that allows water to pass through the surface to a storage area below, where it can infiltrate into the soil or slowly release through an underdrain. Permeable pavement is ideal for cold weather climates. Precipitation can drain into the storage area and expand, which prevents surface refreezing and icy roads.

"The Northwest High School rain garden allows students to utilize their STEAM skills and their 21st Century skills to design a structure that will better their community and environment." - *Rachael A. Burns M.S., Anatomy & Physiology, Plants & Propagation, Horticulture & Landscaping, Northwest Magnet High School*

Northwest High School BUILT the Gardens on their Schoolground

When we say "Northwest High School students built the gardens" on their school ground, we mean that they surveyed, calculated and designed the garden layout, produced conceptual designs, oversaw construction, and even promoted the garden to the community. From start to finish, these students used their classroom knowledge for a real-world project... and they are not stopping there!



The gardens at Northwest High School collect rainwater runoff while providing a pollinator habitat, and examples of native fruits, forest, and medicinal plants. The school grounds will be a hands-on, outdoor learning and classroom space for students for years to come.

Students involved in the project also made career connections working with local environmental professionals and the University of Nebraska-Omaha. The project highlights environmental sustainability and STEAM concepts (Science, Technology, Engineering, Art, and Math).

A **rain garden**, like the one built at Northwest High School, can be beautiful as well as functional. Rain gardens are versatile features that can be installed in almost any unpaved space. They are shallow, vegetated basins that collect and absorb runoff from rooftops, sidewalks, and streets.

This practice mimics natural hydrology by infiltrating, evaporating, and plants transpiring or "evapotranspiring" stormwater runoff.

Get Your Community to Love Green Infrastructure

Sometimes Green Infrastructure (GI) looks a little different than traditional stormwater curbs and gutters and mowed-short landscapes. It may take some outreach to the neighborhood around your school to help them understand how great the GI is for your students, the community, and the local environment. Students can reach out to the neighborhood with fliers, signage, brochures and schoolyard tours to get the community to buy-in to the GI.

Schoolyard Signage

Have students create signs that can be posted throughout the schoolyard that talk about the GI elements and why they are important. Students can research, write, design, draw, and calculate impacts to include in the signage. Signs can be replaced or revised annually. In addition, Q/R codes and website references on signs can connect landscape viewers to significant student research, projects, and information uploaded to school websites.

Signage Theme Examples

Native Meadow Prairie in Progress; Butterfly Habitat Here; Pollinator Paradise

Rain Garden or Bioswale A Ditch that Cleans Water; Super Sponge; Fabulous Filter; Parking Lot Pollution Stopper; Designed with Water in Mind (yes, a sign about math and art elements used to create the bioswale would be informative and show-off your students' genius)

Rain Harvesting Harvest Water-Save Money (this could be a promotion for parents to rain harvest at home!

Pervious Concrete You're Parking on Our Sponge; When it Rains, it Drains

There are lots of examples out on the web of great signs with messages you can use for your school's signage. But, the best messages may come from the students themselves.

Neighborhood Fliers

Most people do not like change. So, if the neighborhood school puts something in that looks different there will be questions, concerns, and commentary. Head off the apprehension at the pass by having students create fliers about the new and existing GI elements and deliver them to the neighbors. Include what it is and why it's there. Have students create messages and art work to go in the flier. Is there a local business that would like to help design and print the fliers? Be sure to highlight how it is going to help students learn and make the schoolyard a better place. If it has benefits to students and the neighborhood, such as reduced flooding and pollution prevention, it will be difficult to argue with.

If the GI has been around a while, give seasonal updates. Have students count numbers of species or number of pollinators and send out a flier about those numbers, how they are growing and what that means for the overall health of the community.

- Bees are responsible for 1 in every 3 bites of food
- Diverse plant communities make the landscape more resilient to drought and disease

Connect to Omaha

City Channel Messages

Incorporate technology and media into the Green Infrastructure (GI) messaging efforts. Have students write stories about their outdoor lessons and read them for the city channel while pictures scroll. Or, have students make videos about what they are learning outdoors, how they are using their schoolyards as a laboratory or produce infomercials about how to use GI at home or at a business.

Local Media

Show off your students and your schoolyards often. Send out press releases on a regular basis to local newspapers, radio and television stations. In the press release, incorporate messages that inform the audience why GI projects are important for the school and the community. Tell stories that are specific, and have clear take-away messages. General stories are not as engaging as stories about a specific person or subject. Tell a story about one student's love for insects because of the pollinator count they did in the school's native prairie, or how a math class is calculating how much runoff is avoided with the GI in their schoolyard and how that helps the neighborhood avoid flooding. The more personal and specific a story is, the more support you can get from your audience. Be sure to put out press releases each time a local parent group or nonprofit volunteers their time to help.

Connect to the World

Social Media

There are so many great ways to use social media to show-and-tell OPS employees, students, parents, the community and the world about the cutting edge, sustainability work that Omaha is doing at their schools. Use all platforms, including, but not limited to Facebook, Twitter, Instagram, blogs, etc.

- Create a schoolyard GI hashtag and use it for any post or message about OPS GI. With this hashtag parents, students and the community can also take pictures and post great things about OPS GI projects that can be tracked and reposted.
- Handover a camera to a student or classroom for a week to provide Instagram photos with captions, or tweets about the GI elements or the projects they are working on in their schoolyards.
- Set themes and have students come up with posts about their schoolyard. Themes could be about pollinators, biodiversity, letters or numbers in nature, colors in nature, or the water cycle.
- Let kids create short videos about different GI topics to edit and post to YouTube. Share these videos on the school's social media sites. If you get enough videos, you can create your own playlists and channels for other communities interested in learning about sustainable schools.
- Let your class create a blog on their tips to the community for GI success.
- Have students create academic twitter accounts, and give them quick homework assignments such as posting a picture of their schoolyard or re-tweeting an interesting GI article. You can even have competitions to see whose account can get the most relative followers!
- Pinterest can be a visual learning board for students. Create scenarios such as "What would perfect green infrastructure look like at our school?" Let them pin different images, articles and ideas to get inspired about DIY GI!

Awards and Recognition

OPS is a leader in incorporating GI into their schoolyard design and engaging students with professionals on real-world projects. Do not let the opportunity pass to be recognized for your innovations and jobs well done. Apply for awards and grant opportunities when possible. Often, this type of recognition opens doors to other partnerships, funding, and projects.

Volunteers

It takes a little bit of effort from volunteers to keep our school's green infrastructure (GI) looking its best so that our students can get the most of out their schoolyard. Establish a volunteer team from the community to assist the school with GI upkeep.

Find a volunteer coordinator. This could be a teacher, a parent or a community member. Their role is to gather and coordinate the volunteers when needed, even through the summer.

The Volunteer Coordinator

- Clearly identifies the jobs that need to be done
- Allows flexible work times
- Coordinates with maintenance staff
- Makes tools available or advise volunteers what tools they need to bring with them (sunscreen, gloves, shovels, garbage bags, etc.)
- Makes sure the jobs are small, doable jobs
- Makes sure all volunteers sign liability releases

Potential Community Volunteers

- Extension Master Garden
- Parents
- Neighbor(s)
- Alumni
- Business Green Teams
- Young Professional Organizations
- College Students
- Non-Profit Organizations

Urban Canopy Trees reduce stormwater by intercepting precipitation with their leaves and branches.

Trees also soak up stormwater, provide cooling shade and improve air quality.

Rain in the City Lingo

Rain

The water that falls from the sky (falling water also comes in the form of snow, hail, and ice)

Runoff

Once the rain hits the ground anything that does not soak in is runoff

Stormwater

The runoff that needs to be managed by city infrastructure to avoid flooding, property damage, and erosion

Green

Environmentally friendly, nature-friendly

Infrastructure

The basic structures (buildings, roads, storm drains, power lines, water systems, etc.) needed for the operation of a society

Green Infrastructure (GI)

Using soils, plants and land features to mimic natural processes to slow, sink and spread stormwater where it falls to avoid flooding, pollution, and erosion

Additional Resources

American Society of Landscape Architects **https://www.asla.org/greeninfrastructure.aspx**

EPA Green Infrastructure **https://www.epa.gov/green-infrastructure**

Omaha Stormwater **http://www.omahastormwater.org/**

University of Nebraska-Lincoln **http://water.unl.edu/category/stormwater-management**

Nebraska Science and Mathematics Curriculum Standard Overview

The Nebraska science and mathematics curriculum standards are designed to test student performance on a variety of topics. Each school district in Nebraska is responsible for students to become science and math literate by creating a K-12 science curriculum that meets the state standards. The standards are laid out by grade level, Kindergarten through Grade 12. Both Science and Mathematics standards are categorized into four science inquiries. There is the Nature of Science and Technology, Physical Science, Life Science, and Earth and Space Science for the Science standards, and Number, Algebra, Geometry, and Data for the Mathematics standards.

The Nebraska State Board of Education adopted the current version of the Nebraska Science Standards on October 6th, 2010. The standards are to be reviewed and updated every seven years and are currently going through the revision process. These standards set the stage for what is taught in classrooms across the state.

Green infrastructure is an excellent way to teach many specific science and math topics inside and outside of the classroom. In addition to science, green infrastructure applies to other subject areas including technology, engineering, arts, and math. These subjects together are often known as STEM or STEAM. This packet of information is the start of creating a better awareness with those in the education system of what is possible with green infrastructure and using it as a means to become more aware of our community's environment.

The standards that have been selected and listed in this package are taken from the 2011 Nebraska Science Standards and 2015 Nebraska Mathematics Standards from the Nebraska Department of Education and can be met through the use of green infrastructure principles and practices. Green infrastructure can be used to explore many areas of science including the water cycle, botany, horticulture, insects and animals, soil science, weather, climate change, environmental pollution, chemistry, and more. It can also involve many areas of math such as calculation, measuring, and chart reading. Utilization of green infrastructure principles and practices provides a dynamic opportunity for students to meet and exceed these science standards. For example, the Science standard 2.4.2.b for K2 states, “Recognize ways in which individuals and families can conserve Earth's resources by reducing, reusing, and recycling.” Runoff from a school roof can be directed into a rain garden where plants will use the water rather than letting it go down the storm drain, carrying pollution with it. The Math standard MA 2.3.3.d for second graders states, “Measure the length of an object using two different length units and describe how the measurements relate to the size of the specific unit.” A rain garden can provide students a hands-on opportunity to measure its length and width, while also learning about unit conversion.

Standards selected and listed here can be taught using green infrastructure principles and practices. Depending on a teacher’s lesson plan, there may be other standards that could be applied to incorporate green infrastructure; so view this document not as a definitive list but as a resource to build upon. One final note: this package is only good if it is used, so we want feedback on how to improve it into the future. Please send questions, comments, or inquiries to omahastormwater@ci.omaha.ne.us, thank you!

Nebraska K-2 Science Curriculum 2011 - Summary for Green Infrastructure

Inquiry - the Nature of Science, and Technology

Inquiry – Students will ask questions and conduct investigations that lead to observations and communication of findings. 2.1.1

1. Scientific Questioning: Explore teacher generated questions that relate to a science topic 2.1.1.a
2. Scientific Investigation: Participate in simple, teacher-facilitated investigations 2.1.1.b
3. Scientific Tools: Explore the guided use of tools (e.g., hand lens, balance, nonstandard measurement tools) 2.1.1.c
4. Scientific Observations: Using the five senses, describe objects, organisms, or events through pictures, words, and numbers 2.1.1.d
5. Scientific Data Collection: Collect and record observations using pictures, words, and symbols (e.g., weather charts, birthdays, lost teeth) 2.1.1.e
6. Scientific Communication: Use drawings and words to describe and share observations with others 2.1.1.f
7. Mathematics: Use appropriate mathematics in all aspects of scientific inquiry 2.1.1.g

Physical Science

Matter – Students will observe and describe properties of objects and their behavior. 2.2.1

1. Properties and Structure of Matter: Observe physical properties of objects (freezing and melting, sinking and floating, color, size, texture, shape, weight) 2.2.1.a
2. Properties and Structure of Matter: Separate and sort objects by physical attributes (texture, weight) 2.2.1.b
3. Properties and Structure of Matter: Measure objects using non-standard (e.g., paperclip length, pencil length) and standard (e.g., inches, centimeters) units 2.2.1.c
4. States of Matter: Identify solids and liquids and recognize that liquids and recognize that liquids take the shape of their container 2.2.1.d

Force and Motion-Students will compare relative position and motion of objects. 2.2.2

1. Motion: State location and/or motion relative to another object or its surroundings (in front of, behind, between, over, under, up, and down) 2.2.2.a
2. Motion: Describe how objects move in many different ways (straight, zigzag, round and round, back and forth, and fast and slow) 2.2.2.b

Life Science
Structure and Function of Living Systems – Students will investigate the characteristics of living things. 2.3.1
1. Characteristics of Life: Differentiate between living and nonliving things 2.3.1.a
2. Characteristics of Living Organisms: Identify the basic needs of living things (food, water, air, space, shelter) 2.3.1.b
3. Characteristics of Living Organisms: Identify external parts of plants and animals 2.3.1.c
4. Characteristics of Living Organisms: Observe and match plants and animals to their distinct habitats 2.3.1.d
Heredity – Students will recognize changes in living things. 2.3.2
1. Inherited Traits: Describe how offspring resemble their parents 2.3.2.a
2. Reproduction: Describe how living things change as they grow 2.3.2.b
Biodiversity– Students will recognize changes in organisms. 2.3.4
1. Biological Adaptations: Recognize seasonal changes in animals and plants 2.3.4.a
Earth and Space Science
Earth Structures and Processes – Students will observe, identify, and describe characteristics of Earth's materials. 2.4.2
1. Properties of Earth Materials: Describe Earth materials (sand, soil, rocks, water) 2.4.2.a
2. Use of Earth Materials: Recognize ways in which individuals and families can conserve Earth's resources by reducing, reusing, and recycling 2.4.2.b
Energy in Earth's Systems – Students will observe simple patterns of change on Earth 2.4.3
1. Energy Sources: Observe that the Sun provides heat and light 2.4.3.a
2. Weather and Climate: Observe and describe simple daily changes in weather 2.4.3.a

Reference:
SAMPLE K-12 SCIENCE CURRICULUM 2011 [PDF].(n.d.). Lincoln: Nebraska Department of Education.
NEBRASKA SCIENCE STANDARD GRADE K12 2010 [PDF].(n.d.). Lincoln: Nebraska Department of Education.

Nebraska 3-5 Science Curriculum 2011 - Summary for Green Infrastructure

Inquiry - the Nature of Science, and Technology
Inquiry – Students will plan and conduct investigations that lead to the development of explanations. 5.1.1
1. Scientific Questioning: Ask testable scientific questions 5.1.1.a
2. Scientific Investigations: Plan and conduct investigations and identify factors that have the potential to impact an investigation 5.1.1.b
3. Scientific Tools: Select and use equipment correctly and accurately 5.1.1.c
4. Scientific Observations: Make relevant observations and measurements 5.1.1.d
5. Scientific Data Collection: Collect and organize data 5.1.1.e
6. Scientific Interpretations, Reflections, and Applications: Develop a reasonable explanation based on collected data (teacher guided) 5.1.1.f
7. Scientific Communication: Share information, procedures, and results with peers and/or adults 5.1.1.g
8. Scientific Communication: Provide feedback on previously conducted scientific investigations such as class experiments or appropriate science publications 5.1.1.h
9. Mathematics: Use appropriate mathematics in all aspects of scientific inquiry 5.1.1.i
Nature of Science – Students will describe how scientists go about their work. 5.1.2
1. Scientific Knowledge: Recognize that scientific explanations are based on evidence and scientific knowledge 5.1.2.a
2. Science and Society: Recognize that new discoveries are always being made which impact scientific knowledge 5.1.2.b
3. Science as a Human Endeavor: Recognize many different people study science 5.1.2.c
Technology – Students will solve a simple design problem. 5.1.3
1. Abilities to do Technical Design: Identify a simple problem 5.1.3.a
2. Abilities to do Technical Design: Propose a solution to a simple problem 5.1.3.b
3. Abilities to do Technical Design: Implement the proposed solution 5.1.3.c
4. Abilities to do Technical Design: Evaluate the implementation 5.1.3.d
5. Abilities to do Technical Design: Communicate the problem, design, and solution 5.1.3.e

Physical Science
Matter – Students will explore and describe the physical properties of matter and its changes. 5.2.1
1. Properties and Structure of Matter: Identify mixtures and pure substances 5.2.1.a
2. Properties and Structure of Matter: Identify physical properties of matter (color, odor, elasticity, weight, volume) 5.2.1.b
3. Properties and Structure of Matter: Use appropriate metric measurements to describe physical properties 5.2.1.c
4. States of Matter: Identify state changes caused by heating and cooling solids, liquids, and gases 5.2.1.d
Force and Motion – Students will identify the influence of forces on motion. 5.2.2
1. Motion: Describe motion by tracing and measuring an object's position over a period of time (speed) 5.2.2.a
2. Forces/Newton's 2nd law: Describe changes in motion due to outside forces (push, pull, gravity) 5.2.2.b
Energy – Students will observe and identify signs of energy transfer. 5.2.3
1. Light: Recognize that light travels in a straight line and can be reflected by an objects (mirror) 5.2.3.b
2. Light: Recognize that light can travel through certain materials and not others (transparent, translucent, opaque) 5.2.3.c
3. Heat: Identify materials that act as thermal conductors or insulators 5.2.3.e
Life Science
Structure and Function of Living Systems – Students will investigate and compare the characteristics of living things. 5.3.1
1. Characteristics of Life: Compare and contrast characteristics of living and nonliving things 5.3.1.a
2. Characteristics of Living Organisms: Identify how parts of plants and animals function to meet basic needs (e.g., leg of an insect helps an insect to move, root of plant helps the plant to obtain water) 5.3.1.b
Heredity – Students will identify variations of inherited characteristics and life cycles. 5.3.2
1. Inherited Traits: Identify inherited characteristics of plants and animals 5.3.2.a
2. Reproduction: Identify the life cycle of an organism (plants and animals) 5.3.2.b
Flow of Matter and Energy in Ecosystems – Students will describe relationships within an ecosystem. 5.3.3
1. Flow of Energy: Diagram and explain a simple food chain beginning with the Sun 5.3.3.a
2. Flow of Energy: Identify the role of producers, consumers, and decomposers in an ecosystem 5.3.3.b

3. Ecosystems: Recognize the living and nonliving factors that impact the survival of organisms in an ecosystem 5.3.3.c
4. Impacts on Ecosystems: Recognize all organisms cause changes, some beneficial and some detrimental, in the environment where they live 5.3.3.d
Biodiversity – Students will describe changes in organisms over time. 5.3.4
1. Biological Adaptations: Describe adaptations made by plants or animals to survive environmental changes 5.3.4.a
Earth and Space Science
Earth Structures and Processes – Students will observe and describe Earth's materials, structure, and processes. 5.4.2
1. Properties of Earth Materials: Describe the characteristics of rocks, minerals, soil, water, and the atmosphere 5.4.2.a
2. Earth's Processes: Identify weathering, erosion, and deposition as processes that build up or break down Earth's surface 5.4.2.b
3. Use of Earth Materials: Identify how Earth materials are used (fuels, building materials, sustaining plant life) 5.4.2.c
Energy in Earth's Systems – Students will observe and describe the effects of energy changes on Earth. 5.4.3
1. Energy Sources: Describe the Sun's warming effect on the land and water 5.4.3.a
2. Weather and Climate: Observe, measure, and record changes in weather (temperature, wind direction and speed, precipitation) 5.4.3.b
3. Weather and Climate: Recognize the difference between weather, climate, and seasons 5.4.3.c
Earth's History – Students will describe changes in Earth. 5.4.4.
1. Past/Present Earth: Describe how slow processes (erosion, weathering, deposition) and rapid process (landslides, volcanic eruptions, earthquakes) change Earth's surface 5.4.4.a

Reference:
SAMPLE K-12 SCIENCE CURRICULUM 2011 [PDF].(n.d.). Lincoln: Nebraska Department of Education.
NEBRASKA SCIENCE STANDARD GRADE K12 2010 [PDF].(n.d.). Lincoln: Nebraska Department of Education.

Nebraska K0 Mathematics Curriculum 2011 - Summary for Green Infrastructure

NUMBER

Numeric Relationships: Students will demonstrate, represent, and show relationship among while numbers within the base-ten number system. 0.1.1

1. Demonstrate cardinality (i.e. the last number name said indicates the number of objects counted), regardless of the arrangement or order in which the objects were counted. 0.1.1.b
2. Use one-to-one correspondence (pairing each object with one and only one spoken number name, and each spoken number name with one and only one object) when counting objects to show the relationship between numbers and quantities of 0 to 20. 0.1.1.c
3. Demonstrate the relationship between whole numbers, knowing each sequential number name refers to a quantity that is one larger. 0.1.1.d
4. Count up to 20 objects arranged in a line, a rectangular array, or a circle. Count up to 10 objects in a scattered configuration. Count out the number of objects, given a number from 1 to 20. 0.1.1.e
5. Write numbers 0 to 20 and represent a number of objects with a written numeral 0 to 20. 0.1.1.f
6. Compose and decompose numbers from 11 to 19 into ten ones and some more ones by a drawing, model, or equation (e.g., 14 = 10 + 4) to record each composition and decomposition. 0.1.1.g
7. Compare the number of objects in two groups by identifying the comparison as greater than, less than, or equal to by using strategies of matching and counting. 0.1.1.h
8. Compare the value of two written numerals between 1 and 10. 0.1.1.i

Operations: Students will demonstrate the meaning of addition and subtraction with whole numbers and compute accurately. 0.1.2

1. Fluently (i.e. automatic recall based on understanding) add and subtract within 5. 0.1.2.a

ALGEBRA

Algebraic Relationships: Students will demonstrate, represent, and show relationships with expressions and equations. 0.2.1

1. Decompose numbers less than or equal to 10 into pairs in more than one way, showing each decomposition with a model, drawing, or equation (e.g., 7 = 4 + 3 and 7 = 1 + 6). 0.2.1.a
2. For any number from 1 to 9, find the number that makes 10 when added to the given number, showing the answer with a model, drawing, or equation. 0.2.1.b

Applications: Students will solve real-world problems involving addition and subtraction. 0.2.3

1. Solve real-world problems that involve addition and subtraction within 10 (e.g., by using objects, drawings or equations to represent the problem). 0.2.3.a

GEOMETRY
Characteristics: Students will identify and describe geometric characteristics and create two- and three-dimensional shapes. 0.3.1
1. Describe real-world objects using names of shapes, regardless of their orientation or size (e.g., squares, circles, triangles, rectangles, hexagons, cubes, cones, spheres, and cylinders). 0.3.1.a
2. Identify shapes as two-dimensional (“flat”) or three-dimensional (“solid”). 0.3.1.b
3. Compare and analyze two- and three-dimensional shapes, with different sizes and orientations to describe their similarities, differences, parts (e.g., number “corners”/vertices), and other attributes (e.g., sides of equal length). 0.3.1.c
4. Model shapes found in the real world by building shapes from materials (e.g., clay and pipe cleaners) and drawing shapes. 0.3.1.d
Coordinate Geometry: Students will determine location, orientation, and relationships on the coordinate plane. 0.3.2
1. Describe the relative positions of objects (e.g., above, below, beside, in front of, behind, next to, between). 0.3.2.a
Measurement: Students will perform and compare measurements and apply formulas. 0.3.3
1. Describe measurable attributes of real-world objects (e.g., length or weight). 0.3.3.a
2. Compare length and weight of two objects (e.g., longer/shorter, heavier/lighter). 0.3.3.b
DATA
Analysis & Applications: Students will analyze data to address the situation. 0.4.2
1. Identify, sort, and classify objects by size, shape, color, and other attributes. Identify objects that do not belong to a particular group and explain the reasoning used. 0.4.2.a

Reference:
NEBRASKA MATHEMATICS STANDARDS (Rep.). (n.d.). Retrieved https://www.education.ne.gov/math/Math_Standards/Adopted_2015_Math_Standards/2015_Nebraska_College_and_Career_Standards_for_Mathematics_Vertical.pdf

Nebraska 1 Mathematics Curriculum 2011 - Summary for Green Infrastructure

NUMBER

Numeric Relationships: Students will demonstrate, represent, and show relationships among whole numbers within the base-ten number system. 1.1.1

1. Write numerals to match a representation of a given set of objects for numbers up to 120. 1.1.1.c
2. Compare two two-digit numbers by using symbols <, =, and > and justify the comparison based on the number of tens and ones. 1.1.1.f

Operations: Students will demonstrate the meaning of addition and subtraction with whole numbers and compute accurately. 1.1.2

1. Fluently (i.e., automatic recall based on understanding) add and subtract within 10. 1.1.2.a
2. Add and subtract within 20, using a variety of strategies (e.g., count on to make a ten). 1.1.2.b
3. Add within 100, which may include adding a two-digit number and a one-digit number, and adding a two digit number and a multiple of ten using concrete models, drawings, and strategies which reflect understanding of place value. MA 1.1.2.e

ALGEBRA

Algebraic Relationships: Students will demonstrate, represent, and show relationships with expressions and equations. 1.2.1

1. Use the meaning of the equal sign to determine if equations are true and give examples of equations that are true (e.g., 4 = 4, 6 = 7 – 1, 6 + 3 = 3 + 6, and 7 + 2 = 5 + 4). 1.2.1.a
2. Use the relationship of addition and subtraction to solve subtraction problems (e.g., find 12 – 9 = ___, using the addition fact 9 + 3 = 12). 1.2.1.b
3. Find numerical patterns to make connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). 1.2.1.c
4. Determine the unknown whole number in an addition or subtraction equation (e.g. 7 + ? = 13). 1.2.1.d

Algebraic Processes: Students will apply the operational properties when adding & subtracting. 1.2.2

1. Decompose numbers and use the commutative and associative properties of addition to develop addition and subtraction strategies including (making 10's and counting on from the larger number) to add and subtract basic facts within 20. 1.2.2.a

Applications: Students will solve real-world problems involving addition and subtraction. 1.2.3

1. Solve real-world problems involving addition and subtraction within 20 in situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all parts of the addition or subtraction problem (e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem). 1.2.3.a
2. Solve real-world problems that include addition of three whole numbers whose sum is less than or equal to 20 by using objects, drawings, and equations with a symbol to represent the unknown number in the problem. 1.2.3.b
3. Create a real-world problem to represent a given equation involving addition and subtraction within 20. 1.2.3.c

GEOMETRY
Characteristics: Students will identify and describe geometric characteristics and create two- and three-dimensional shapes. 1.3.1
1. Determine defining and non-defining attributes of two-dimensional shapes; build and draw shapes that match the given definition. 1.3.1.a
2. Decompose circles and rectangles into two and four equal parts, using the terms “halves”, “fourths” and “quarters”, and use the phrases “half of”, “fourths of”, and “quarter of”. 1.3.1.b
3. Use two-dimensional shapes (e.g., rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) and three-dimensional shapes (e.g., cubes, rectangular prisms, cones, and cylinders) to compose and describe new shapes. 1.3.1.c
Measurement: Students will perform and compare measurements and apply formulas. 1.3.3
1. Measure objects by using a shorter object end-to-end and know that the length of the object is the amount of same-size objects that span it lined up end-to-end. 1.3.3.c
2. Order three objects by directly comparing their lengths, or indirectly by using a third object. 1.3.3.d
DATA
Representations: Students will create displays that represent data. 1.4.1
1. Organize and represent a data set with up to three categories using a picture graph. 1.4.1.a
Analysis & Applications: Students will analyze data to address the situation. 1.4.2
1. Ask and answer questions about the total number of data points, how many in each category, and compare categories by identifying how many more or less are in a particular category using a picture graph. 1.4.2.a

Reference:
NEBRASKA MATHEMATICS STANDARDS (Rep.). (n.d.). Retrieved https://www.education.ne.gov/math/Math_Standards/Adopted_2015_Math_Standards/2015_Nebraska_College_and_Career_Standards_for_Mathematics_Vertical.pdf

Nebraska 2 Mathematics Curriculum 2011 - Summary for Green Infrastructure

NUMBER

Numeric Relationships: Students will demonstrate, represent, and show relationships among whole numbers within the base-ten number system. 2.1.2

1. Compare two three-digit numbers by using symbols <, =, and > and justify the comparison based on the meanings of the hundreds, tens, and ones. 2.1.1.e

Operations: Students will demonstrate the meaning of addition and subtraction with whole numbers and compute accurately. 2.1.2

1. Fluently (i.e. automatic recall based on understanding) add and subtract within 20. 2.1.2.a

ALGEBRA

Algebraic Relationships: Students will demonstrate, represent, and show relationships with expressions and equations. 2.2.1

1. Identify a group of objects from 0-20 as even or odd by counting by 2's or by showing even numbers as a sum of two equal parts. 2.2.1.a

Applications: Students will solve real-world problems involving addition and subtraction. 2.2.3

1. Solve real-world problems involving addition and subtraction within 100 in situations of addition and subtraction, including adding to, subtracting from, joining and separating, and comparing situations with unknowns in all positions using objects, models, drawings, verbal explanations, expressions and equations. 2.2.3.a
2. Create real-world problems to represent one- and two-step addition and subtraction within 100, with unknowns in all positions. 2.2.3.b

GEOMETRY

Characteristics: Students will identify and describe geometric characteristics and create two- and three-dimensional shapes. 2.3.1

1. Recognize and draw shapes having a specific number of angles, faces, or other attributes, including triangles, quadrilaterals, pentagons, and hexagons. 2.3.1.a
2. Partition a rectangle into rows and columns of equal sized squares. Count to find the total. 2.3.1.b
3. Divide circles and rectangles into two, three, or four equal parts. Describe the parts using the language of halves, thirds, fourths, half of, a third of, a fourth of. 2.3.1.c
4. Recognize that equal shares of identical wholes need not have the same shape. 2.3.1.d

Measurement: Students will perform and compare measurements and apply formulas. 2.3.3

1. Identify and use appropriate tools for measuring length (e.g., ruler, yardstick, meter stick, and measuring tape). 2.3.3.c
2. Measure the length of an object using two different length units and describe how the measurements relate to the size of the specific unit. 2.3.3.d
3. Measure and estimate lengths using inches, feet, centimeters, and meters. 2.3.3.e

4. Compare the difference in length of objects using inches and feet or centimeters and meters. 2.3.3.f
5. Use measurement lengths and addition and subtraction within 100 to solve real-world problems. 2.3.3.h
DATA
Representations: Students will create displays that represent data. 2.4.1
1. Create and represent a data set using pictographs and bar graphs to represent a data set with up to four categories. 2.4.1.a
2. Create and represent a data set by making a line plot. 2.4.1.b
Analysis & Applications: Students will analyze data to address the situation. 2.4.2
1. Interpret data using bar graphs with up to four categories. Solve simple comparison problems using information from the graphs. 2.4.2.a

Reference:
NEBRASKA MATHEMATICS STANDARDS (Rep.). (n.d.). Retrieved https://www.education.ne.gov/math/Math_Standards/Adopted_2015_Math_Standards/2015_Nebraska_College_and_Career_Standards_for_Mathematics_Vertical.pdf

Nebraska 3 Mathematics Curriculum 2011 - Summary for Green Infrastructure

NUMBER

Numeric Relationships: Students will demonstrate, represent, and show relationships among whole numbers and simple fractions within the base-ten number system. 3.1.1

1. Compare whole numbers through the hundred thousands and represent the comparisons using the symbols >, < or =. 3.1.1.b
2. Round a whole number to the tens or hundreds place, using place value understanding or a visual representation. 3.1.1.c
3. Show and identify equivalent fractions using visual representations including pictures, manipulatives, and number lines. 3.1.1.f

Operations: Students will demonstrate the meaning of multiplication and division with whole numbers and compute accurately. 3.1.2

1. Add and subtract within 1,000 with or without regrouping. 3.1.2.a
2. Select and apply the appropriate methods of computation when solving one- and two- step addition and subtraction problems with four-digit whole numbers through the thousands (e.g., visual representations, mental computation, paper-pencil). 3.1.2.b
3. Use drawings, words, arrays, symbols, repeated addition, equal groups, and number lines to explain the meaning of multiplication. 3.1.2.c
4. Multiply one digit whole numbers by multiples of 10 in the range of 10 to 90. 3.1.2.e
5. Use objects, drawings, arrays, words and symbols to explain the relationship between multiplication and division (e.g., if 3 x 4 = 12 then 12 ÷ 3 = 4). 3.1.2.f
6. Determine the reasonableness of whole number sums and differences in real-world problems using estimation, compatible numbers, mental computations, or other strategies. 3.1.2.h

ALGEBRA

Algebraic Relationships: Students will demonstrate, represent, and show relationships with expressions and equations. 3.2.1

1. Identify arithmetic patterns (including patterns in the addition or multiplication tables) using properties of operations. 3.2.1.a
2. Interpret a multiplication equation as equal groups (e.g., interpret 4 × 6 as the total number of objects in four groups of six objects each). Represent verbal statements of equal groups as multiplication equations. 3.2.1.b

Algebraic Processes: Student will apply the operational properties when multiplying & dividing. 3.2.2

1. Solve real-world problems involving addition and subtraction within 100 in situations of addition and subtraction, including adding to, subtracting from, joining and separating, and comparing situations with unknowns in all positions using objects, models, drawings, verbal explanations, expressions and equations. 2.2.3.a
2. Create real-world problems to represent one- and two-step addition and subtraction within 100, with unknowns in all positions. 2.2.3.b

Applications: Students will solve real-world problems involving equations with whole numbers. 3.2.3

1. Solve real-world problems involving two-step equations (involving two operations) involving whole numbers using addition and subtraction. 3.2.3.a
2. Write an equation (e.g., one operation, one variable) to represent real-world problems involving whole numbers. 3.2.3.b

GEOMETRY

Characteristics: Students will identify and describe geometric characteristics and create two- and three-dimensional shapes. MA 3.3.1

1. Identify the number of sides, angles, and vertices of two-dimensional shapes. 3.3.1.a
2. Sort quadrilaterals into categories (e.g., rhombuses, squares, and rectangles). 3.3.1.b
3. Draw lines to separate two-dimensional figures into equal areas, and express the area of each part as a unit fraction of the whole. 3.3.1.c

Measurement: Students will perform and compare measurements and apply formulas. 3.3.3

1. Find the perimeter of polygons given the side lengths, and find an unknown side length. 3.3.3.a
2. Identify and use the appropriate tools and units of measurement, both customary and metric, to solve real-world problems involving length, weight, mass, liquid volume, and capacity (within the same system and unit). 3.3.3.d
3. Estimate and measure length to the nearest half inch, quarter inch, and centimeter. 3.3.3.e
4. Use concrete and pictorial models to measure areas in square units by counting square units. 3.3.3.f
5. Find the area of a rectangle with whole-number side lengths by modeling with unit squares, and show that the area is the same as would be found by multiplying the side lengths. 3.3.3.g
6. Identify and draw rectangles with the same perimeter and different areas or with the same area and different perimeters. 3.3.3.h

DATA

Representations: Students will create displays that represent data. 3.4.1

1. Create scaled pictographs and scaled bar graphs to represent a data set—including data collected through observations, surveys, and experiments—with several categories. 3.4.1.a
2. Represent data using line plots where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. 3.4.1.b

Analysis & Applications: Students will analyze data to address the situation. 3.4.2

1. Solve problems and make simple statements about quantity differences (e.g., how many more and how many less) using information represented in pictographs and bar graphs. 3.4.2.a

Reference:
NEBRASKA MATHEMATICS STANDARDS (Rep.). (n.d.). Retrieved https://www.education.ne.gov/math/Math_Standards/Adopted_2015_Math_Standards/2015_Nebraska_College_and_Career_Standards_for_Mathematics_Vertical.pdf

NUMBER

Numeric Relationships: Students will demonstrate, represent, and show relationships among fractions and decimals within the base-ten number system. 4.1.1

1. Compare whole numbers up to one million and decimals through the hundredths place using >, <, and = symbols, and visual representations. 4.1.1.f
2. Round a multi-digit whole number to any given place. 4.1.1.g

Operations: Students will demonstrate the meaning of addition and subtraction of whole numbers and fractions and compute accurately. 4.1.2

1. Add and subtract multi-digit numbers using the standard algorithm. 4.1.2.a
2. Multiply a four-digit whole number by a one-digit whole number. 4.1.2.b
3. Multiply a two-digit whole number by a two-digit whole number using the standard algorithm. 4.1.2.c
4. Divide up to a four-digit whole number by a one-digit divisor with and without a remainder. 4.1.2.d
5. Use drawings, words, and symbols to explain the meaning of addition and subtraction of fractions with like denominators. 4.1.2.e
6. Add and subtract fractions and mixed numbers with like denominators. 4.1.2.f
7. Multiply a fraction by a whole number. 4.1.2.g
8. Determine the reasonableness of whole number products and quotients in real-world problems using estimation, compatible numbers, mental computations, or other strategies. 4.1.2.h

ALGEBRA

Algebraic Relationships: Students will demonstrate, represent, and show relationships with expressions and equations. 4.2.1

1. Create a simple algebraic expression or equation using a variable for an unknown number to represent a math process (e.g., 3 + n = 15, 81 ÷ n = 9). 4.2.1.a
2. Generate and analyze a number or shape pattern to follow a given rule, such as y = 3x + 5 is a rule to describe a relationship between two variables and can be used to find a second number when a first number is given. 4.2.1.b

Applications: Students will solve real-world problems involving equations with fractions. 4.2.3

1. Solve real-world problems involving multi-step equations comprised of whole numbers using the four operations, including interpreting remainders. 4.2.3.a
2. Solve real-world problems involving addition and subtraction of fractions and mixed numbers with like denominators. 4.2.3.b

GEOMETRY
Characteristics: Students will identify and describe geometric characteristics and create two- and three-dimensional shapes. MA 4.3.1
1. Recognize angles as geometric shapes that are formed where two rays share a common endpoint. 4.3.1.a
2. Classify an angle as acute, obtuse, or right. 4.3.1.b
3. Identify and draw points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines, and recognize them in two-dimensional figures. 4.3.1.c
4. Classify two-dimensional shapes based on the presence or absence of parallel and perpendicular lines, or the presence or absence of specific angles. 4.3.1.d
5. Identify right triangles. 4.3.1.e
6. Measure angles in whole number degrees using a protractor. 4.3.1.f
7. Sketch angles of a specified measure. 4.3.1.g
8. Recognize and draw lines of symmetry in two-dimensional shapes. 4.3.1.h
Measurement: Students will perform and compare measurements and apply formulas. 4.3.3
1. Apply perimeter and area formulas for rectangles. 4.3.3.a
2. Identify and use the appropriate tools, operations, and units of measurement, both customary and metric, to solve real-world problems involving time, length, weight, mass, capacity, and volume. 4.3.3.b
3. Generate simple conversions from a larger unit to a smaller unit within the customary and metric systems of measurement. 4.3.3.c
DATA
Representations: Students will create displays that represent data. 4.4.1
2. Represent data using line plots where the horizontal scale is marked off in appropriate units (e.g., whole numbers, halves, quarters, or eighths). 4.4.1.a
Analysis & Applications: Students will analyze data to address the situation. 4.4.2
1. Solve problems involving addition or subtraction of fractions using information presented in line plots. 4.4.2.a

Reference:
NEBRASKA MATHEMATICS STANDARDS (Rep.). (n.d.). Retrieved https://www.education.ne.gov/math/Math_Standards/Adopted_2015_Math_Standards/2015_Nebraska_College_and_Career_Standards_for_Mathematics_Vertical.pdf

Nebraska 5 Mathematics Curriculum 2011 - Summary for Green Infrastructure

NUMBER

Numeric Relationships: Students will demonstrate, represent, and show relationships among whole numbers, fractions, and decimals within the base-ten number system. 5.1.1

1. Compare whole numbers, fractions, mixed numbers, and decimals through the thousandths place and represent comparisons using symbols <,>, or =. 5.1.1.b
2. Round whole numbers and decimals to any given place. 5.1.1.c
3. Round whole numbers and decimals to any given place. 5.1.1.c

Operations: Students will demonstrate the meaning of operations and compute accurately with whole numbers, fractions, and decimals. 5.1.2

1. Multiply multi-digit whole numbers using the standard algorithm. 5.1.2.a
2. Add, subtract, multiply, and divide decimals to the hundredths using concrete models or drawings and strategies based on place value, properties of operations (i.e. Commutative, Associative, Distributive, Identity, Zero), and/or relationships between operations. 5.1.2.g

ALGEBRA

Applications: Students will solve real-world problems involving equations with fractions and mixed numbers. 5.2.3

1. Solve real-world problems involving addition and subtraction of fractions and mixed numbers with like and unlike denominators. 5.2.3.a

GEOMETRY

Characteristics: Students will identify and describe geometric characteristics and create two- and three-dimensional shapes. 5.3.1

1. Identify three-dimensional figures including cubes, cones, pyramids, prisms, spheres, and cylinders. 5.3.1.a
2. Identify faces, edges, and vertices of rectangular prisms. 5.3.1.b
3. Justify the classification of two-dimensional figures based on their properties. 5.3.1.c

Coordinate Geometry: Students will determine location, orientation, and relationships on the coordinate plane. 5.3.2

1. Identify the origin, x axis, and y axis of the coordinate plane. 5.3.2.a
2. Graph and name points in the first quadrant of the coordinate plane using ordered pairs of whole numbers. 5.3.2.b

Measurement: Students will perform and compare measurements and apply formulas. 5.3.3

1. Recognize that solid figures have volume that is measured in cubic units. 5.3.3.a
2. Use concrete models to measure the volume of rectangular prisms in cubic units by counting cubic units. 5.3.3.b
3. Generate conversions within the customary and metric systems of measurement. 5.3.3.c