AgMag Jr. Teacher Guide

Issue 2, 2014/15

Many of you are aware of the Minnesota Agriculture in the Classroom (MAITC) education program. Initiated in1986, MAITC is a unique public/private partnership between the Minnesota Department of Agriculture and the MAITC Foundation. The overall program goal is to advance agricultural literacy to all learners, especially K-12 students and educators. MAITC's mission is "to promote understanding and awareness of the importance of agriculture."

We are pleased to be in our seventh year of offering the unique and free AgMag Jr. series. The AgMag Jr. is written for and targeted at FIRST GRADE. Issue 1 reflects activities for earlier in the school year; Issue 2 reflects increased reading and skill levels students have gained later in the school year. Teachers have flexibity to use the magazine when the reading level of their students reaches the reading level of the magazine. Other primary grade educators may also use as appropriate. However, it is important to note there is NOT different content written for each grade, so using at multiple grades can be duplicative. We publish two issues per school year. Spanish versions are also available.

The AgMag Jr. series is made possible due to the generous financial support of AgStar Financial Services, a long-time supporter of the MAITC education program.

Why Ag in the Classroom?

Agriculture is constantly changing, but one thing is constant: our survival depends on it. Even as early as the primary grades, it is important for students to gain an understanding and appreciation for the ways agriculture touches their lives. Food does not magically appear in the grocery store or on the kitchen table. It all starts with agriculture. Only two percent of Americans work directly in farming, feeding and providing fiber for all of us. Millions more work in agriculture-related jobs.

Today's students are tomorrow's community leaders, policy setters and voters. Making wise decisions about our gigantic agriculture lifeline is vital to our nation's future. Giving students literacy to prepare them for those decisions is what Ag in the Classroom is all about.

AgMag Jr. Content

Issue 1 focuses on the general theme "Agriculture is Everywhere," and introduces students to the role agriculture plays in the world all around them.

Issue 2 focuses on "From the Farm to You." It shows how a product (milk) starts on farms and moves through processing and distribution steps before it reaches the consumers. It identifies how farm products benefit our lives and what grows where in Minnesota. Farm animals and farm crops are featured on a special fold-out page.

The magazine activities and reproducible pages in this Teacher Guide incorporate essential skills needed by first graders (reading, vocabulary development, writing, logical sequencing, alphabetizing, geography/map skills, science, social studies, math and more).

Minnesota Academic Standards Connection

Subject	Standard Code	Benchmark
Social Studies	0.2.1.1.2	Identify goods and services that could satisfy a specific need or want.
Social Studies	1.3.1.1.2	Use relative location words and absolute location words to identify the location of a specific place, explain why or when it is important to use absolute versus relative location.
Science	0.4.1.1.1	Observe and compare plants and animals.
Science	1.4.1.1.1	Describe and sort animals into groups in many ways, according to their physical characteristics and behaviors.
English Language Arts	0.2.3.3 1.2.3.3	Describe the connection between two individuals, events, ideas or pieces of information in a text.

Enhance and extend your AgMag Jr. with interactive activities. Google AgMag Jr Interactive to learn more!

Visit us at **www.mda.state.mn.us/maitc**

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Glossary

AGRICULTURE: Growing plants and raising animals that people use for food, clothing and many other things every day. It's also harvesting those farm products and getting them to us so we can use them.

*(**Adult notes:** Agriculture is the industry that grows, harvests, processes and brings us food, fiber, forests, sod, landscaping materials and more. Agriculture uses soil, water, sun and air to produce its products. Agriculture starts on farms, orchards, gardens and ranches with the growing and the harvesting of crops and livestock. It continues as farm products move to processing plants and finally travel as finished products to stores, farm markets, lumberyards, greenhouses and more where consumers buy the products. Agriculture is connected in some way with almost everything we eat, wear and use.)*

Quote from an Unknown Source: "Agriculture is not simply farming. It's the supermarket, the equipment factory, the trucking system, the overseas shipping industry, the scientist's laboratory, the houses we live in, and much more. It has an affect on the air we breathe, the ground we walk on, the water we drink, and the food we eat."

BACTERIA: Microorganisms that grow and multiply quickly in warm temperatures. Bacteria is everywhere; some kinds can make people sick.

CROPS: Plants that are grown and harvested to feed people and animals or to make other things people need.

FARMER: A person who lives and works on a farm. He or she provides us with products we need and use every day. Farming is a business. It's also the farmer's job. Farmers make money by selling their farm products.

FIBER: The raw product used for fabric, such as cotton and wool. Wood is also a fiber, used for making things.

HOMOGENIZATION: Mixing the cream in milk with the thinner, watery parts so they stay blended together. If not homogenized, cream rises to the top.

PASTEURIZATION: Milk is heated to kill germs and make it safe for people to drink. Heating the milk also slows the growth of bacteria so the milk does not spoil as quickly.

POULTRY: "Bird" types of farm animals. Ducks, chickens, turkeys and geese are kinds of farm poultry.

RAW MILK: Milk as it comes directly from the cow.

SHELF LIFE: The time a product can stay in the store before it starts to lose freshness. Milk shelf life dates are printed on the cartons and bottles. The milk will be fresh a few days after the date shown. Shoppers need to check shelf life dates on the milk they buy so they know it is still good to use.

Discussion Prompters

AgMag Jr. Cover (Science, Social Studies)

1. Why do many farms have a lot of buildings? What are some of the buildings on this farm used for? *(Barns are used to shelter and protect animals. On dairy farms, they are used for milking. Silos store chopped hay, corn or other crops for feeding animals. Machine sheds store and protect farm machines. Some farms have special grain bins to store crops.)*
2. What crop is the girl holding? (*Apples)* What is another name for a farm that grows fruits? *(Orchard)*
3. What is the difference between farm animals, zoo or wild animals and pets?

   (Farm animals are raised to provide products that make human lives better. Farm animals give meat, milk, eggs, fiber (wool), hide (leather), feathers and more. Some give help with work or transportation (horses, oxen, mules). Animal fats are used in making lotions, soaps, film, plastics, medicines and more.)

   (Zoo animals are cared for in public places for people to see and study. Wild animals are an important part of the natural world environment wherever they live. Sometimes people go on trips and safaris to see wild animals in their own settings.)

   (Pets are companion animals, kept for the pleasure and company they provide.)
4. Why are zebras and lions not raised on Minnesota farms? *(They do not provide farm products. They are not easily tamed, so may be dangerous. Minnesota's cold winter climates are too harsh for them.)*
5. Why are bananas, pineapple and peanuts not grown in Minnesota? *(Minnesota weather is too cold for them. Minnesota soils are not the kinds they thrive in.)*

Page 2-3, Moo to You (Science, Social Studies)
Guide students through the story of milk, from the farm to their tables. Added discussion items:

On the Farm

1. How do farmers take good care of their cows? *(Cows are kept comfortable and safe from the weather in barns. They have clean bedding (straw, shredded newspapers, mats, etc.) to lie on. They get good nutritious food and fresh water. If they are sick, the farmer may call an animal doctor (veterinarian) to care for them. In nice weather, they go outdoors to exercise and graze.)*
2. What do cows eat? *(In warmer months, they graze in pastures and eat grass. In colder months, they eat hay (dried grasses), silage (chopped corn) and haylage (chopped hay). All year around the farmer gives them a special food called ration, made of ground grains with minerals and nutrients added. A cow may drink enough water to fill a bathtub every day!)*
3. What is the farmer doing with the milking machine? *(She is milking cows. The cow's milk is stored in a body part under the cow called an udder. The udder has four teats. The farmer carefully washes the cow's udder and teats before milking. The milking machine attaches to the teats. Vacuum gently squeezes the milk out of each teat. It does not hurt the cow at all. The milk goes through the tubes you see in the picture to a pipe that takes it into a cooling tank.)*
4. Do all cattle give milk? *(No, only a cow that has had a calf gives milk.)*
5. How often are cows milked? How much milk do they give? (*Most are milked twice or three times a day. The amount of milk a cow gives depends on her breed and how long it has been since she had a calf. Black and white Holsteins give the most milk. Cows give the most milk after a new calf is born. A good cow may give seven or more gallons of milk a day.)*
6. The cows on this page are dairy cows. Other cattle called beef cattle, are raised for meat.
7. People around the world drink milk from more than just cows. What are some of these animals? *(Goats, buffalo, camels, reindeer, sheep, water buffalo, moose, donkeys, horses and yaks.)*

On the Road

Tank trucks come to the farm and pump the milk out of the farmer's cooling tank. The driver tests the milk to make sure it is healthy and clean. Then it goes into the refrigerated tank on the truck. The tank truck visits many farms to pick up milk, and then hauls its load to a processing plant.

1. Why must milk be kept cool all the way from the farm to you? (*Milk spoils and sours quickly if it is not kept cool. Tiny bacteria grow fast in warmer temperatures, causing the milk to spoil. Farmers, truckers and plant workers do their part, but we need to keep milk cool in our refrigerators at home, too.)*
2. Does all milk go to a processing plant? (*Yes, but not all plants put milk into bottles and cartons. Some plants use milk to make ice cream, cheese, butter, yogurt or other dairy products.)*

At the Plant

When milk gets to the processing plant, it is tested again to make sure it is safe from harmful things before it is unloaded. It is strained through a filter to make sure it is clean. It is heated to kill any germs (pasteurized) and mixed so the cream in the milk stays blended instead of rising to the top (homogenized). Finally, it is piped through large machines that fill cartons and bottles. The milk is then loaded into refrigerated trucks and hauled to stores.

1. Why is it so important to keep checking and testing the milk? *(Everyone from small babies to great grandparents will drink and use the milk. It must be clean and healthy so no one gets sick.)*
2. Everyone who handles milk must keep all the milk tanks, tubes, pipes and machines absolutely clean. Why is this so important? *(Milk spoils and becomes unsafe for people to use if it picks up germs from unclean equipment. Milk equipment is cleaned with hot, soapy water many times a day.)*

At the Store

1. Why are there so many different kinds of milk at the store? *(People want different kinds and sizes of milk.)*
2. Why are there dates on milk cartons and boxes? *(The dates tell us how long the milk will be fresh and good to use. If the date has gone by, we should not buy the milk. See SHELF LIFE under GLOSSARY.)*

You Drink the Milk

1. What kinds of milk do you like to drink?

   (*Different kinds include skim, 1%, 2%, whole milk, chocolate, strawberry, buttermilk, dry/powdered, evaporated, canned and more.*)
2. What foods can you name that are made from milk? *(Cheese, cottage cheese, yogurt, ice cream, butter, sour cream, frozen yogurt, etc.)*
3. Why are milk and dairy products such as cheese, cottage cheese and yogurt healthy for you? *(They are a good source of nutrition, with calcium for strong bones, teeth, and muscles. They also have protein for healthy hair, skin, blood and more. Milk has added vitamin D.)*
   Children should have at least three servings of foods from the dairy group every day.

Page 4, Farm Animals (Science)

This page shows some of Minnesota's main farm animals. Both milk (dairy) and beef cows are shown. Dairy animals are raised to produce milk, but they are also eaten as meat. Beef cattle have heavier, blocky bodies and are raised for meat. The cattle shown here are the most common dairy and beef breeds in the United States. The milk cow is a Holstein and the beef cattle are Black Angus.

1. Discuss each animal, what it eats and what it needs to be comfortable, safe and healthy. You talked earlier about how farmers take good care of their cows. How do they care for each of these animals? *(Nutritious food, fresh water at all times, warm shelters, protection against predators for smaller animals, vet care for large animals, etc.)*
2. What are the differences between mammals and birds? *(Mammals have fur or hair, bear live babies and produce milk for their young, etc. Birds have feathers. Most can fly. Their young hatch from eggs, etc.)*

Page 5, Farm Crops (Science, Social Studies)

This page shows some of Minnesota's leading crops. Both people and farm animals depend on them for food.

1. New Word: Processing! We do not eat most raw farm crops just as they come from the field. They would be hard to eat and our bodies are not made to digest them well. Changing raw crops into foods we can eat is called *processing*. Washing, cooking, roasting, cutting into pieces, peeling, shelling, canning and mixing with other foods are all parts of processing.
2. We use many different parts of plants. Which parts of each plant do we use for food? *(Corn, sunflowers, soybeans, wheat: seeds, often called kernels, beans; Potato: tuber, which is an underground stem; Sugar beet: root.)* Nearly all parts of these plants can be used as animal food.
3. What are some foods that come from each of the crops shown?

Page 6, Minnesota (Science, Social Studies)

As you guide children to think about the simplified map and geographic directions, go deeper with questions such as:

1. Why is weather in northern Minnesota colder than in southern Minnesota? *(Northern Minnesota is closer to the always-cold North Pole. Southern Minnesota is closer to the always-hot equator.)*
2. Minnesota has some very hilly areas and some flatter areas. Which would be best for growing farm crops? *(Flatter.)* Why? *(Farm machinery such as tractors, plows and combines, needed to grow crops, cannot operate well on hilly surfaces. Soil erosion is a problem, too.)*
3. Rainfall is very important to crop farmers. What happens to their crops if there is not enough rain? (*Plants wither and die.)* If there is too much rain? *(Crops can drown, wash away or be destroyed by floods.)*
4. Why is it a good idea to raise animals in areas where there are field crops? *(Farm animals eat field crops. It is easier and costs less to have their foods nearby.)*
5. Some farmers raise trees as a crop. How do trees help us? *(They give shade in the summer and protect against wind and snow in the winter. Some are holiday trees. Tree products include wood for building homes, furniture and much more; pulp for paper; sap for maple syrup; nuts and fruits to eat; shelter for birds and wild animals. Trees are beautiful to look at. They help hold soil from blowing away. They give off air (oxygen) for us to breathe and filter pollution out of air to make it cleaner.)*
6. What city is our state capital? Put a dot to show where St. Paul is located. What part of the state is it in?

Answers: (Note: Answers given in Discussion Prompters section are not repeated here.)

AgMag Jr. Cover

Animals: goat, dairy cow, chicken, lion, horse, sheep, pig, turkey, zebra. All are Minnesota farm animals except lion and zebra.

Plants: sugar beet, sunflower, pineapple, red pepper, wheat, peanuts, banana, apple, corn. All are Minnesota farm crops except the pineapple, peanuts and banana.

What does each farm animal and plant give us?
Products Include:

Animals: Goat (milk, meat, goatskin); Cow (milk, meat, leather); Chicken (eggs, meat, feathers); Horse (rides for pleasure and transportation, help with work, entertainment (rodeos), horsehide leather); Sheep (wool, meat, sheepskin, oils, occasionally milk); Pig (meat, pigskin); Turkey (meat, feathers).

Plants: Sugar beet (sugar, beet pulp for animal food); Sunflower (seeds, oil); Pineapple (fruit, juice); Peppers (food); Wheat (flour, wheat germ); peanuts (nuts, peanut oil); banana (fruit); apple (fruit, applesauce, cider); corn (food for people and animals, corn oil, corn syrup, ethanol).

Moo to You, page 2-3

How many times does the word milk appear: 17
It also appears one more time in the word milking and once more when students write it in.

Farm Animals, page 4

How many mammals? 6 (including the beef cattle)

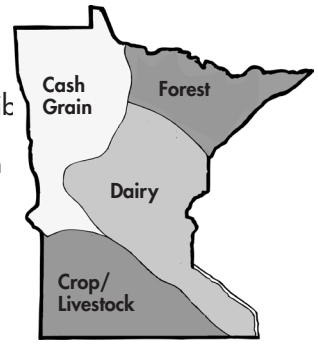
How many birds? 2

Farm Crops, page 5

Underground: potato, sugar beet

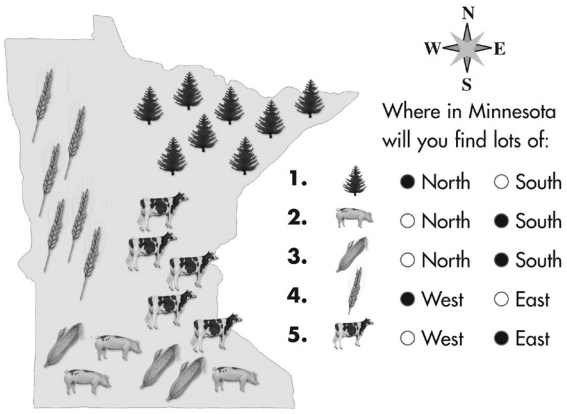
Minnesota, page 6

All agriculture involves growing food, fib and forests, but what grows where varies greatly, not only from one region of the country to another, but within our own state. Minnesota's soil types, weather (growing season), rainfall and terrain all play a part. The state has four main growing regions:



Minnesota Map, page 6

Note: You are sure to find these animals and crops where their symbol appears on the map. Many will be found in other parts of Minnesota, too.



Reproducible Activities

Ag A-B-C's

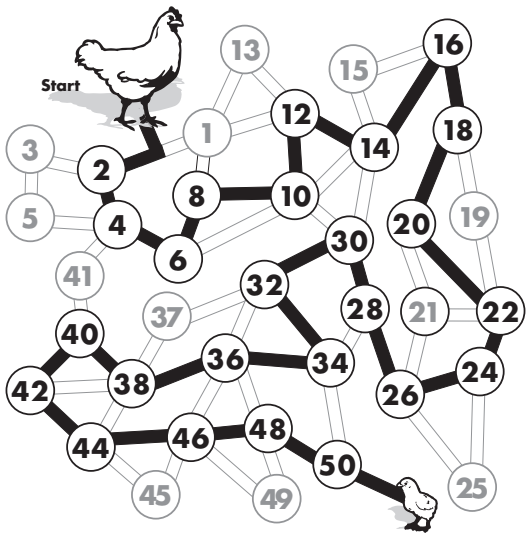
Field Crops: corn, peas, soybeans, sugar beets, wheat

Farm Animals: cattle, goats, pigs, poultry, sheep

Special Crops: apples, flowers, sod, trees, vegetables

Farm Machinery: computer, corn picker, farm truck, plow, tractor

Chick Maze



Teacher's Grab Bag
Butter in a Jar Activity

Materials:
- heavy whipping cream
- plastic or glass jar with lid or
  2 oz. plastic cups with lids (from restaurant supply store, craft store or your cafeteria)

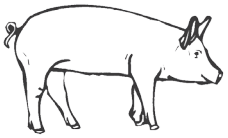
Directions: Pour cream into a jar or small plastic cups. Small cups work great because everyone can make their own butter. Fill each container 2/3 full. You need some air space. Make sure the lid is secure. Shake briskly. The more cream in the container, the longer it takes. In 2 oz jars, butter forms in 5 – 10 minutes. After butter forms, it is usually salted. Enjoy on crackers or bread.

Adapted from Field Guide to Utah Agriculture in the Classroom

Ag A-B-C's

You'll see all these things on Minnesota farms. Put each group of five words in alphabetical order in the boxes next to each group.

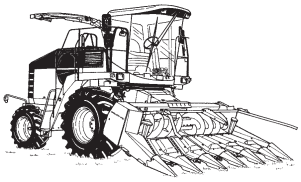
Field Crops



Farm Animals

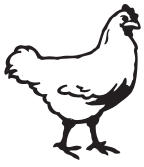
soybeans	corn	sheep	c
wheat		pigs	
corn		poultry	
peas		cattle	
sugar beets		goats	

Special Crops



Farm Machinery

flowers		tractor	
sod		farm truck	
apples		computer	
vegetables		plow	
trees		corn picker	



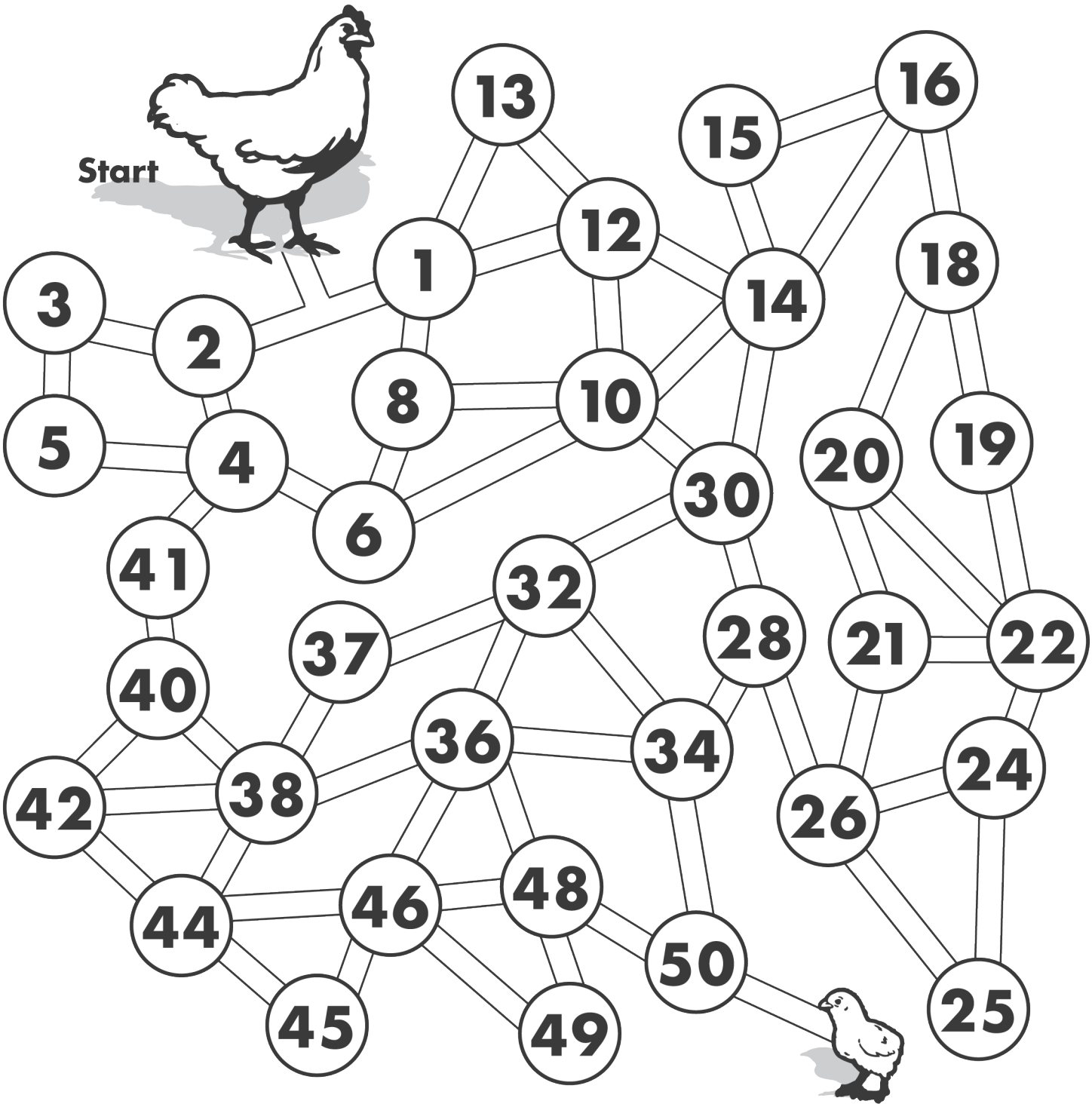
Geese, chickens, turkeys and ducks all fit in a group of two-legged animals called_____.

Hint: The answer is on this page.

Chick Maze

Count by twos to help the hen get to her chick.
Color in the path to connect the right numbers.

Adapted from Oklahoma Ag in the Classroom K-2, Book1



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