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Farm Tour – 3rd Grade

TEKS Overview:
English Language Arts and Reading: 1A&D, 2A-B, 3C, 4A-C, 13A-B
Math: 11A, 14A-B, D, 16B **Science**: 1A-B, 2A-D, 3A, 8 A-D, 9A-B, 10A-B
Social Studies: 4B-C, 17A, 18A-B **Health**: 1C-D, 11B **PE**: 4A, C

Objectives:

- Students will see how plants and animals live and learn what they need to survive
- Students will learn where their food comes from
- Students will understand that hunger is an important issue
- Students will use their five senses to experience a working farm

Introduction

TEKS: English Lang. Arts: 1A,D, 2A-B, 3C, 4A-C, 13A-B Science: 1A-B, 2A-D, 10A

- Students gather in the Education Building and sit on the floor. Leaders welcome them to WHRI, introduce themselves, and explain the purpose of WHRI. *[Teachers and students should already be familiar with WHRI purpose and mission by way of the pre-tour information sheet – if for some reason they did not receive or use the information you will need to spend more time with introduction.]*
  - Ask students what they know about farms. What are the types of things that farmers do and what do they expect to see on a farm?
    - Dialogue briefly about what farmers do and what they will see on the WHRI farm. Mention: growing food/vegetables, taking care of animals, etc.
    - Explain that the students will see many of the "normal farm things" at WHRI but they will also see many things that are different because we are more than just a farm, we are also a kind of school . . . .
    - Use the analogy of a school, showing that the farm has teachers and students just like they do except at WHRI we are learning to take care of the land, gardens, and animals so that we can help people all over the world feed themselves and their

families. Here at WHRI we are interested in plants and animals because we want to be able to teach hungry people how to use them to feed their families.

- Take one or two questions if there is time but assure the students that you will be explaining these things more while they walk around the farm.
- Tell students some of the things that they will be able to see and do today at the farm. [*Be sure to emphasize those things that will create anticipation and excitement in the students, i.e. baby animals, tasting vegetables, planting seeds, etc)*

- Leader establishes the rules or *agreements* for the students' visit to the farm. Have students repeat after each. (*Show poster).
  - I agree to stay with the group.
  - I agree to be gentle and quiet with the animals.
  - I agree to walk and NOT run.
  - I agree to use my quiet voice and NOT shout.
  - I agree to raise my hand if I have a question or I need to use the bathroom.
  - I agree to have fun.

Fair Trade

- Explain the concept of fair trade and its importance:
  - Most of the day-to-day work that we do here at the farm has to do with the production of food and the care of livestock so that we can work with other people around the world to help them feed themselves, their families and their communities. However, when we talk about people being hungry, and especially about those who are trapped in extreme hunger, often these people need help with more than just getting food on their table. They need help getting access to the kinds of things we often take for granted but which are often simply not available to people in developing countries. Things like: the chance to go to school, to get a job, or to go to the doctor
  - Finding solutions to these problems is also part of the answer to helping people emerge out of hunger and poverty for the long run – not just for a few meals! One way that we encourage ourselves and others to help with these bigger picture issues is to purchase what are called "fair trade goods."
    - We all know that many of the things that we buy come from different places all over the world. You may be wearing a shirt that was made in Indonesia, or shoes that were made in Chile or a watch that was made in Vietnam. The people who make these things are just like you and I, and they have the same needs, dreams and hopes for their family that we have.
    - Unfortunately many of the things that we buy are made by companies who don't pay their workers enough money to feed their families. Many are made in factories and workshops that are very dangerous to work in because the owners do not make them safe. This often means that they are doing things that are very bad for the environment as well. Some of them are even made by boys and girls just like you who aren't allowed to go to school but instead work long, hard, often dangerous jobs even though they are so young.
    - We don't think these are good situations for people to live and work in, so we don't want to buy things that are made like this. If these companies get our money it will

encourage them to keep making things in a way that takes advantage of the people who are working for them. Sometimes it is hard to know what to buy, but one way that you can know that you are not buying products that hurt people is to buy products that are labeled "fair trade." If you see the words "fair trade" on something it is a promise that the people who made that product were paid the right amount of money to feed their families, that they were not in danger of being hurt while they were making things and that children were not forced to do the work.

- You can ask your parents what they know about the things that they buy and that you heard about fair trade today.

Landscape/Native Plants

TEKS: English Lang. Arts: 1A,D, 2A-B, 3C, 4A-C, 13A-B Science 2A-D, 10A

- Begin tour at the front of the Education Building, focusing on the landscape.
  - **Native Plants:** Explain to students that most of the plants used in this landscape are native to Texas, which means that they are adapted to the hot dry weather and don't require as much water to stay alive. This is one way that we are working to conserve water on our farm – by encouraging the growth of plants that naturally belong on our farm-not trying to bring in plants that are not adapted to living in Texas.

What do plants need to survive?
1. Light
2. Air
3. Water
4. Soil

  - **Living vs. non-living**: Ask students to point out living and non-living things in the landscape.
    - Ask students how they know if something is living or non-living.
    - Can it eat, drink, breath, grow or move?

Scientifically a living thing is anything that is now, or ever has been alive. Living things grow, reproduce and need food, air and water.

- **Plant Types, Parts and Variety:** Walk through the landscape showing students several plants to touch. Point out the different parts of the plants and then ask the students to name the parts on other plants as you make your way through the landscape. Emphasize the diversity and variety in the plants found in the landscape, reminding them that these plants are all native to Texas and of their ability to thrive in our area.

Basic Parts of a Plant:
1. Roots
2. Stems
3. Leaves
4. Flowers
5. Fruits
6. Seeds

- Catmint - not native to Texas, but to the Mediterranean which has a similar climate to this part of Texas, names so because cats are attracted to the smell of the plant
- Roses -
- Grasses -
- Rosemary – not native to Texas, but to the Mediterranean which has a similar climate to this part of Texas so it does very well
- Vines on the trellis, if growing
- Buffalo grass – a native Texas grass, point out the numerous dense stolons by which the grass spreads
- Mexican plum – beautiful white flowers, small red fruit that birds really like, very hardy so it is often used for root stock in this area.
- Dessert willow – not related to the weeping willows but the leaves look very similar, hummingbirds really like their flowers
- *Hoja santa*, (if growing) – "sacred leaf," also known as the "root beer plant" because of its distinctive smell, leaves are used to wrap smoked fish in.

- **Sensory Exploration:** Ask students to name the five senses; point to eyes, ears, etc. to prompt them -guide the students to explore the landscape using their five senses.

  - **Sight**: Ask which plant looks the prettiest to them, point out to the students ways in which the look of the plants will change through the seasons of the year; which one would they build a nest in if they were a bird, which one would they like to eat if they were a goat, etc. Have them describe the differences between the way the buffalo grass and the catmint look in the classroom area of the landscape – if age appropriate help them understand why those differences are important for each plant. Have each student examine a leaf of catmint up close – try dividing it into equal parts.

  - **Smell**: Ask the students if they can smell any of the plants. If there is time allow the students to walk through the landscape to find which plants have the strongest smell. Encourage them not to pick any flowers. Show students how crushing leaves or petals make the small stronger. Ask the students which plant smells the best. Good plants to focus on are any flowers blooming at the time, catmint, rosemary, hoja santa (crush for more distinctive smell).

  - **Sound**: Ask the students if they can hear any of the plants. Explain that while very few plants make noises all by themselves that we can hear many plants make noises when they are moved by the wind, by animals or by people. Have the students pull the variegated grass through their hands until it squeaks or brush it until it rustles.

- **Touch**: Guide the students to explore textures of soft plants, prickly plants, rough plants and smooth plants. Compare the way the catmint, rosemary, grasses and trees feel. Show them the thorns on the roses and explain their importance for the rose bushes.

- **Taste**: Ask the students if any of the plants in the landscape look like they would taste good. Explain that while we don't grow vegetables in our landscape that there are several plants in the landscape that can be used in cooking. Point out the catmint, the rosemary, the garlic chives and *hoja santa*.

- Ask if there are any last questions before leaving the landscape area.

Nicaragua House

TEKS: English Lang. Arts: 1A,D, 2A-B, 3C, 4A-C, 13A-B Science 8A-D
Social Studies 4B, 17A, 18A-B

- Ask students if they know where the country of Nicaragua is? *[Depending on the age of the students – here is an easy way to tell them where Nicaragua is located: have them all turn to face Houston – roughly southeast, and tell them if they walked to Houston, almost 200 miles, and then just kept walking through Houston and across the Gulf of Mexico for another 1300 miles they would eventually end up in Nicaragua very wet and very tired.]*

  - Explain that people in Nicaragua just like people all over the world have the same basic needs that they have. Ask the students if they can think of what those needs might be.
    - Food
    - Water
    - Shelter
    - Clothing

- Explain that this is an example of the type of house you might find in the country of Nicaragua. Ask the students if they have ever heard of Habitat for Humanity – an organization that helps build houses all over the world for people who do not have homes of their own, including in Waco, TX and in the country of Nicaragua – this is an example of the type of house that Habitat for Humanity builds in Nicaragua.

  - Ask the students why they think we have a house like this.
    - Explain that we want to learn and experience how people live in other parts of the world.
    - Remind them of our mission to fight hunger and that an important part of that mission is learning how people in

Habitat for Humanity has built over 3,500 homes in Nicaragua and 30,000+ in the United States!

other cultures and countries live. This helps us to better understand them, it helps us to learn things from them and it helps us better understand how we might be able to help them.

- Allow the students to step inside the house and encourage them to look around. *[If people are currently living in the Nic House make sure the students stay in the entrance to the house and are respectful of the residents' belongings.]*
  - Ask the students to look around and name some ways that this house is just like the house where they live (Ex: roof, door, floor, a stove, a bed, etc)
  - Ask the students to look around and name some of the ways that this house is different from the places they live. (Ex: no electricity, phone, TV, bathroom, kitchen, air conditioning, or glass in windows, only one room, etc)
    - Ask the students if they think that this house meets the needs that people have for shelter - even if this house is different from where they live and even if it does not have some of the things that we think that we need in our houses.
- Outdoor Kitchen:
  - Ask the students if they know what this building is used for
  - Explain how food is prepared in a kitchen like this and some of the challenges involved in doing so.
- Rainwater catchments/Shower/Water Conservation
  - Take the students to the back of the house and show them the shower there. Ask them what they think this area is used for. Ask them where they think the water comes from.

- Almost 1/3 of the world does not have access to safe, clean water.
- In the U.S. we use an average of 100 gallons of water a day!
- 2/3 of the world gets by on only 13 gallons a day or less.

Education Garden

TEKS: English Lang. Arts: 1A,D, 2A-B, 3C, 4A-C, 13A-B Mathematics: 14A-B Science: 1A-B, 2B-D, 3A, 8A, C-D, 10A Social Studies: 4B-C Health Ed 1C-D, 11B Physical Ed 4C

- The raised beds in the Education Garden area are a great place to let the students interact more closely with plant and vegetable production.
  - Herbs:
    - Without telling them what it is give each student a piece of mint leaf and ask them what it smells like.
    - Point out other herbs that the students can touch and or smell (will vary as to season)
      1. Basil
      2. Rosemary
      3. Lambs Ear
      4. Lemon Balm

- Show plants in various stages of growth.
  - Bring along some seeds of plants that are growing in the garden and show them to the students.
  - Point out plants that are at different stages of growth, especially those that are now producing fruit.
  - Let students harvest something from the garden, if possible. (Students must wash their hands and the vegetables before eating.)

- Roof-top gardening:
  - Explain to the students that many of the people in the world that are in danger of being hungry live in cities and therefore they do not have land where they can grow food. However, there are many creative ways that you can grow fresh vegetables for your family to eat even if you do not have a place to plant them in the ground. Many of these creative ways involve recycling materials that we might normally think of as trash but which can be transformed into small gardens!
  - Explain to the students that this is a simulated rooftop, similar to one you might find all over the world. Ask them to name some of the things that we are using to grow food in on the rooftop:
    - Tires
    - Swimming pool
    - Used bags
  - Benefits of roof-top gardening:
    - Makes use of existing space/materials – you do not have to spend money renting land to grow food or buying materials.
    - Out of the reach of animals that might eat the plants
    - Plenty of sunlight
    - Easy to manage – no need to travel far from home to tend crops

Vegetable Garden

TEKS: English Lang. Arts: 1A,D, 2A-B, 3C, 4A-C, 13A-B Mathematics: 14A-B Science: 1A-B, 2B-D, 3A, 8A, C-D, 10A Social Studies: 4B-C Health Ed 1C-D, 11B Physical Ed 4C

- Point out the vegetable rows. Help students identify various vegetables that they have eaten before and those that they have never eaten.
  - Ask students to name as many vegetables as they can think of. Ask students what their favorite vegetable is.
  - Ask what role gardens play on a farm. What would happen if we didn't have gardens? Emphasize the connection between gardens just like this one and the food they eat at home or buy in the grocery store.

- Let students harvest something from the garden, if possible. (Students must wash their hands and the vegetables before eating.)
  - Ask what plants need to grow.

- Ask what our bodies need to grow. (Some of the same things as plants!)
- Ask if vegetables are good for their bodies. Why?

What do plants need to survive?
1. Light
2. Air
3. Water
4. Soil

- Ask how farmers can take care of their plants.
  - Water/Irrigate
  - Mulch
  - Ask students to describe the weather and conclude what kind of weather is good for the plants/farmers.
  - Ask a student to evaluate the temperature using a simple air thermometer. (Do this again, at the end of the tour, inside the education building.)

- Show plants in various stages of growth.
  - Bring along some seeds of plants that are growing in the garden and show them to the students.
  - Point out plants that are at different stages of growth, especially those that are now producing fruit.

Rabbits/Vermicompost

TEKS: English Lang. Arts 1A&D, 2A-B, 3C, 4A-C, 13A-B Mathematics: 14A-B, 16B
Science 1A-B, 2C-D, 3A, 8A-D, 9A-B, 10B

[Tour leaders should be aware that depending upon the age/maturity of the students some groups will be more sensitive to the idea of rabbits as a food source as opposed to the pets that they usually are in American culture, so tread gently especially with younger students.]

- As you approach the rabbit cages take the opportunity to remind the students to the rules you all agreed to – especially those regarding being very quiet around the animals, and the need to be especially quiet around the rabbits, as they frighten very easily.
  - Have the students gather on one side of the cages, with further reminders not to touch the cages/rabbits while you remove one of the rabbits from its cage to hold while you talk to the students.
  - Ask what they know already about rabbits.
  - Ask what role the rabbits play in their habitat. Do they affect any other organisms?

Female rabbits are does, males are bucks, baby rabbits are kits or kittens and a group of young rabbits is called a kindle. Does usually have litters of 6 to 10 kits at a time with a gestation period of 28-31 days.

- As you hold the rabbit point out characteristics of the rabbit:
  - Ears – *[importance of]*
  - Teeth – *[connection to diet]*
  - Nose – *[importance of for survival]*

- Have the students form a line and allow them to pet the rabbit, 1 at a time.

- Hold the rabbit's head hidden in your elbow to keep it calm.

- Ask the students why they think we have rabbits on our farm, why would they be important for hungry people around the world – what do rabbits give us?

  - Food
    - If age appropriate, mention that with only two female rabbits and one male rabbit over the course of one year a family can have the same amount of meat that they would get from a cow. But there are decisive benefits to being able to acquire meat from rabbits as opposed to meat from cows – ask if they can think what that might be. In developing contexts one of the biggest benefits is that a rabbit can be eaten/prepared in one meal/day and thus there is no need for refrigeration (a scarce resource in many developing contexts) or preservation as would be needed if you butchered a cow.
  - Fertilizer

- Fertilizer/Vermicompost
  - Many people around the world depend on their gardens for the food they eat. They don't have the money (or the store!) to buy what they need. So growing vegetables and fruits are very important for the health and survival of their family. Fertilizers help plants grow by providing them with nutrients that they need to grow bigger and faster. Many fertilizers are very expensive and they are made from materials that might not be healthy for the soil or for people, so many people can't and don't use these chemical fertilizers. However there are fertilizers that they can use that are free and safe – and rabbits help these farmers produce these fertilizers.
- Scrape away the top layer and take a shovel full of worms and bedding from the vermicompost.
  - Ask the students what they see.
  - Explain to the students that the type of fertilizer that the rabbits help us make is called vermicompost – which is just a fancy way of saying that the fertilizer is made by worms. Ask the students if they know how worms could help us make fertilizer?
    - Explain that rabbits eat grasses, weeds, hay and even fruit and vegetable scraps (teach them the word 'herbivore') and then turn their food into poop/manure. The worms eat the rabbit droppings and the leaves which we mix in for them and then turn their food into worm poop or *worm castings* – these worm castings are in fact the beginnings of little pieces of soil and all over the world, under the ground worms are doing the very same thing all the time. The worm castings help make great, nutrient rich soil and that helps our plants grow – remember what we said about rabbit manure, it is very high in nutrient content because of the way the rabbits digest their food, and thus some of those nutrients make their way back into the soil with the help of the worms! Rabbits and worms take things that we think of as waste (scraps and droppings) and turn them into something very useful for helping us to grow food.

Red wigglers are the worms most commonly found in vermicompost because they thrive in rotting vegetation and manure, so much so that they are rarely found in soil.

- Why is rabbit manure such a great source of nutrients for fertilizer? Unlike most animals that eat grasses, rabbits are not ruminants – meaning that they don't have stomachs that are specially designed to break down the very hard to digest plant fibers. Thus when rabbits eat grasses some of the plant passes through the rabbits system undigested and thus, still containing many of the nutrients. Some of the rabbits manure is thus undigested grass and the rabbit will eat this again, attempting to get the remaining nutrient content – animals that do this are called coprophagic.

  Rather than chewing their cuds rabbits pass two types of feces: a hard fecal pellet and a soft cecal pellet which they re-ingest to extract nutrients.
- Show students the finished vermicompost pointing out that it looks, feels and smells like dirt – because that is what it is!
- Ask what students do at home with fruit and vegetable scraps. Remind them about recycling with the rabbits and tell them about the process of composting. Ask what is different about the soil with worm castings and soil without them.

▪ Allow students to hold a worm in their hands.

- Ask what the worm feels like.
- Worm secretions – the "slime" that the worm leaves on your hand is a combination of proteins and nitrogen that serves several purposes: it keeps the worm from drying out and enables it to tunnel through the dirt; and along the way it helps collect/aggregate the soil and casting particles that make up our soil.
- Ask if the students can tell which end is the head and which is the tail. The head will be the end that is most actively moving around – the worms head/anterior is very sensitive to light and it is this sensitivity towards light that is the source of the worms navigation.
- Explain that worms are hatched from tiny white cocoons – point these out if any are in the vermicompost.
- Explain that in the process of making all of this great fertilizer for us that worms will eat at least their weight in food every day! Ask how much food they would have to eat to do the same thing!

o Have students place their worms on their 'measurement bookmarks' and mark the length. (leader should bring the bookmarks and some crayons in his or her pocket.)

▪ Ask students to explain/share about their measurements.

▪ Ask students to sort their worms from shortest to longest.

o Ask students to make a big circle with their fingers. Review the nutrient cycle they have learned about: plants-animals-droppings-worms-soil-plants. *Each part depends on each other.

Chickens/Eggs

TEKS: English Lang. Arts 1A&D, 2A-B, 3C, 4A-C, 13A-B, Science 1A-B, 2C-D, 3A, 8A-D, 9A-B, 10B

- Guide the students to make observations about the chickens and their environment.
  - Ask the students how many different types/colors of chickens they see.
    - Explain that just like with cats and dogs there are many different breeds of chickens and that they have different characteristics.
  - Ask what they notice about the chickens. What are the chickens doing to the ground? Why?
  - Ask which are the female chickens and which are the male.
    - Why does the rooster crow? Protection (Which is why he is probably crowing right now!). Wakes the chickens up in the morning and calls them back to their home at night for safety.
  - If possible take a chicken out of the laying box. Hold it firmly and allow students to feel its feathers and feet.
    - Point out the parts of the chicken (head, feet, wings, claws, beak) and ask students why each part is important/what it is used for.
  - Ask how chickens help us here on the farm – what do chickens give us?
    - Eggs
    - Help us control bugs and weeds by scratching around and eating them
    - They also help us fertilize our fields by leaving behind all that nutritious poop/manure.
    - Meat
  - Explain to the students that for all these reasons chickens are very important to us here at the farm and for the very same reasons they can be important to hungry people all over the world, so by learning all about how to take care of our chickens we can help other people do the same thing.
  - Let's talk about eggs!
  - Have students observe the eggs- If possible, show students where eggs are collected.
    - Ask if they notice any differences in the eggs.
      - If possible, show students differences in egg sizes and colors and explain that different breeds of chickens lay different color eggs
      - Ask the students if they can guess how often a chicken can lay an egg?
        - Most healthy chickens can lay one egg every 26-27 hours.
      - Ask the students if they know how long it takes an egg to hatch into a baby chicken?
        - By sitting on the eggs the hens are able to keep the temperature of the eggs at almost 100 degrees – hens will often take turns sitting on the

Chicken breeds at WHRI:
- Ameraucana
- Barred Rock
- Rhode Island Red
- Leghorn
- Australorp

The crest on a chicken's head is called a comb and the flaps of skin underneath the beak are called waddles, both help the chicken to cool off on hot days.

eggs so that everyone gets a chance to eat. They will turn the eggs several times during the day to keep them warm all over and after 21 days the eggs should be hatching.

- Ask if there are any last questions before leaving the chicken area.

Dairy/Goats and Cows

TEKS: English Lang. Arts: 1A,D, 2A-B, 3C, 4A-C, 13A-B Science: 1A-B, 2C-D, 8A-D, 9A-B, 10B

(It may be helpful to have another person waiting nearby with a goat already on a lead for students to view, or to leave one goat in the dairy barn so that younger students may see the goats up close.)

Female goats are called does, male goats are bucks (castrated males are wethers), and baby goats are kids.

- Goats: Hold one of the goats by the collar or hold a small kid in your arms while you talk to the students.

- Ask students what goats need to stay alive. (food, water, minimal shelter)
- What do goats like to eat?
  - Grasses
  - Woody shrub and tree leaves
  - Ok, just about any plant
- Show the students the goats teeth:
  - When fully grown goats will have eight bottom teeth and no upper front teeth, but a dental pad instead – against which they will mash the grass and leaves they eat to begin the digestion process.
- Ask how goats help us - what do goats give us.
  - Milk
    - Ask the students if they think a goat or a cow produces more milk?
    - Explain how fresh milk can help small children who are not very healthy grow much faster and stay healthy, so we want to learn how to help families raise their own goats and give milk to their children.
  - Meat
- Ask what we can make out of milk.
  - Cheese, yogurt, butter, ice cream, etc.
- If possible, show students how we milk the goats or describe the process to them by walking them through the dairy.

WHRI goat breeds:
- Alpine
- Saanen
- Nubian

Contrary to popular belief goats will not eat anything and everything, including metal cans. They have a very wide diet which allows them to eat a little bit of just about any plant. It is their extremely curious nature and their natural habit of using their upper lip and tongue, much like a dog, to explore anything new or unfamiliar that gives rise to this myth.

TEKS Referenced:

English Language Arts and Reading, Grade 3.

(1) Listening/speaking/purposes. The student listens attentively and engages actively in various oral language experiences. The student is expected to:

(A) determine the purpose(s) for listening such as to get information, to solve problems, and to enjoy and appreciate (K-3);

(D) listen critically to interpret and evaluate (K-3);

(2) Listening/speaking/culture. The student listens and speaks to gain knowledge of his/her own culture, the culture of others, and the common elements of cultures. The student is expected to:

(A) connect experiences and ideas with those of others through speaking and listening (K-3); and

(B) compare language and oral traditions (family stories) that reflect customs, regions, and cultures (K-3).

(3) Listening/speaking/audiences/oral grammar. The student speaks appropriately to different audiences for different purposes and occasions. The student is expected to:

(C) ask and answer relevant questions and make contributions in small or large group discussions (K-3);

(4) Listening/speaking/communication. The student communicates clearly by putting thoughts and feelings into spoken words. The student is expected to:

(A) use vocabulary to describe clearly ideas, feelings, and experiences (K-3);

(C) retell a spoken message by summarizing or clarifying (K-3).

(13) Reading/culture. The student reads to increase knowledge of his/her own culture, the culture of others, and the common elements of culture. The student is expected to:

(A) connect his/her own experiences with the life experiences, language, customs, and culture of others (K-3); and

(B) compare experiences of characters across cultures (K-3).

Mathematics, Grade 3.

(3.11) **Measurement.** The student directly compares the attributes of length, area, weight/mass, and capacity, and uses comparative language to solve problems and answer questions. The student selects and uses standard units to describe length, area, capacity/volume, and weight/mass.

The student is expected to:

(A) use linear measurement tools to estimate and measure lengths using standard units;

(3.14) **Underlying processes and mathematical tools.** The student applies Grade 3 mathematics to solve problems connected to everyday experiences and activities in and outside of school.

The student is expected to:

(A) identify the mathematics in everyday situations;

(B) solve problems that incorporate understanding the problem, making a plan, carrying out the plan, and evaluating the solution for reasonableness;

(3.16) **Underlying processes and mathematical tools.** The student uses logical reasoning.

The student is expected to:

(B) justify why an answer is reasonable and explain the solution process.

Science, Grade 3.

(1) Scientific processes. The student conducts field and laboratory investigations following home and school safety procedures and environmentally appropriate and ethical practices. The student is expected to:

(A) demonstrate safe practices during field and laboratory investigations; and

(B) make wise choices in the use and conservation of resources and the disposal or recycling of materials.

(2) Scientific processes. The student uses scientific inquiry methods during field and laboratory investigations. The student is expected to:

(A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology;

(B) collect information by observing and measuring;

(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence;

(D) communicate valid conclusions;

(3) Scientific processes. The student knows that information, critical thinking, and scientific problem solving are used in making decisions. The student is expected to:

(A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information;

(8) Science concepts. The student knows that living organisms need food, water, light, air, a way to dispose of waste, and an environment in which to live. The student is expected to:

(A) observe and describe the habitats of organisms within an ecosystem;

(B) observe and identify organisms with similar needs that compete with one another for resources such as oxygen, water, food, or space;

(C) describe environmental changes in which some organisms would thrive, become ill, or perish; and

(D) describe how living organisms modify their physical environment to meet their needs such as beavers building a dam or humans building a home.

(9) Science concepts. The student knows that species have different adaptations that help them survive and reproduce in their environment. The student is expected to:

(A) observe and identify characteristics among species that allow each to survive and reproduce; and

(B) analyze how adaptive characteristics help individuals within a species to survive and reproduce.

(10) Science concepts. The student knows that many likenesses between offspring and parents are inherited from the parents. The student is expected to:

(A) identify some inherited traits of plants; and

(B) identify some inherited traits of animals.

Social Studies, Grade 3.

(4) Geography. The student understands how humans adapt to variations in the physical environment. The student is expected to:

(B) compare how people in different communities adapt to or modify the physical environment;

(C) describe the effects of physical and human processes in shaping the landscape; and

(17) Social studies skills. The student communicates effectively in written, oral, and visual forms. The student is expected to:

(A) express ideas orally based on knowledge and experiences;

(18) Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others, in a variety of settings. The student is expected to:

(A) use a problem-solving process to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution; and

(B) use a decision-making process to identify a situation that requires a decision, gather information, identify options, predict consequences, and take action to implement a decision.

Health Education, Grade 3.

(1) Health behaviors. The student explains ways to enhance and maintain health throughout the life span. The student is expected to:

(C) identify types of nutrients;

(D) describe food combinations in a balanced diet such as a food pyramid;

(11) Personal/interpersonal skills. The student recognizes critical-thinking, decision-making, goal-setting, and problem-solving skills for making health-promoting decisions. The student is expected to:

(B) gather data to help make informed health choices;

Physical Education, Grade 3.

(4) Physical activity and health. The student knows the benefits from involvement in daily physical activity and factors that affect physical performance. The student is expected to:

(A) describe the long term effects of physical activity on the heart;

(C) identify foods that increase or reduce bodily functions;