

Unit of Inquiry – Third and Fourth Grade

Transdisciplinary Theme:

How we organize ourselves

An inquiry into the interconnectedness of human-made systems and communities; the structure and function of organizations; societal decision-making; economic activities and their impact on humankind and the environment.

Central Idea:

People organize themselves by creating structures and practices that enable sequence and flow.

Lines of Inquiry:

- There are many types of structures - figurative and literal.
- Structures can be weak or strong depending on their foundation.
- Planning and reflecting are important parts of a process.

Key concepts:

- Change: How is it changing?
- Function: How does it work?

Content & Standards Covered

Math

Identify various attributes of different structures, uses for various structures and cultural symbolism in structures around the world. Students will understand how materials are used to create a structure as well as how a community works together to plan, create, build, and complete a structure.

Students will be able to:

- CCSS.MATH.CONTENT.3.NF.A.2.A
Represent a fraction $\frac{1}{b}$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $\frac{1}{b}$ and that the endpoint of the part based at 0 locates the number $\frac{1}{b}$ on the number line.
- CCSS.MATH.CONTENT.3.NF.A.2.B
Represent a fraction $\frac{a}{b}$ on a number line diagram by marking off a lengths $\frac{1}{b}$ from 0. Recognize that the resulting interval has size $\frac{a}{b}$ and that its endpoint locates the number $\frac{a}{b}$ on the number line.
- CCSS.MATH.CONTENT.3.NF.A.3
Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
- CCSS.MATH.CONTENT.3.NF.A.3.A

Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

- CCSS.MATH.CONTENT.3.NF.A.3.B
Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.
- CCSS.MATH.CONTENT.3.NF.A.3.C
Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form $3 = 3/1$; recognize that $6/1 = 6$; locate $4/4$ and 1 at the same point of a number line diagram.
- CCSS.MATH.CONTENT.3.NF.A.3.D
Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.
Extend understanding of fraction equivalence and ordering.
- CCSS.MATH.CONTENT.4.NF.A.1
Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
- CCSS.MATH.CONTENT.4.NF.A.2
Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.
Build fractions from unit fractions.
- CCSS.MATH.CONTENT.4.NF.B.3
Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
- CCSS.MATH.CONTENT.4.NF.B.3.A
Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- CCSS.MATH.CONTENT.4.NF.B.3.B
Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: $3/8 = 1/8 + 1/8 + 1/8$; $3/8 = 1/8 + 2/8$; $2 \frac{1}{8} = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8$.
- CCSS.MATH.CONTENT.4.NF.B.3.C
Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
- CCSS.MATH.CONTENT.4.NF.B.3.D

Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

- CCSS.MATH.CONTENT.4.NF.B.4
Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
- CCSS.MATH.CONTENT.4.NF.B.4.A
Understand a fraction a/b as a multiple of $1/b$. For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.
- CCSS.MATH.CONTENT.4.NF.B.4.B
Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)
- CCSS.MATH.CONTENT.4.NF.B.4.C
Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?
Understand decimal notation for fractions, and compare decimal fractions.
- CCSS.MATH.CONTENT.4.NF.C.5
Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.2 For example, express $3/10$ as $30/100$, and add $3/10 + 4/100 = 34/100$.
- CCSS.MATH.CONTENT.4.NF.C.6
Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as $62/100$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
- CCSS.MATH.CONTENT.4.NF.C.7
Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.

Reading/Language Arts

Students will explore the Writing Process and each step to a complete product. We will be exploring how authors of series develop their character through more than one book and relating this to character development as well as writing as a process. Students will explore the different characteristics or 'parts' of a text including headings, table of contents, illustrations, glossary and examine their uses and how they impact our comprehension of the text.

Students will be able to:

- 3.RL.3 Describe characters in a story (e.g., their traits, motivations, or feelings) and explain how their actions contribute to the sequence of events.
- 3.RL.9 Compare and contrast the themes, settings, and plots of stories written by the same author about the same or similar characters (e.g., in books from a series).
- 4.RL.5 Explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g., verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) when writing or speaking about a text.
- 4.RL.7 Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text.
- 3.RI.5 Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.
- 3.RI.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).
- 4.RI.7 Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
- 4.RI.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
- 4.RF.4.b Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.
- 4.W.2.a Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
- 4.W.2.b Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
- 4.W.2.c Link ideas within categories of information using words and phrases (e.g., another, for example, also, because).
- 4.W.2.d Use precise language and domain-specific vocabulary to inform about or explain the topic.
- 4.W.2.e Provide a concluding statement or section related to the information or explanation presented.
- 4.W.9.b Apply grade 4 Reading standards to informational texts (e.g.,, “Explain how an author uses reasons and evidence to support particular points in a text”).
- 4.W.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
- 4.SL.4 Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Science

Students explore the concepts of energy and change, waves, and energy transfer in the Energy Module. They experience electricity and magnetism as related effects and learn useful applications of electromagnetism in everyday life. They will also consider energy transfer, force, and motion in different systems.

Students will be able to:

Learn through Hands on Investigations Including-

- Investigation 1- Energy and Circuits: Students investigate electric current and circuits. They work with a variety of components and explore conductors and insulators. Students explore series and parallel circuits and compare the functioning of the components in each circuit. They formulate and justify their predictions, based on their observations of electricity transferring energy to produce light and motion.
- Investigation 2- The Force of Magnetism: Students investigate the properties of magnets and their interaction with materials and each other. They conduct an investigation to determine if like or opposite poles of a magnet attract. They construct a simple compass and use it to detect magnetic effects. They also discover that magnetism can be induced in a piece of iron. To investigate the strength of the force of attraction between two magnets, they graph data to look for patterns of interaction. Students go outdoors to find objects in the environment that are attracted to magnets.

Social Studies

Students will explore structures from different cultures. Students will understand that culture impacts the types of structures that we build. Other impacts on structures found all over the world are geographically influenced, and based on natural resources.

Students will be able to:

- Identify various attributes of different structures
- Explore uses for various structures
- Identify cultural symbolism in structures around the world or structures that are associated with specific geographical areas.
- Understand how materials are use to create a structure
- Explore how a community works together to plan, create, build, and complete a structure within their community.

Art

Students will be able to:

- Use their knowledge and experiences to make informed interpretations of artworks
- Use relevant and insightful questions to extend their understanding
- Provide constructive criticism when responding to artwork

- Use a range of strategies to solve problems during the creative process
- Explore how Artists organize their work through the study of geometric art, action art, and abstract art
- Understand that reflecting and planning are an integral part of the creative process
- Maintain a creative journal inputting reflections and ideas
- Create an original work of art using a previously researched style

Quran & Islamic Studies

Students will be able to:

- List the steps of Salah, by name, in order by creating visual aides to help remember them.
- Practice their Salah by determining the organization of the prayer positions in order.
- Memorize the corresponding duaa for the steps by practicing with teacher.
- Discuss the importance of structures by brainstorming how structures have influenced our lives.
- Compare and contrast figurative and literal structures by using a venn diagram.
- Investigate a figurative structure in Islam by exploring the six pillars of Iman.
- Memorize the “Iman-e-Mufassil” by practicing with the teacher.
- Memorize the ninety-nine attributes of Allah (swt) in the form of a nasheed.
- Distinguish between humans and angels by using a graphic organizer describing the qualities of both creations.
- Identify the roles of certain angels: Jibreel, Mikaeel, Israfeel, Angel of Death, Malik, and Ridwan.
- Identify which books were given to which Prophet by analyzing the Prophets’ stories.
- Explain the difference between Prophet and Messenger by participating in a class t-chart.
- Justify the belief in fate by examining the concept of good and bad situations in Islam.
- Determine the signs of the Day of Judgment by researching various Ahadeeth.
- Create literal structures which will represent the figurative structure of the six pillars of Iman.

Arabic

Students will work on teams to compose a story. Each team will choose one of the Great Muslim Inventors from the Arab world that has impacted their lives.

Students will be able to:

- explain and discuss their own writing with peers and adults
- organize thoughts and feelings before speaking
- identify and explain the basic structure of a story - beginning, middle and end; may use storyboards or story maps to communicate elements
- realize that there is a difference between fiction and non-fiction and use books for particular purposes, with teacher guidance
- recognize and use the different parts of a book, for example, title page, contents, index

- organize ideas in a logical sequence
- reread, edit and revise to improve their own writing, for example, content, language, organization
- respond to the writing of others sensitively
- realize that writers ask questions of themselves and identify ways to improve their writing, for example, "Is this what I meant to say?", "Is it interesting/relevant?"
- work cooperatively with a partner to discuss and improve each other's work, taking the roles of authors and editors
- describe personal reactions to visual messages; reflect on why others may perceive the images differently
- gain a lot of new vocabulary.