Small Mammal Jointed Models to Make, Description Cards, and a Menu of Follow-on Activities in Different Intelligence Areas

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Abstract

Instilling an appreciation of nature in our youth is an important precursor to environmental protection and support for sustainability. Research has shown that involving students in environmental projects improves their motivation, skills, and achievement on standardized tests, This document contains images of the body parts of small mammals with directions for reproducing, cutting, gluing, and assembling them (with paper fasteners) into life-size jointed models of the animals. There are two distinct versions (different color phases and poses) of each of 11 small mammals that generally live in grasslands, along creeks/ponds, or woodland edges of Midwestern habitats: Eastern Chipmunk, Franklin's Ground Squirrel, Eastern Mole, Plains Pocket Gopher, Thirteen Lined Ground Squirrel, Northern Short Tailed Shrew, Southern Bog Lemming, Meadow Vole, Meadow Jumping Mouse, Deer Mouse, and Northern Grasshopper Mouse. A set of card fronts and backs gives facts about each of the animals (to be matched to the corresponding jointed models) with an image of the correct animal on the reverse side for self-checking. The main lesson activity is explained and presented as a learning cycle. A menu of authentic activities that would make meaningful follow-on activities in the last phase of the learning cycle, the expansion phase, is presented. These are sorted into different multiple intelligence areas to provide student choice and differentiation of instruction. Each activity is accompanied with objective, instructions, rationale of how the activity is an authentic task, criteria for evaluation and an example correct response to the activity. [50 Figures; 12 References; Appendix with 20 pages of additional figures]

Part 1: Introduction

This document serves as a resource for educators interested in tapping into learners' multiple ways of knowing as they investigate small mammals in the environment. Small mammals are "low in the food chain" and often overlooked both in the science classroom and in society at large. The study of small mammals can foster a deeper understanding of the complexity of the natural world. Hands-on learning with the models and construction projects presented in this document support student achievement through mastery of science content (Chi & Koeske, 1983; Klemmer, Waliczek, & Zajicek, 2005) and application to other content areas such as writing reading, and problem solving (Wilson & Monroe, 2005; Swarat, Ortony, & Revelle, 2012)). Additionally, developing an understanding of the role of small mammals in the environment is a key part of valuing natural fauna and flora and understanding sustainability in the broader natural world (Lindemann-Matthies, 2005).

In this document you will find a variety of diverse resources and lesson ideas. Small mammal jointed models and description cards are provided to support hands-on investigations. The lessons are organized thematically by Gardner's multiple intelligences and offer a range of

learning activities to explore the role of small mammals in the natural world.

Part 2: Making the Small Mammal Jointed Models and Description Cards

Note: Please read all of these directions before beginning so that you are familiar with the process and what comes next. The Appendix has the card fronts and backs and the body parts for the small mammal jointed models.

1) Materials and Equipment: Gather the following materials and equipment before you begin: 1 set of small mammals printed in color onto light-colored cardstock pages, scissors, white craft glue (Aleene's Original Tacky Glue is recommended but any white craft glue should work), a couple of large, heavy books to compress and flatten the glued pieces as they dry, 2 large sheets of mat board in earth-tone colors (the colored cardboard used in picture framing), a small-diameter paper punch or drill, needle-nose pliers for rolling or curling under the back ends of the paper fasteners, a box of one hundred 2.5 cm (1-inch) brass paper fasteners (Figure 1), a plastic shoebox with a lid for storage, wide clear tape to affix a paper label to each end of the shoebox.

Figure 1. Box of brass paper fasteners for jointed animal models.

2) Printing on Light-Colored Cardstock on a Color Laser Printer. Print the page full-size on a piece of white, off-white, buff, tan, or yellow card stock paper. It is important to print onto heavy cardstock so that the craft glue does not wrinkle the paper later. It is also best to print on a color laser printer rather than an ink-jet printer, as the ink will be waterproof and hold up to handling better. See Figure 2.

Figure 2. Two pages of buff cardstock showing printed animal model parts.

3) Cutting the Individual Body Part Pieces of the Animal. Before cutting out each individual piece, cut the printed paper into polygonal sections with one piece on each section. See Figure 3. This will make it easier to handle each piece and to carefully cut its outline. Use scissors to carefully cut out each body part piece, leaving a 1-2 millimeter margin around each part. See Figure 4. This is a good task to do while listening to music, chatting with a friend, or watching a video or television show. Be sure that no parts are lost – all need to be cut out and saved. Take care not to mix up the body parts of one animal with other animals because it can take time to sort them. It may be best to cut out the pieces of just a few animals at a time so everything can be kept straight.

Figure 3. Cutting apart the body part pieces before trimming them.

Figure 4. The trimmed body part pieces and paper cuttings.

4) Gluing the Pieces to Mat Board. Glue each cutout piece to heavy cardboard such as mat board, the colored cardboard used in framing pictures. This is usually available at a craft store and is certainly obtainable from any picture-framing store. Mat board usually comes in large sheets but is sometimes sold in smaller pieces. Choose an earth-tone color that works well with the small mammals' natural colorings, perhaps a brown, dark green, or rust color. Thicker cardboard results in more durable models, but has the drawback of being somewhat harder to cut with scissors. When gluing, use white craft glue like Aleene's Original Tacky Glue (in a gold-colored cylindrical bottle) that is fairly thick, yet water-soluble for clean-up. Elmer's white glue or other white glues also work, but may be somewhat runny. Rubber cement is not recommended because the solvents used are not healthy to breathe and because it eventually dries completely and falls off - delaminates. Glue stick is also not recommended because over time it dries and the piece and its background come apart also. White craft glue is very durable, long-lasting, non-toxic and easy to clean from table tops and clothes.

Open the bottle so that a thin stream of glue comes out and then scribble all over the back of each piece – do not just attach with a few dots of glue or by outlining the piece only – really cover the back of each piece with a thin coating of glue. If the glue drips, you are using too much. Be sure to outline each piece carefully with a thin line of glue so that the edges are firmly glued to prevent users from putting their fingernails under the edge and prying it loose. See Figure 5 for an illustration of a glue-covered back of a piece.

Figure 5. Back side of a body part piece with glue applied.

Space the pieces about a centimeter (around a half-inch) apart so that a narrow border of 2-3 mm (about an eighth of an inch) can be left around each piece when it has been cut out. See Figure 6.

Figure 6. Body parts glued to mat board.

After all the body parts of one animal have been glued to mat board, cut out the area and place under a large heavy book so that it will dry flat. Make sure that glue is not seeping out around the edges, though, or the pieces will become glued to the book cover. Run your hand over the pieces to check for stickiness before putting the book on top. If your pieces have too much glue, gently wipe it away.

Generally, after about 15 minutes of book compression, the pieces are ready to be cut apart. Usually one can be busy cutting out another set of animal body parts while one set is being compressed under the book.

5) Cutting the Body Parts that were Glued to Cardboard. The cardboard will be more difficult to cut than the thinner cardstock paper. Cut all of the pieces apart first, before trying to trim them. Use straight cuts to do this so that the resulting pieces are rectangles and polygons. This should be fairly fast and easy to do. Keep the pieces of each animal together in a pile so that they do not become mixed with other animals. Then take time to cut around each piece, leaving a 2-3 mm border. If a foot or paw has a large re-entrant angle, you can allow the mat board background to fill it in, cutting the piece in a more general shape. See Figures 7 and 8.

Figure 7. The mat board-mounted body parts cut apart from each other.

Figure 8. The trimmed mat board-mounted body parts and the pile of mat board cuttings.

6) Punching or Drilling Holes in the Pieces. Notice the little round dots on the pieces that show where they will eventually be joined with brass paper fasteners. Almost all of the main body parts (the exception is one of the lemmings that has the front legs together as a unit) should have 4 holes indicated and then each body part will have one hole. Use the hole punch or drill to make each hole approximately the size of the marked circle or just large enough for the prongs of the paper fastener to fit through the hole. Punch or drill all holes before gluing any pieces together.

7) Gluing the Pieces Together. Be sure to read this part carefully, as not all pieces are glued completely back to back with their mirror images- some are only partly-glued. Sort the legs into sets that are lefts and rights of the same legs. These should be glued back to back so that each leg is double thickness with a colored image of the leg on each side. Try to match up the drilled/punched holes as you do this. The one exception to this is the front leg unit of one of the lemmings. Do not glue those two pieces together yet, wait and do them later- instructions for them will be given in the next part here. The main body left and right sides should also be glued together completely so that the body is doubly-thick and has a printed left and right side. Put these glued pieces under a book to dry flat under compression. See Figure 9 for example of paired legs.

Figure 9. Paired legs with holes punched.

Pay attention to how the other pieces – the head and the tail - need to be ***partially*** glued. The part of the head that joins the body (the neck area) needs to stay open so that it fits over the doubly-thick body part. Only glue the snout and forehead areas of the animal's head and leave the back of the head and

the neck area unglued so that it can be gently pried open to fit over the neck part of the body. Go ahead and apply glue to the snout and forehead, put the two pieces together, and let them dry under the book.

Similarly, the tail will need to have the end that attaches to the body left without glue so that it can be gently pried open to fit on either side of the doubly-think body piece. Glue half of the tail starting at the far end of the tail. Put it under the book to dry. One of the lemmings has a two-leg unit for the front legs. Similar to the way the head was glued, glue just half of the leg unit together- the half that has the paws, leaving the upper leg parts unglued so that they can be gently pried open to fit over the doubly-thick body. See Figure 10 for glue placement on the Eastern Chipmunk's tail.

Figure 10. Glue on half of Chipmunk's tail.

8) Trimming pieces as necessary. After the pieces have dried, use scissors to carefully trim any areas that do not match. If the drill/punch holes do not match up at all, then re-drill or re-punch as necessary. If they match somewhat, usually one will be able to get the paper fastener prongs through them without drilling or re-punching.

9) Assembling each Animal. This is the exciting part at which the animal finally comes together! Make sure the glue on the head piece is dry. Gently pry the two pieces apart just enough to slip the neck area of the body piece in between, matching up the holes on all the pieces here. See Figure 11. Take a paper fastener and push it through the hole to anchor them all together. Bend the prongs back and then use the needle-nosed pliers to roll or curl each prong under against the head of the animal. See Figure 12.

Figure 11. Slipping the body's neck area between the two sides of the head.

Then take the tail and gently pry it apart enough to fit over the back end of the animal's body. Again, align the holes and push the prongs of a paper fastener through. Use the pliers to curl the two prongs under on the back side of the animal.

Figure 12. Rolling the ends of the paper fastener under with needle-nosed pliers.

Then find the two back legs. Put one on one side of the body and the other on the other side. Put the prongs of the paper fastener through the hole in one glued leg, then through the leg hole in the body and through the hole in the leg on the other side. Bend the prongs apart and use pliers to curl them under. Do the same for the front legs. Now your animal is complete! See Figures 13 and 14.

Figure 13. Completed front of Eastern Chipmunk Jointed Model.

Figure 14. Completed back of Eastern Chipmunk jointed model showing the rolled prongs of the paper fasteners.

10) Finishing the Set. Label the front and back ends of a clear plastic shoebox with your name and the name of the small mammals set. Place each small mammal model into the box as you finish it. There are 11 different small mammals and two different versions of each, making 22 models altogether. There is a set of 12 cards that completes the activity. Please print the fronts and backs of the cards and then glue to mat board or cardboard to make the card set. The images of the small mammals on the backs of the cards are the "answers." Keep the card set in the box with the small mammal models.

Part 3: The Main Lesson Using the Jointed Mammal Models and Cards

The Learning Cycle Lesson Model

The Learning Cycle lesson model is a popular constructivist student-centered teaching model, often called the "5 E's" model (Bybee, 1997) that has undergone change as new understandings of how students learn have been uncovered. Recently, additional steps have been proposed to improve the fit between lesson presentation and educational psychology concepts of human learning (Eisenkraft, 2006). This lesson model has three main phases and several initial or final steps that all begin with the letter "E".

The first phase of the learning cycle is the Exploration Phase. It begins with the "Engage" step, which includes focusing student attention on the topic with a key question or visual, followed by "Eliciting" of student knowledge about the topic. These two steps are crucial. Nothing can be learned unless the learner pays attention. Requiring students to tell or show what they know about the lesson topic before any content is presented is important for several reasons. First, students often assume they know more about a somewhat familiar topic than they actually do. Asking them to list what they know, draw a diagram of how the process works, or demonstrate kinesthetically often allows students to be more aware of the holes in their understanding, motivating them to find out more. At this time, the teacher learns how students think about the topic – the "organization of their minds" – to use a term from the field of educational psychology. This is also an opportunity for the teacher to formatively assess whether the planned lesson will be a review, appropriately challenging, or perhaps needs to be more in-depth. During this first phase of the Learning Cycle, the teacher should help students make connections from their prior knowledge to the current lesson topic, activating what students know.

Another task of the teacher during the Exploration Phase is to cause students to wonder about the topic, to be curious, and to feel some "Disequilibrium" – another educational psychology term used to for an uncomfortable state in which the student feels uncertain or confused about the topic. This discomfort causes the student to desire correct knowledge of the topic so that everything will again fit into place and make sense. Therefore, disequilibrium may motivate the student to attend to the lesson to better understand the concept, attaining "Equilibrium."

The next Learning Cycle Phase is the Explanation Phase. It is during this phase that the teacher first begins to explain information about the topic and how it works. This may be accomplished through hands-on activities, reading of the textbook, viewing a video, conducting and discussing an experiment, or other activities. The teacher's job is to provide examples and explanations and to check for closure at the end of the phase. Usually, the teacher asks students to explain how the concept works during closure to determine if students have now returned to equilibrium. In educational psychology terms, the students reach equilibrium through a process called "Adaptation." Adaptation has two

parts: assimilation and accommodation. During assimilation, the student identifies the parts of previous knowledge that remain correct. During accommodation, the student replaces any incorrect ideas with new learning.

The final phase of the Learning Cycle is the Expansion Phase. During this time, students confirm the new organization of knowledge in their minds through guided and independent practice. The Expansion Phase involves application of the learning to a new domain; allowing students to *conditionalize* the knowledge – learn how it may be applied to new situations. This phase concludes with two steps: Evaluation of student learning and Extension to related investigations in additional new domains. The small mammal projects for various intelligence areas outlined in this document can serve as Expansion Phase activities. The next section shows the basic small mammal lesson as a learning cycle with the expansion phase activities to be chosen from the rest of the document.

Small Mammal Learning Cycle Lesson

Exploration Phase

Engage: Pass out a few of the jointed small mammal models to each group of students. Ask students to compile a list of the names of these and other small mammals they know. Do not tell students the names. Handling the animal models should gain student attention and help them focus on the topic of small mammals.

Elicit: Ask each group to report a couple of small mammals they were able to identify or that they had listed. Do not correct any student responses at this point. Allow each group to share ideas and make a list on the board of the animals mentioned.

Main Exploration Phase Activity: Make sure each group has a complete set of the small mammals and their corresponding information cards. Ask students to keep the cards showing the information side and not to look at the reverse sides of the cards. Students should work together to first pair the two models that represent the same species of small mammal, and then find the corresponding card. Students will likely find this a daunting task and feel a sense of disequilibrium.

Explanation Phase

Examples and Explanations: Allow students to turn over the cards to check their work. Give time for the students to read the information about each small mammal and to discuss which animals have characteristics or lifestyles that are surprising. Call on each group to present a mammal and to tell why it is interesting. Students should now have returned to equilibrium.

Closure: Ask students to answer some questions about some of the small mammals. Perhaps, "What unique characteristics do moles have that allow them to store food?" or "Which small mammal might be considered a predator?" Generate other similar questions to ask students to be sure that they have some new knowledge of small mammals and their lifestyles.

Expansion Phase

Choose activities from the Follow-on" Menu in Part 4 below to complete and expand the lesson.

Part 4: The Follow-on Menu of Activities in Different Intelligence Areas

The lesson ideas presented here are arranged by a focal intelligence, although many lessons tap into multiple ways of knowing. For example, a student working on the Myths about Small Mammals Lesson (pg .11), which is listed under Verbal-Linguistic Intelligence, might be considered working within the Naturalist Intelligence as well because increased content knowledge would contribute to a more detailed and interesting myth. We suggest students should be offered the chance to select activities they find appealing or interesting. When a menu of activities is offered to students, they are provided choice and a degree of control over their learning which can increase motivation and engagement (Guthrie & Davis, 2003).

Verbal-Linguistic Intelligence

Diamante Poem

by Ashley Sill

1. How Verbal-Linguistic Intelligence is Supported: Poetry writing involves working with words and the subtleties of language.

2. Objective: Students will be able to create a 7-line diamante poem that follows the correct format of the poem and includes information about one small mammal of Iowa and one predator.

3. Authentic Task: Creating a diamante poem is an authentic task used by some poets. This task allows students to practice literacy skills that strengthen vocabulary skills. Vocabulary skills are needed in most professions, especially journalists, editors, authors, and teachers.

4. Instructions: 1) Choose one small mammal and one of its predators that are interesting to you. 2) Draw seven lines on a sheet of paper. 3) Have a dictionary and thesaurus ready to help you think of some creative words! 4) Start the first line of the diamante poem using a noun. This line should represent the topic or theme for the poem. The noun should be the small mammal that you chose. 5) On the last line, write another noun that represents the predator that you chose. 6) The second line should include two adjectives that describe the noun in line one. 7) The third line should include three gerunds (verb + ing) that also describe the noun in line one. 8) The fourth line should include a two-word phrase related to line one and a two-word phrase related to line seven. 9) Line five should include three gerunds that describe the noun in line seven. 10) Line six should include two adjectives that describe the noun in line seven. 11) You now have a diamond-shaped diamante poem! 12) Be prepared to recite your poem informally to the rest of the class, as well as share what some of the different lines of your poem mean.

5. Criteria: 1) The poem needs to include information about one small mammal and one predator. 2) The poem should follow the correct diamante format. 3) A plethora of vocabulary and creative words should be included in the poem so that no words are repeated. 4) The student should be able to explain the relationship between the first and last lines of the poem, as well as how the middle of the poem is the transition point. 5) The poem should include correct information about the two animals included.

6. Example Correct Response:

Deer Mouse,

Diminutive, Colorful,

Jumping, Scampering, Watching,

Rodent freezes; predator searches.

Soaring, Scanning, Hunting,

Fierce, Broad,

Hawk.

Puppet Play about Small Mammals

by Janae Halleland

1. How Verbal-Linguistic Intelligence is Supported: Writing a puppet play script involves working with vocabulary, compositing sentences, and determining the logic of the verbal interactions.

2. Objective: The student will be able to create a puppet show that includes three facts about the animal in each of the following; appearance, habitat, behavior, and diet.

3. Authentic Task: Creating a puppet show is an authentic task used by some children's television shows along with other professions such as librarians, teachers, and entertainers. This task practices writing skills that are needed by authors, reporters, and script writers.

4. Instructions: 1) Choose a small mammal of interest. 2) Read books or find information from the Internet to determine at least three facts about the animal you chose regarding its appearance, habitat, behavior, and diet. 3) Create an outline of a puppet show that shares the facts chosen for each category. 4) Determine the audience for your puppet show (teacher, other students, community members, etc.). 5) Create characters to present the information to the audience. 6) Write a rough draft of your puppet show using the characters created. 7) Type a final draft of your puppet show. Be sure the show is interesting

and portrays accurate details. 8) Create stick puppets or finger puppets to present your play to the audience.

5. Criteria: 1) The script needs to have at least three correct facts in each of the following areas; appearance, habitat, behavior, and diet. 2) The script needs to be written to a clear audience and to be appropriate for that audience.

6. Example Correct Response:

Deer Mouse Play

Narrator 1: If you were to wander in about any habitat, you might find a mouse with large bulging eyes, big ears, and a very long tail.

Narrator 2: This mouse is called a deer mouse because of the way it moves. Deer mice are very good jumpers and runners, just like deer.

Deer Mouse: I live all over the United States and live in natural habitats. You will probably find me with many other of my kind as I live in areas with other deer mice.

Narrator 1: As you can see, the deer mouse also has a distinctly darker upper body with white undersides. The Deer Mouse can also live up to five years, which is much longer than many rodents.

Narrator 2: This mouse also builds nests from grasses in protected areas above ground, in tree cavities, in rotting logs, or in abandoned burrows.

Deer Mouse: I am a nocturnal species, which means that I like to be awake during the night time. I do not hibernate during the winter months. At night, I feast on larvae from moths, butterflies, and other insects. During colder months I find seeds to munch on and keep me alive. I also gnaw on antlers and bones for my calcium needs.

Hawk: I am a predator that tends to hunt deer mice.

Badger: You may also find me chasing after a deer mouse!

Deer Mouse: There are lots of deer mice like me in the world, but it's important to keep me around! I keep insects from harming trees and forests. I'm a very interesting creature!

Repetitious Poem about a Small Mammal

by Erica Daugherty

1. How the Verbal-Linguistic Intelligence is Supported: The student composes a poem that follows a specific format of repeating words.

2. Authentic Task: Poets use repetition to create rhythm in their poetry. This task practices creative writing, reading, researching, and expressing feelings. These skills such as these are needed by students, writers, authors, and scientists.

3. Objective: The students will be able to create a poem telling facts about the animal that follows a specific format.

4. Instructions: 1) Choose one to three small mammals that interest you. 2) Research your specific mammals or mammals using literature and/or the internet. 3) Write down some important and specific facts about your mammal or mammals. 4) Title your poem. 6) Create a 12-20 line poem that expresses the beauty of your mammal or mammals.

5. Criteria: 1) There need to be one to three mammals featured in the poem. 2) Poem needs to have a title. 3) Include at least five specific facts about the mammal or mammals in the poem. 3) The poem needs to have 12 lines minimum and 20 lines maximum.

6. Example Correct Response:

Eastern Chipmunk
Eat, Eat, Eat!
Cheeks filled with seeds, nuts, and fruit;
Into my home they will soon be stored.
Run, Run, Run!
Hawks are overhead and foxes are near;
But find my burrow they won't.
Hide, Hide, Hide!
My burrow is lined with leaves under a rock,
So my predators will not see.
Sleep, Sleep, Sleep.
Back to my young I return.
It's time for torpor, for tired I am.
It's far too cold outside.

Interview with a Small Mammal

by Kristi Clark

1. How the Verbal-Linguistic Intelligence is Supported: Imagining and writing an interview requires expression of ideas into questions and responses.

2. Authentic Task: A mock interview with a small mammal practices: reading, writing, and research for scientific

information. Skills such as these are needed by; students, writers, authors, librarians, teachers, scientist and most professionals.

3. Objective: The students will be able to create a pretend interview with a small mammal of their choice, using factual scientific information about the animal's habitat and life style.

4. Instructions: 1) Choose a small mammal that interests you. 2) Read books and/ or find information online about the mammal of your choice. Determine at least 4 facts about the animal's habitat, predators, diet, appearance, and behaviors. 3) Generate questions that go along with the facts that you found during your research. 4) Word-process your questions and answers. Create a script to use while interviewing the mammal. 5) If time allows find a stuffed animal or photograph of your mammal and interview the animal for your classmates using your script.

5. Criteria: The typed questions / answers should include at least 4 correct facts about the animal's habitat, predators, diet, appearance, and behaviors.

6. Example Correct Response:

Deer Mouse Interview

Interviewer: Today I have a very special guest with me, and here she is Mrs. Deer Mouse.

Deer Mouse: Hello children!

Interviewer: So I was wondering, why do they call you a *Deer* mouse?

Deer Mouse: Well the reason I am called a deer mouse is because my fur resembles that of a deer; dark on the back and white on the legs and underside.

Interviewer: That makes sense! What are you having for dinner tonight Mrs. Deer Mouse?

Deer Mouse: I usually have seeds, berries or nuts; sometimes I'll have an insect or two.

Interviewer: Sounds good! Next question: Where is your nest located?"

Deer Mouse: My nest is located under some low tree limbs in a heavy brush area. I like this spot because it is protected and very close to my food source.

Interviewer: That is smart thinking to be close to your food. What animals are you afraid of; will they try to eat you?

Deer Mouse: Oh, I'm terribly afraid of the owls, snakes, hawks, and foxes! Yes they love to eat deer mice.

Interviewer: Don't be scared, we don't have any of those animals here today.

Deer Mouse: Good! I better get back to my babies; I had four babies this spring!

Interviewer: Thank you for stopping by this morning, I know you usually go out at night; we appreciate you coming this morning.

Deer Mouse: Yes, I'm very tired. I'm not a daytime mouse! Thank you, I better get on my way.

Wanted Poster

by Jeffrey Walker

1. How the Verbal-Linguistic Intelligence is Supported: The student composes a description or set of behaviors of the "wanted" animal.

2. Objective: Students will create a wanted poster of one of the small mammals that shows an image of the animal and reasons why the animal is "Wanted."

3. Authentic Task: FBI officers create wanted posters for criminals. People who would like help also post "Help Wanted" posters with descriptions of characteristics and behaviors. This activity allows the student to consider reasons people do and do not like an animal.

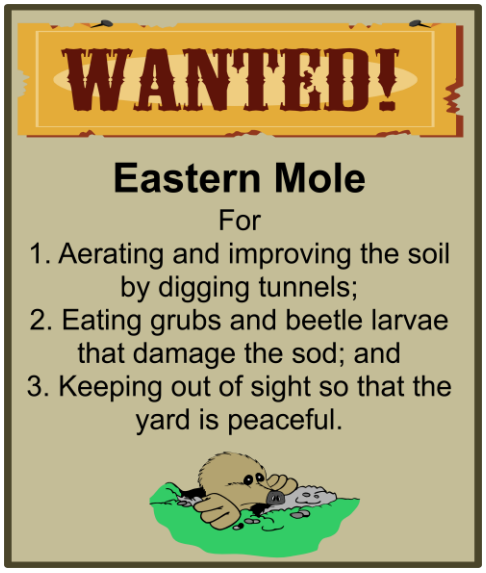
4. Instructions: 1) Choose one of the small mammals as the focus of the wanted poster. 2) Research facts about the animal and decide if the poster will tell reasons people do not like the animal or reasons they like it. 3) Examine old and current wanted posters on the Internet or in books. 4) Create a poster showing either three positive or three negative facts about the animal.

5. Criteria: 1) The poster is colorful and interesting. 2) The poster shows an image of the animal and tells three facts that explain why it is "wanted." These may be three positive or three negative facts.

6. Example Correct Responses:

Wanted Poster: Negative Facts

Wanted Poster: Positive Facts



Logical-Mathematical Intelligence

Myths about Small Mammals & their Predators

by Kayla DeSanti

1. How Logical-Mathematical Intelligence is Supported: Evaluating the truth of an argument, reliability of a source, and distinguishing between fact and fiction are logic skills.

2. Objective: The student will be able to create a document featuring four small mammals (or their predators) presenting myths and then explaining the facts about the animals.

3. Authentic Task: Adults need to be able to distinguish fact from fiction in their daily lives, especially when considering common myths, advertising campaigns, and political campaigns.

4. Instructions: 1) Choose two mammals that are interesting to you. These should be at least one of the small mammals, but you may also include a predator of small mammals. 2) Go on the internet or find books where you can find myths, sayings, and facts about the mammals you have chosen. 3) Choose at least one myth or folklore saying about each animal and then present facts that show that the myth or saying is incorrect. 4) Illustrate each animal with clip art, hand-drawn images, or images from the Internet.

5. Criteria: 1) You need to have at least four mammals in the document and they need to be illustrated. 2) Information must be typed with correct grammar, spelling, and punctuation. 3) You must have at least one myth or saying about each animal that is corrected with facts. You may have more if you choose.

6. Example Correct Response:

Myth: Badgers have legs that are shorter on one side of the body than the other so they can easily walk on sloping sides of hills.	**Fact:** A badger's front legs are both the same length, as are the back legs.
Myth: If a badger crosses the path in front of you or digs the earth in front of you, it is very bad luck and you will die soon.	**Fact:** Badgers are the one of the fastest diggers of all animals because they live by digging out and killing their prey. That is why people thought it was bad luck to have a badger cross in front of them or dig. Digging was also associated with grave-digging and therefore death.
	
Badger	
Myth: When the lemming population gets too large, lemmings jump off cliffs into water to commit suicide by drowning.	**Fact:** When a lemming population grows very large, many lemmings migrate to find new territory. They are fairly good swimmers and may jump into water to swim to a new location. Unfortunately, the distances are sometimes too great and they become exhausted and drown.
	
Southern Bog Lemming	

Pictorial Graph

by Kelli Ciavarelli

1. How the Logical-Mathematical Intelligence is Supported: Students show quantities in a pictorial way.

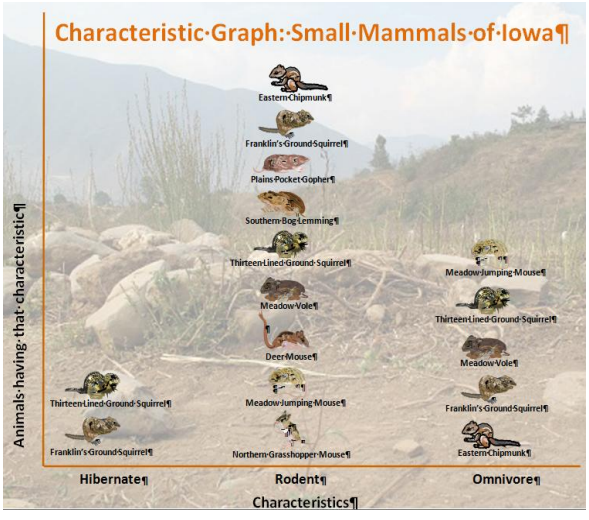
2. Objective: The student will be able to create a pictorial graph that includes three characteristics of at least six different small mammals.

3. Authentic Task. Creating a graph based on characteristics is an authentic task used by business or science professionals to compare data. Visual representation of quantitative data is a skill needed in multiple professional fields such as business, advertising, financing, teaching, health care, and management.

4. Instructions: 1) Examine pictures of the small mammals to generate questions about these animals. Write the questions on paper and research the answers. 2.) Decide which of the facts are most important and interesting to use in the graph. 3.) Make the graph by labeling the axes and giving it a title. Then use cutout pictures of the animals to show which animals have each characteristic. 4.) Use markers, crayons, or colored pencils to design and decorate the background of the graph in a way that would make the small mammals feel at home!

5. Criteria: 1) The graph needs to show three characteristics and at least six different small mammals presented. 2) The drawings or images should be realistic, and each animal should be labeled with the correct name. 3) The graph must have a title and both axes need to be labeled in a legibly. 4) The information must be correct. 5) The overall appearance should be aesthetically pleasing.

6. Example Correct Response:



Graphing the Speeds of Small Mammals

by Amanda Hinners

1. How the Logical Mathematical Intelligence is Supported: Graphing small mammal speeds involves numerical measurements (speeds) and logic in their arrangement on the graph.

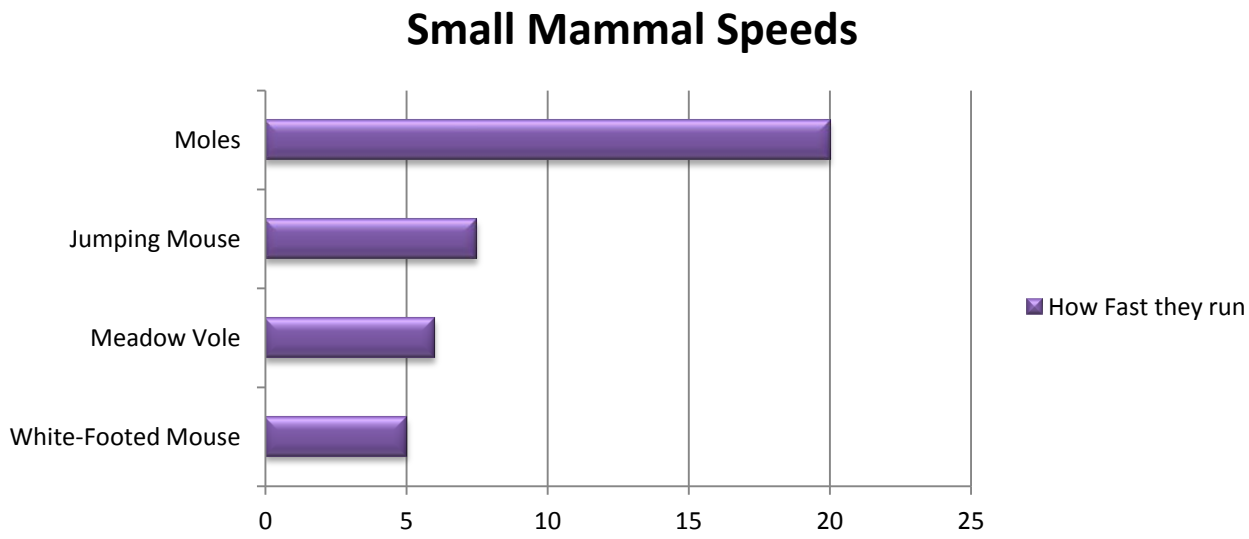
2. Objective: The student will be able to create a graph of small mammal speeds (4 or 5 mammals of their choice) arranged from fastest to slowest speed.

3. Authentic Task: This work involves mathematical skills of data presentation that are used in many professions including business, science, and education.

4. Instructions: 1) The student selects and researches information about speed of movement of several animals to include on the chart. 2) The student arranges the small mammals in order from slowest to fastest or fastest to slowest.. 3 The students label the graph with a title. 4. When everyone is finished let the students present to the class.

5. Criteria: 1. The graph needs to be arranged from slowest to fastest or fastest to slowest. 2. The graph needs to be labeled and numbered correctly (by ones, fives, tens, etc.). 3. The graph needs to be visually appealing.

6. Example Correct Response:



Measuring a Small Mammal

by Samantha Hicok

1. How the Logical-Mathematical Intelligence is Supported: Students practice making measurements and compare them with published data.

2. Objective: The students will be able to measure different parts of a life-size model of a small mammal using a ruler. The students will record their measurements and then research the actual measurements of the animal to see if their measurements, as well as the size of the picture, are accurate.

3. Authentic Task: This task practices measuring, recording, and research skills. These skills are used by many professionals, like scientists, contractors, and engineers. This task also helps to support the students' problem-solving skills, which they will use throughout their education and in almost any profession they choose.

4. Instructions: 1) Choose one of the models of small mammals. 2) Think about and discuss with the people around you the different parts of the animal that could be measured. Write these ideas down vertically on the paper (at least three). 3) Using the ruler, measure the parts of the animal that were discussed. Record the measurements by the appropriate part, noting the units such as centimeters

(cm). 4) Think about and discuss with the people around you other measurements (at least one) that could be taken from a real animal that could not be found on the paper one (weight, for example). 5) Use text and internet resources to try to find these measurements and record them. 6) Students should check the measurements they took against the real measurements to see how accurate they are. 7) Once all of the data from student measurements and research has been collected, create a chart or graph to organize it (can be handwritten or computer generated).

5. **Criteria:** 1) The student's measurements should be accurate to the nearest half-unit. 2) The chart or graph should be neat and well-organized with appropriate labeling. 3) Students need to have used outside resources to find more information. 4) At least four measurements should be included in the chart or graph.

6. Example Correct Response:

Example Measurements of a Meadow Jumping Mouse (Published data from Timm, Slade, Pisani, Choate, Kaufman, & Kaufman, n.d.)

Aspect of Body Being Measured	Measurement Using Ruler on Drawing	Published Measurement from book or Website
Total Length	18-24 cm	17.8-22.0 cm
Tail Length	10-16 cm	10.6 – 13.1 cm
Hind Foot	2.5 cm in	2.6 – 3.0 cm
Height	4 cm	no data
Weight	no data	12-22 grams

Full Scale Cutout of a Small Mammal

by Mikael Rein

1. How the Logical-Mathematical Intelligence is Supported: Student uses measurements to make a full scale drawing/cutout of a small mammal.

2. Objective. Using the measurements given and a picture of the thirteen lined ground squirrel students will be able to make an accurate paper model of the animal that is small, medium, or large sized.

3. Authentic Task. Toy manufacturers and museum model-makers use measurements to allow them to make true-sized models of animals for play or educational display.

4. Instructions: 1) Look at the image of the thirteen-lined ground squirrel and notice the measurements in Table 1. 2) Construct a full-scale (life-sized) paper model of the ground squirrel on a manila folder or piece of cardstock paper. Look at the measurements in the table and decide if you are going to make a small, medium, or large sized thirteen lined ground squirrel. Decide if you will be using metric measurement (centimeters) or inches. If you would like to draw a different small mammal, research its measurements and use them. 3) Use a ruler to measure and mark the total length of the animal on your paper. Then determine the tail length. Also, check that the body length (containing the head but not the tail) is correct. 4) Now sketch the animal, making sure that its back foot is the correct size. Draw the nose and mouth. 5) Cut out 4 thin strips from the brown construction paper that will be the stripes on the squirrel's back. Also with the brown construction paper cut out a half circle for the ear. Glue the strips along the body of the squirrel and space them out so that they are not touching. Glue the ear onto the head. Next, cut out a black football-shape for the eye and a smaller half-circle for the ear. Glue the eye on and glue the black half circle on top of the brown half circle. Use a white colored pencil to draw dots on the brown cut out lines on the body. Color the nose a pinkish color. With at least 3 different colored brown colored pencils draw little lines for fur all over the body. 6) Cut out the animal and write a fact about the ground squirrel on the back.

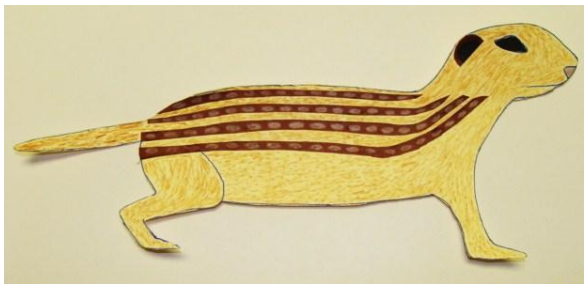
Measurements of the Thirteen Lined Ground Squirrel (Craven, n.d.; Purdue University, 2010; Streubel and Fitzgerald, 1978)

Aspect being measured	Small	Medium	Large
Total length including tail	17.0 cm	23.3 cm	29.7 cm
	7 in.	9.5 in	12 in.
Tail length	6.0 cm	9.6 cm	13.2 cm
	2.5 in	4 in	5.5 in
Body length without tail	11 cm	13.8 cm	16.5 cm
	4.5 in	5.5 in	6.5 in
Hind foot	2.7 cm	3.4 cm	4.1 cm
	1 in	1.25 in	1.5 in

5. Criteria: 1) The paper model needs to have all the required details (eye, mouth, nose, ear, fur, stripes). 2) The model needs to be in color (tans, yellows, browns). 3) The animal should measure to scale.

6. Example Correct Response:

Example Paper Model of Ground Squirrel



Practicing Logical Thinking with the Small Mammals Mystery Box

by Jennifer Lenane

1. How Logical-Mathematical Intelligence is Supported: Students use logical inferences and the process of elimination to determine the mystery animal.

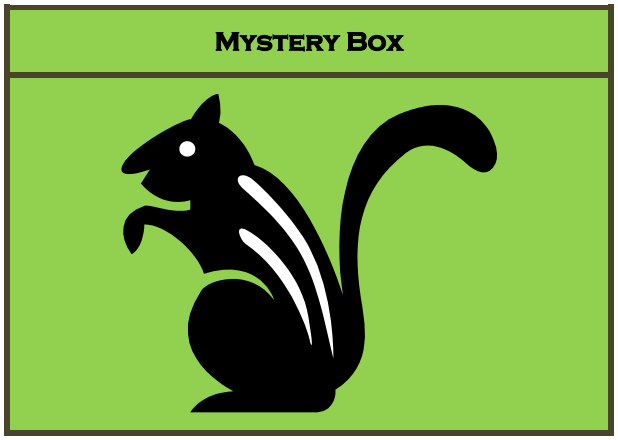
2. Objective: Students will ask a variety of questions to determine the mystery animal, using deductive reasoning and knowledge of the small mammals to eliminate incorrect animals. The student holding the mystery animal will assess each question and answer "yes" or "no" to support his/her peers' learning and thinking.

3. Authentic Task: Using deductive reasoning and having an ability to ask questions is an important part of many careers. Police officers, investigators, and lawyers all use these skills on a daily basis to solve crimes.

4. Instructions: 1) Each student will choose a small mammal to be his/her mystery animal. 2) Students will cut out and construct a small mammal object to place in the mystery box from the clip-art. 3) Students will form groups of 3 or 4 students to share and practice determining the mystery mammal. 4) One student at a time, students will place their mammal in a mystery box (or envelope). 5) Going in a circle, the other members of the group will ask yes or no questions and use deductive reasoning to figure out what mammal is in the mystery box.

5. Criteria: 1) Students must ask at least 3 questions throughout the activity. 2) Questions should be clear and concise. 3) The student holding the mystery box answers with "yes" or "no." 4) Questions should address factual information about the mammals.

6. Example Correct Response:



Example Question and Answer Script for Guessing the Mystery Animal

Student 1: Is the animal smaller than 10 inches in length?
Mystery Box Holder: Yes.
Student 2: Does this animal have stripes?
Mystery Box Holder: Yes.
Student 3: Does the animal have 13 stripes?
Mystery Box Holder: No.
Student 1: Does the animal have cheek pouches that help carry food?
Mystery Box Holder: Yes.
Student 2: Is the animal an Eastern Chipmunk?
Mystery Box Holder: Yes!

Writing Story Problems About Small Mammals for Math Facts

by Laura Korodan

1. How the Logical-Mathematical Intelligence is Supported: Students write mathematical word problems which involve information about small mammals.

2. Objective: The students will be able to write two math word problem which include facts about at least one small mammal.

3. Authentic Task: Writing and solving math problems is what mathematicians do. This task practices math skills

that strengthen problem-solving skills. Problem-solving skills are needed in many professions, such as engineers, biologists, mathematicians, and surgeons.

4. Instructions: 1) Choose one or two small mammals of interest. 2) Write two facts about the mammal(s), making sure the facts include numbers or measurements. 3) Include the name of the small mammal(s) in writing a mathematic word problem. 4) Write the equation for solving the word problem. Indicate the answer in a sentence.

5. Criteria: 1) The math problems should include two separate facts about small mammals. 2) The problems should be written clearly. 3) The equation and answer to each problem should be included. 4) The math problem should include factual information. 5) The name of the small mammal chosen should be included in the problem.

6. Example Correct Response:

Problem: A gopher's body is 15 inches long and a gopher's tail is about half the size of its body. About how long is the gopher's tail?

Answer: 15/2 = 7.5; the gopher's tail is about 7.5 inches long.

Problem: A deer mouse has 2-4 litters in one year and each litter usually has 3-5 babies. If one mother has 4 litters and each litter has 5 babies in it, how many babies is that?

Answer: 4 x 5 = 20; the mother deer mouse had 20 babies.

Arranging Small Mammals into a Series

by Christina Roberts

1. How the Logical-Mathematical Intelligence is Supported: The student uses measurements or other quantitative information to arrange mammals into an ordered series.

2. Objective: The student will be able to sort the mammals into several series based on information they have researched about the mammals.

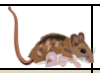
3. Authentic Task. Creating a series based on a characteristic is an activity that some scientists and researchers use to identify similar organisms.

4. Instructions: 1) Create a series based on a criterion of your choosing from the least to the most of that criterion. 2) Use literature or information from the internet to research characteristics of each small mammal. 3) Use printed clip art pictures of the small mammals to create the series.

5. Criteria: 1) Make a minimum of two different series from the least to the most of a certain criterion. 2) Each series should contain at least 3 small mammals. 3) Each mammal should be labeled. 4) Each series should be labeled with the name of the criterion used. 5) Work should be correct and aesthetically pleasing.

6. Example Correct Response:

Example small mammal series

Tail Length	 Southern Bog Lemming	 Eastern Chipmunk	 Deer Mouse	 Meadow Jumping Mouse
Number of Stripes	 Thirteen Lined Ground Squirrel	 Eastern Chipmunk	 Franklin's Ground Squirrel	

Bodily-Kinesthetic Intelligence

Duplicating Animal Body Part Form and Function in a Jewelry Item

by Kristi Gunnarson

1. How Bodily-Kinesthetic Intelligence is Supported: The student considers how the animal's skeleton works supporting the animal's bodily motions and lifestyle.

2. Objective: The student will be able to draw a representation of the skeleton of one of the small mammals and record facts explaining how the skeleton functions to support the animal's lifestyle.

3. Authentic Task: Creating the skeleton of the small mammal of Iowa is an authentic task used by some researchers who are studying the skeletal system of living things. This task practices sketching engineering skills that strengthen three dimensional visualization skills. Three

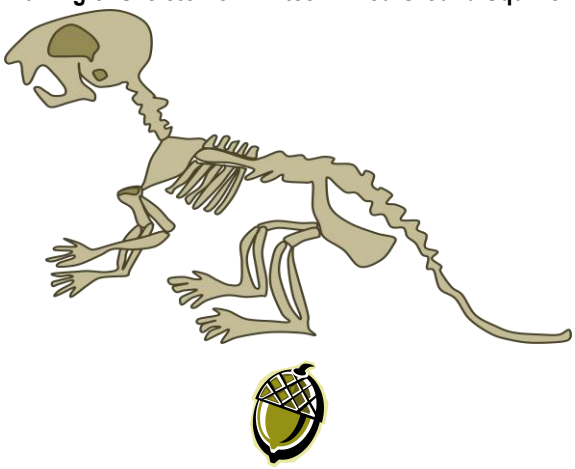
dimensional visualization skills are needed by engineers, architects, and clothing designers.

4. Instructions: 1) Choose one of the small mammals that is of interest. 2) Research books or websites to find a skeleton of your animal. 3 Looking at the skeleton photograph, draw a sketch of the skeleton to the best of your ability, noticing the various bones and the body parts they support. 3) Read books or use resources from the Internet to investigate the skeleton of your animal, its features, and facts. 5) Write three facts about how the animal's skeleton supports the motions and activities of the animal and its lifestyle.

5. Criteria: 1) the skeleton must have all the major skeletal parts: skull, vertebrae and ribs, arms and legs, tail. 2) Three facts about how the skeleton supports the animal's motions and activities are noted. 3) The level of detail and neatness indicate that the student put time and effort into the work.

6. Example of Correct Response: Three Facts: 1) Each front leg has four toes and each back leg has five toes. All toes have long, slender digging claws to help the animal dig its burrow system. 2) The animal has a fairly long tail that helps it balance as it stands on hind legs to look around. 3) The animal has sharp front teeth in the skull to snip grasses.

Drawing of Skeleton of Thirteen Lined Ground Squirrel



Wax Museum

by Erika Gauley

1. How Bodily-Kinesthetic Intelligence is Supported: Students pretend that they are an artifact in a wax museum and will dramatize the movements and verbally tell the lifestyle of a small mammal when their placard has been touched.

2. Authentic Task: Students present information they have gathered in a creative way, through the means of drama. In the real world, actors are involved in this task when they take on the role of a character.

3. Objective: Students will transform research into a dramatic presentation that "brings to life" a small mammal, highlighting key characteristics about its appearance, habitat, and lifestyle.

4. Instructions: 1) Students choose a small mammal that they would like to research. 2) Students read texts or use the internet to investigate their small mammal. 3) Students take notes while gathering information, making sure to identify key characteristics that are required elements. 4) Students transform their notes into a script that introduces and describes their small mammal in the first person. 5) Students write their script on an index card. Script needs to include instructions of dramatized body motions. 6) Students rehearse their presentation, so that they can look up from their script to interact with their audience. 7) Students put together a clothing ensemble that resembles their small mammal. 8) Students are split into two groups. One group presents their script, while the other group rotates to each "small mammal". Students touch a small mammal's placard (index card) to make him or her come to life. 9) Once the placard is touched, the student will present his or her dramatic performance in its entirety. After completion, the student will remain silent until his or her placard has been tapped by a new visitor.

5. Criteria: 1) The dramatic presentation must include: the name of the small mammal, its appearance, where it is most commonly found, its habitat, diet, predators, behavior, reproduction, and life expectancy. 2) The presentation must be within one to two minutes in length, and it should be clear, interesting, and well-rehearsed. 3) Instructions for body motions need to be written into the script. 4) The appearance or costume should be appropriate to the small mammal.

6. Example Correct Response: Hello, my name is Squeakers, and I am a deer mouse. (Student stands with bent knees and arms held forward , bent at elbows.) I have a small body that is five to eight inches long. I have a pointed nose with large, black, and beady eyes. My ears are rather large, and my whiskers are long. I am called a deer mouse because my coat resembles that of a deer. My fur is grayish brown, but my under parts are white. I have a lot of fur, but it is short and soft. My tail is dark on the top and light on the bottom. (Student flicks tail.) I grew up in North America in a prairie, but I have relatives who live in bushy and woodland areas. (Student motions to the right and then left.) My favorite foods are insects, seeds, fruits, flowers, and nuts. (Student pretends to use paws to feed

the mouth). I have to be very cautious because many animals would like to eat me. These include: snakes, owls, badgers, skunks, foxes, bobcats, and coyotes. (Student acts afraid and nervously shifts position.) I am most active at night. During this time I gather food and restructure my nest. (Student acts out nest-fluffing.) I communicate with fellow deer mice by grooming them, producing scents, and making squeaky noises. (Student shows how mouse grooms fur.) Female deer mice have many litters a year, and my litter had seven of us mice. Unfortunately, I will not live very long; my life expectancy is usually around a year.

Duplicating Animal Body Part Form and Function in a Jewelry Item

by Kristi Gunnarson

1. How Bodily-Kinesthetic Intelligence is Supported: The student considers how the animal's body works and create an item to wear that mimics that aspect.

2. Objective: The student will be able to create a piece of jewelry or a costume piece that represents the form and function of a body part of one of the small mammals from the master list.

3. Authentic Task: creating costumes and jewelry is an authentic task done by fashion designers, artists, and adults.

4. Instructions: 1) Each student will choose one of the small mammals to research and study 2) The student will choose at least one characteristic of interest concerning the animal, thinking about the form (shape, color, size, configuration, texture, elasticity, etc.) and the function of that body part. 3) The student will find some way to portray that characteristic in a piece of jewelry or another costume item.4) The student will write a short description of how the worn article represents the animal's body part.

5. Criteria: 1) The item created must be able to fully function for its intended use 2) The item must contain a characteristic that can be related to form and function of a body part of one of the small mammals studied 3) The student must complete a brief description of the item he/she created how it relates to the animal. The student also needs to include how it functions for the human owner of the item.

6. Example of Correct Response: Example description: This bracelet represents the Eastern Chipmunk's cheek pouch in which the chipmunk transports food. I chose to make a bracelet that could store things just like the chipmunk's pouches. This bracelet has a little pouch in which a pencil, lip gloss, or a piece of gum could be stored. The bracelet's owner can wear the bracelet and keep something special inside the pouch to transport it just like the chipmunk carries seeds to its burrow.

Photograph of the Bracelet

The Bracelet in Use.

Dramatizing the Actions of a Small Mammal

by Kayla Maynard

1. How Bodily-Kinesthetic Intelligence is Supported: The student considers typical body motions and stances of the animal and acts them out using his/her own body.

2. Objective: The student will be able to apply the knowledge learned from the small mammals activity to develop movements and costume elements that represent an animal.

3. Authentic Task. Interpreting animal characteristics through a physical performance is an authentic task used by actors and dancers.

4. Instructions: 1) Choose a small mammal that you find interesting. 2) Research the animal more in depth to find more information about physical characteristics and actions, paying particular attention to those that may be dramatized. 3) Use paper, markers, crayons, glue, sheet foam, felt, or other craft materials. to create a signifying physical attribute of the animal. 4) Find a way to attach your creation to you so that it will accurately display the characteristic – perhaps use tape or a strap. 5) Practice the movements that are most characteristic of your chosen animal. 6) Perform a dramatization of your animal for others and ask them to guess your animal.

5. Criteria: 1) The student needs to have at least one homemade costume-part representing a physical attribute of the animal that is correctly placed on the student's body 2) The scenery should be related to the animal's environment and aid in the performance 3) The movements should accurately portray the most signifying characteristics of the animal. 4) The performance should be interesting and intrigue students to guess the animal.

6. Example Correct Response. During the performance, the student does the following actions that represent characteristic actions of the thirteen-lined ground squirrel: burrowing, rolling into a ball to hibernate, and standing upright to look around. The student wears the pattern shown below. The student also will have background props of a caterpillar and grassy area to show the food and environment of this animal.

Pattern representing thirteen lines (some dotted) to be attached to the back of the performer.

Visual-Spatial Intelligence

Pop-up

by Brittany Diercks

1. How the Visual–Spatial Intelligence is Supported: Students learn how to make a pop-up that arranges flat images in space.

2. Objective: The student will be able to create a pop-up poster or booklet that describes the diet, habitat, and predators of a small mammal.

3. Authentic Task: Creating a pop-up poster or booklet is an authentic task used by some authors and/or illustrators in making books. The task practices engineering skills by creating three-dimensional objects using paper and glue. These skills are used by architects, engineers, and designers.

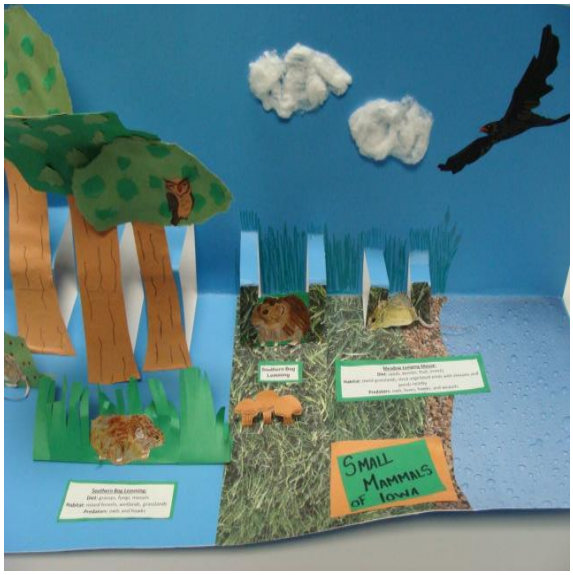
4. Instructions:1) Choose one or two small mammals that interest you. 2) Use clip art, your own drawings, or magazine pictures in your pop-up. 3) Choose whether you want to create a poster or small booklet. The poster has to show two animals and the booklet can show one or two mammals, but must be at least five pages long. 4) To make a pop-up page, fold a piece of paper in half. 5) From the middle of the folded edge, snip two parallel cuts about an inch deep and about a half-inch apart. This is a rectangular

"tab." Fold the tab back and forth on the side of the rectangle that is opposite the folded edge. Then open up the folded paper and push on the tab to make it fold inward. It will be folded inside when you close the folded paper. 6) You will be gluing a cutout animal or plant to the folded tab on the inside of the paper so that when one opens the paper, the cutout stands up. 7) You may want to practice with scrap paper to see how tall and wide the tabs should be so that the cutouts show in the correct positions in your scene. 8) Cut the rest of the tabs and glue the cutouts to the pop-ups. Add details to the scene. 9) Label the animals and have the diet, predators, and habitats written on or near the pop-ups to explain the interactions.

5. Criteria: 1) The pop-up needs to open correctly so that the cutouts stand up. 2) The drawings and scenery should accurately represent the animals' habitats. 3) There should be at least five pop-up items. 4) The diet and predators of the mammals should be represented. 5) The mammals should be labeled. 6) There should be correct written facts telling the diet, habitat, and predators of the animal featured on the pop-up.

6. Example Correct Response:

Example Pop-up Showing Interactions between Small Mammals and Owl and Hawk Predators.



Painting of Small Mammal

by Becky Wuebker

1. How the Visual-Spatial Intelligence is Supported: Students paint a visual display by hand that includes information on a small mammal.

2. Objective: The students will be able to create a picture of a small mammal that shows the animal's habitat and characteristics.

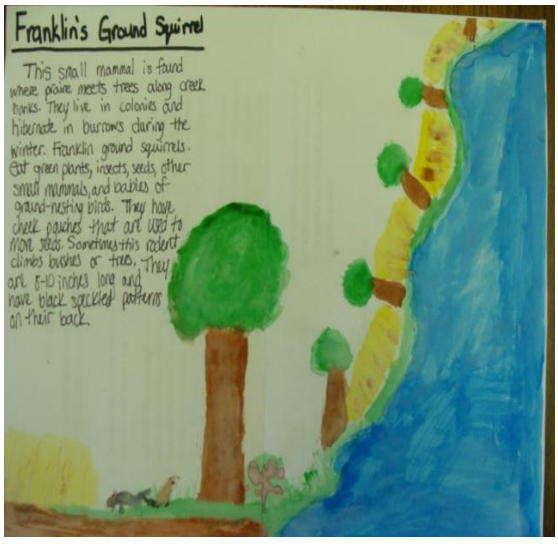
3. Authentic Task: Some illustrators create Creating a water color pictures for illustrating books. Artists may situate animals in realistic settings.

4. Instructions: 1) Choose and research a small mammal that interests you. 2) Envision how you want the picture to look. 3) Paint the small mammal in its habitat, including features such as home, food, and other aspects of the environment.

5. Criteria: 1) The student must include at least four clear details about the small mammal. 2) The facts about the small mammal must be correct. 3) Paint must be used, but other media such as pencil, pen, or marker may be included. 4) The small mammal's name must be labeled.

6. Example Correct Response:

Example Small Mammal Habitat Painting



Concept Map of Ideas about Small Mammals

by Bethany Olson

1. How the Visual–Spatial Intelligence is Supported: The student organizes information into a visual concept map to show relationships in a spatial layout.

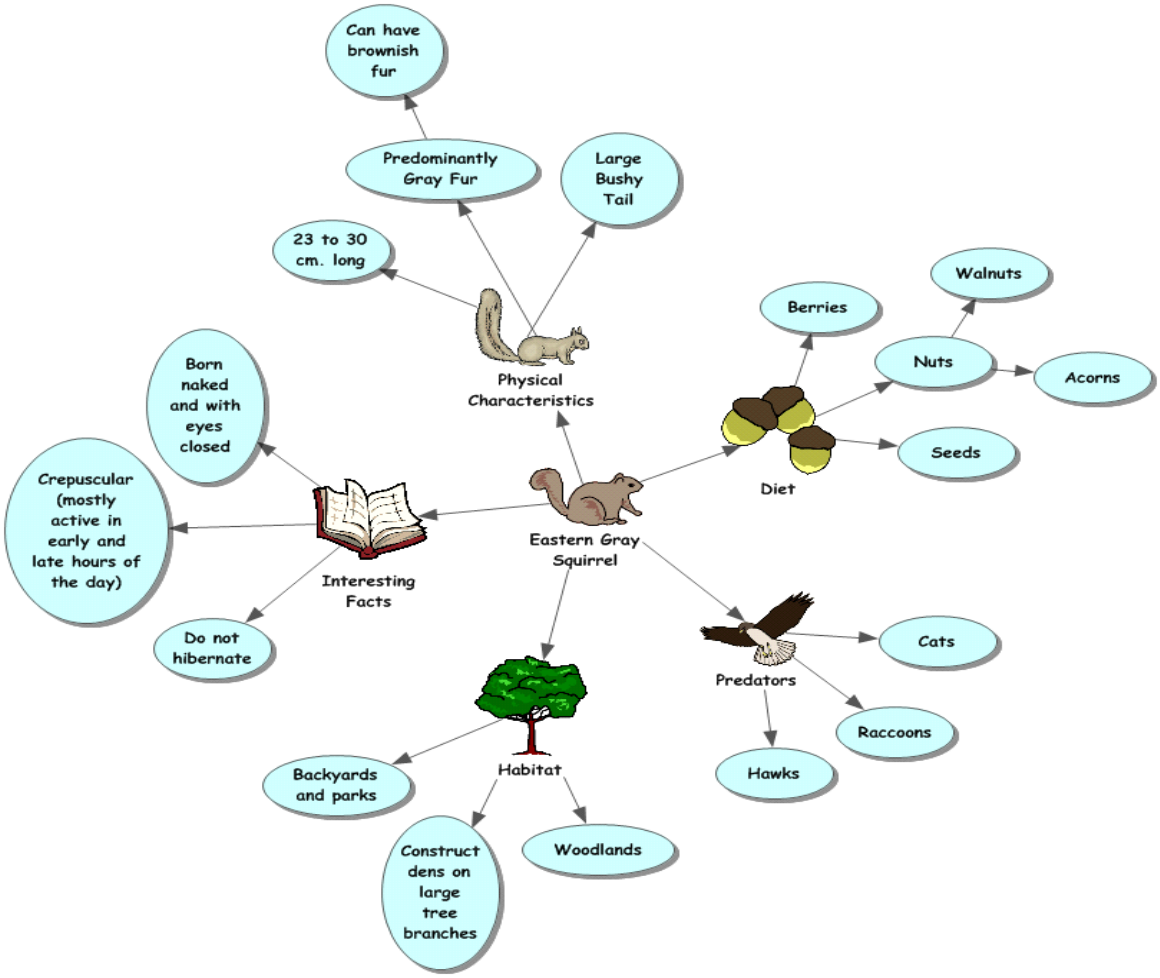
2. Objective: Students will be able to design a concept map to present organized information about small mammals.

3. Authentic Task: Designing concept maps is an authentic task used by some writers before writing articles or books. This technique is also used by other professionals to show how different aspects of information relate to each other.

4. Instructions: 1) Select one small mammal that is of interest. 2) Research the following information about the small mammal: physical characteristics, habitat, diet, predators, and interesting facts. 3) Create a concept map by drawing or using computer software. Put the name of the small mammal in middle of the page. Add the five categories (physical characteristics, habitat, diet, predators, and interesting facts) around the small mammal and connect them like spokes of a wheel. Add information discovered during research around the categories and connect these ideas with lines. 4) Draw or add clip art pictures to the concept map.

5. Criteria: 1) The student should have a completed web showing the physical characteristics, habitat, diet, predators, and interesting facts of a small mammal of their choice. 2) Each category must contain at least three accurate facts discovered through research. 3) The graphic organizer should contain at least six pictures (clip art or hand-drawn).

6. Example Correct Response:



Patchwork Quilt

by Ashley Wright

1. How the Visual–Spatial Intelligence is Supported: Students arrange and balance visual components and colors in the quilt.

2. Objective: The students will be able to create a patchwork quilt panel about one of the small mammals.

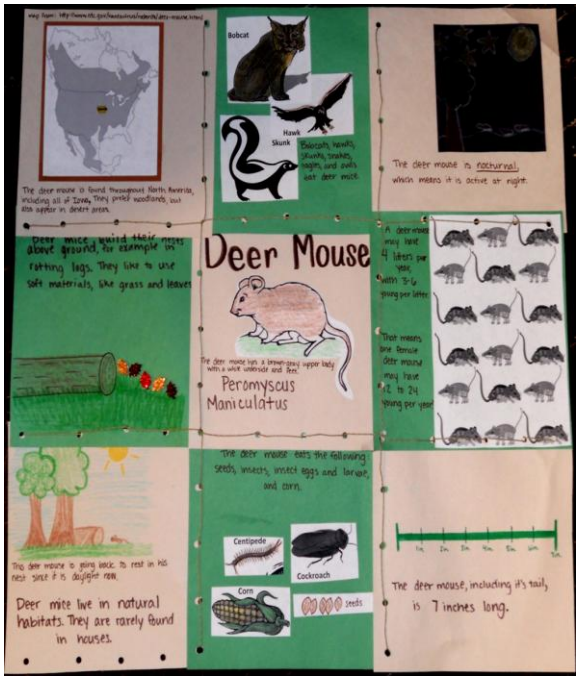
3. Authentic Task: Many adults create quilts for need, employment, or as a hobby. Students must use their hands to "sew" the paper squares together by weaving string or yarn through the paper. Sewing is an authentic task that many adults do in real life; for example, sewing on a button with needle and thread or stitching up a small rip in a piece of clothing.

4. Instructions: 1) Students will work with partners to complete this task. 2) Each group picks one small mammal to research on the internet or in books. 3) After researching the mammal, the pairs of students will work together to create a quilt panel about the mammal they researched. 4) Chose interesting colors of nine pieces of paper to use to create the color block pattern of the quilt. 5) Arrange the papers on a table or the floor to produce a pleasing pattern. 6) Use a single hole punch to make holes along the edges of the squares/rectangles, and use string or embroidery thread to "sew" the paper panels together. 7) Once all squares are sewn together, begin decorating the quilt. One of the squares needs to include the common name of the mammal, the scientific name of the mammal, and a picture of the mammal. 8) Each of the other eight squares must have one fact per square about the mammal's habitat or lifestyle. Each fact should be represented with a sentence (in legible handwriting) and colored illustration. (Illustrations can be hand drawn, clipart from the internet, or cut out from magazines.) 9) After all pairs have completed their quilts; they will take turns presenting them to peers. 10) Quilts will be displayed in the classroom or in the hallway so students can reference them to continue learning about the small mammals of Iowa.

5. Criteria: 1) It must be evident that both group members contributed to the quilt. 2) All nine pieces of paper must be sewn together to create the quilt. 3) One of the squares must have the name and scientific name of the mammal on it, along with a colored illustration of the mammal. 4) Each of the other eight squares must have one fact on it. The fact will be represented by a sentence (in neat legible handwriting), and a colored hand-drawn or clipart illustration that relates to the fact. 5) Both students in the group must speak while presenting their quilt to the class.

6. Example Correct Response:

Quilt about the Deer Mouse



Explanation of Quilt Figure: Top left: Fact-Deer mice are found all over North America. **Top middle:** Fact- Bobcats, hawks, skunks, snakes, eagles, and owls eat deer mice. **Top right:** Fact-Deer mice are nocturnal. **Middle left:** Fact-Deer mice build their nests above ground in places like rotting logs and use soft materials, like grass and leaves. **Center:** Deer Mouse, Peromyscus Maniculatus. Deer mice have a brownish gray upper body with a completely white underbody and feet. **Middle right:** Fact-A deer mouse may have 4 litters per year. Each litter may have 3-6 young. This means that a female dear mouse may have 12-24 young per year! **Bottom left:** Fact-Deer mice live in natural habitats. They are rarely found in houses. **Bottom middle:** Fact- Deer mice eat seeds, insects, insect eggs and larvae, and corn. **Bottom right:** Fact- The deer mouse, including its tail, is 7 inches long.

Small Mammal Cartoon

by Adrianne Staley

1.How the Visual–Spatial Intelligence is Supported: The student arranges images and text in a linear cartoon involving three hand-sketched cartoon panels.

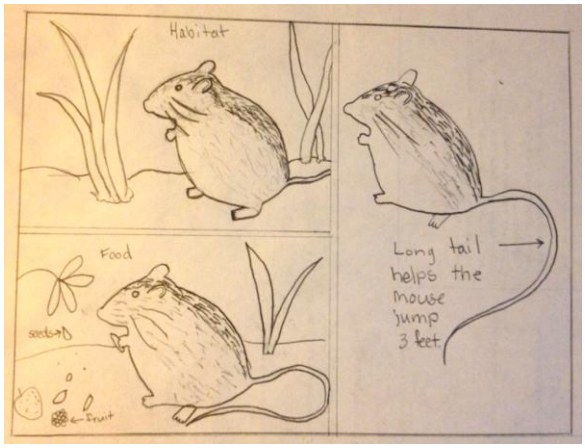
2. Objective: The students will be able to sketch/draw a three paneled cartoon illustrating the habitat, food, and physical characteristics.

3. Authentic Task: Scientists use their drawing skills to sketch animals and their habitats. There are many cartoonists that make political cartoons, images for children's books, children's science textbooks, comic books, and cartoon strips for newspapers.

4. Instructions: 1) Ideally, students should sketch the chosen small mammal in the wild. If that is not possible, the student should locate a detailed photograph in a book and make a sketch from that. 2) The sketch may be done in pencil, colored pencil, crayon, or ink. 3) Include at least two characteristics of the animal's habitat, food, and environment. 4) On the back of the drawing, write three facts about the animal that can be observed from the drawing.

5. Criteria: 1) The cartoon should include at least three panels and cartoon representations that correctly reflect the physical appearance, the habitat, and the food of an Iowan small mammal of the student's choice. 2) The student must also label each panel to introduce each of the attributes of the animal.

6. Example Correct Response: The cartoon below illustrates the Meadow Jumping Mouse.



Mapping Animal Ranges

by Brittany Hoefer

1. How the Visual–Spatial Intelligence is Supported: Students use a map representing a geographic area and determine the ranges of animal populations.

2. Objective: Given a map of the United States, the student will be able to draw or label the range (areas in which the animals are naturally found) of at least two small mammals.

3. Authentic Task. Scientists and naturalists map the ranges of animals. Determining the current location of animals to compare to past ranges shows how human population growth, urban sprawl, and global climate change affect natural populations.

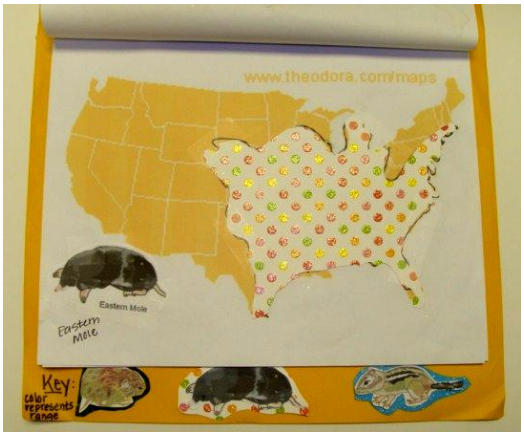
4. Instructions: 1) Students will select two to three mammals to research. Students will be provided internet access as well as library time to view print materials. 2) Once students have gathered information, they will be provided a large map of the United States on which they will map out the range of two or three mammals. 3) Students will be given 2-3 maps of the United States on which they will label each of the mammals' range using a marker. Be sure they use a different map for each mammal. 4) After students have drawn out the ranges, the teacher will provide materials of different textures (for example, sheet foam, glittered paper, fabric) for students to create a craft map of the different ranges of the small mammals.

5. Criteria: 1) At least two mammal ranges are labeled correctly on the map. 2) The map includes a key that explains the texture used for each animal's range. 3) The map work is neat and attractive. 4) The animal's range is shown with a textured material.

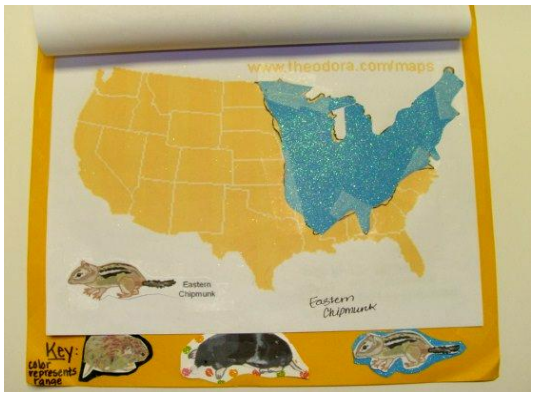
6. Example Correct Response:

Book of Map Pages Showing Animal Ranges.

Another Page Showing Eastern Mole's Range.



Range of the Eastern Chipmunk.



Diorama Showing Environmental Interactions

by Melanie Lambert

1. How the Visual–Spatial Intelligence is Supported: Students create a three-dimensional scene, arranging the various components in space.

2. Objective: The student will be able to create a three-dimensional diorama that includes four aspects of one or more small mammal's lives.

3. Authentic Task: Dioramas are used in museums to show a scene that educates or entertains the observer. Display designers use three dimensional dioramas to show a glimpse into history or the habitat and environmental interactions of animals and people. Architects use dioramas to show a structure they plan to build.

4. Instructions: 1) Choose one to three small mammals that live in the same environment. 2) Research information about these animals, identifying four interesting things (e.g., sleeping, eating, movement habits) to depict in the diorama. 3) Create a background in a shoebox or similar-sized box for the small mammal's habitat. 4) Add details to correctly show what was learned from research. 5) Arrange the items in the diorama, and glue them into place. Don't forget to place pictures or models of the mammal(s) into the diorama. 6) Write several sentences describing the information you learned from your research that is related to the scene of the diorama.7) Place a title on your diorama clearly for everyone to see.

5. Criteria: 1) One or more animals within the diorama. 2) Four accurate aspects of the small mammal's life are shown. 3) The diorama is colorful and creative (e.g., original ways of using materials, details added). 4) The small mammal is placed in the correct environment. 5) The student has described the diorama with several sentences. 6) The diorama is labeled with print that is large and easy to read.

6. Example Correct Response: Description: The Eastern Mole lives underground most of the time, tunneling and eating worms. This animal has a poison in its saliva that paralyzes worms. It gathers worms and stacks them in an underground room. This diorama shows the mole in its tunnel. The babies are in a room waiting for their mother.

Example Diorama of the Eastern Mole

Graphing the Sizes of Small Mammals

by Kacie Rogan

1. How the Visual–Spatial Intelligence is Supported: A graph is a visual display of information.

2. Objective: The student will be able to create a graph displaying the various sizes of the small mammals from smallest mammal to largest animal. The student will accurately research the various lengths and weights of the small mammals to plot the points on the graph.

3. Authentic Task: Professionals and adults use graphs to organize information. This task practices graphing skills that strengthen interpreting graphs or data analysis skills. These skills are used by researchers, scientists, and sports analysts.

4. Instructions: 1) Research the average length and weight of eleven different small mammals. Research may be conducted on the internet, through books, or an encyclopedia. 2) Organize the data you collected (lengths and weights of eleven small mammals) from smallest length to largest in a table style format. Numbers may have to be converted to the same units of measure. For example the length may be reported in millimeters or centimeters or inches and the weight may be in grams or ounces or pounds. There may be a tie between two or more animals. If this occurs your points may overlap a little bit on your graph. 3) Create a graph on a piece of large construction paper. Use a ruler to draw the axes of the graph. Make sure your graph has a title and the x and y axes are labeled. Use either the metric system or the English system. Your graph should also have numbers on it. You count by twos or fives, depending on your research. 4) Plot each small mammal's weight and length on your graph. In order to plot the point find each of the individual measures on the axes and then find the meeting point of the two points.

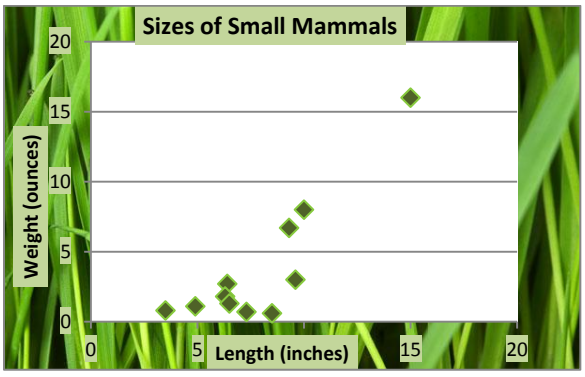
5. Criteria: 1) The graph must be labeled with a title. The x and y axes must be labeled with weight and length along with units. The axes must also be numbered. 2) Data points should be clear and neat. 3) The information of the small mammal's length and weight must be accurate. 4) The data must also be organized in a table.

6. Example Correct Response:

Example Table of Small Mammal Data

Small Mammal	x Length (in.)	y Weight (oz.)
Eastern Chipmunk	9.6	3
Franklin's Ground Squirrel	15	16
Eastern Mole	6.4	2.7
Plains Pocket Gopher	9.3	6.7
Northern Short Tailed Shrew	3.5	0.8
Southern Bog Lemming	4.9	1.1
Thirteen Lined Ground Squirrel	10	8
Meadow Vole	6.3	1.8
Meadow Jumping Vole	8.5	0.6
Deer Mouse	7.3	0.7
Northern Grasshopper Mouse	6.5	1.3

Example Graph of Small Mammal Data



Small Mammal Puzzle

by Kelsey A. Werner

1. How Visual-Spatial Intelligence is Supported: Student make a painting that represents the lifestyle of a small mammal and then create a puzzle that is cut apart and reassembled to show the painting.

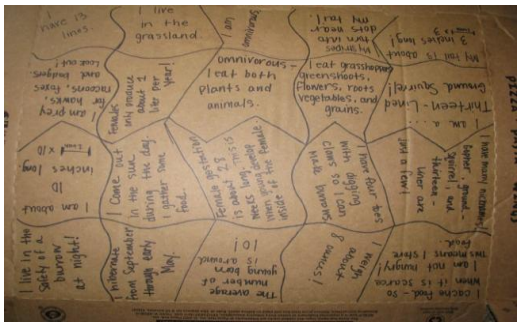
2. Objective: The students will be able to create a puzzle showing a painting of a small mammal in its habitat with a fact written on the reverse side of each puzzle piece.

3. Authentic Task. Many people enjoy assembling jigsaw puzzles. This activity allows the student to create his/her own factual puzzle.

4. Instructions.1) Choose a small mammal that you enjoy or don't know much about. 2) Research and record at least ten facts about it. These facts should tell about what it looks like, what it eats, where it lives, and what eats it. 3) Use a piece of non-corrugated cardboard that is at least page-size. 4) Divide the back of the cardboard into ten or more different-shaped puzzle pieces by drawing lines. Write one fact about the animal on each piece. Do not cut apart the pieces yet. 4) On the front of the cardboard, paint a picture of your small mammal in its habitat. You must include where your mammal lives, a food item, and identifiable characteristics of your small mammal. Let your painting dry overnight. 5) Using the outlines of pieces on the back puzzle side to guide work, cut apart the puzzle pieces. 6) Two people work together to assemble the puzzle. Each student gets several pieces. To practice the facts, they ask each other a question about the fact on a puzzle piece before using it in the puzzle.

5. Criteria. 1) The painting must include characteristics of the small mammal's appearance, a food that the small mammal consumes, and the small mammal's habitat. 2) The puzzle pieces on the back of the painting must include at least ten facts about the small mammal.

6. Example Correct Response.



Making a Statue of a Small Mammal

by Nicole Basile

1. How the Visual–Spatial Intelligence is Supported: The student uses clay or papier-mâché to make a statue of a small mammal, transforming two-dimensional pictures into a three-dimensional model.

2. Objective: The student will be able to create a sculpture out of clay that realistically represents the Eastern Chipmunk, or a different small mammal of Iowa. To make an accurate life size sculpture the student will be able to research the bodily dimensions and characteristics of their small mammal.

3. Authentic Task: Sculptors make three-dimensional statues as do other artists, potters, and designers.

4. Instructions: 1) Choose a small mammal. 2) Research the size of the animal's head, body, legs, and tail and the coloring characteristics and markings of the animal's fur. 3) Sculpt or model the small mammal in some medium such as clay, papier-mâché, or wax. Make the small mammal life size by using the researched measurements and consulting some photographs of the creature. 4) Add color with markers or paint to portray the animal realistically. 5) Present your finished sculpture to the class, telling interesting facts.

5. Criteria: 1) The sculpture needs to be neatly and made proportional to the actual size of the small mammal. 2) The sculpture needs to be accurately painted according to the actual coloring characteristics and markings of the animal's fur. 3) The small mammal sculpture should be neatly made.

6. Example Correct Response:

Front and Back Views of Statue of Eastern Chipmunk Clay Statue

Sketch of Animal in its Environment

by Erin Snyder

1. How the Visual–Spatial Intelligence is Supported: The student arranges images, text and crafts on each page of the scrapbook to make a pleasing assemblage.

2. Objective: The students will be able to sketch/draw a thirteen lined ground squirrel and its habitat.

3. Authentic Task: Scientists studying animals in the wild may take pictures and draw or sketch the animals in the habitat. They do this to get a better understanding of the animal in its natural environment.

4. Instructions: 1) Ideally, students should sketch the chosen small mammal in the wild. If that is not possible, the student should locate a detailed photograph in a book and make a sketch from that. 2) The sketch may be done in pencil, colored pencil, crayon, or ink. 3) Include at least two characteristics of the animal's habitat, food, and environment. 4) On the back of the drawing, write three facts about the animal that can be observed from the drawing.

5. Criteria: 1) The sketch must be realistic and be done from life or a photograph. 2) At least two characteristics of the animal's habitat must be shown in the drawing. 3) Three facts that can be observed in the drawing should be written on the back.

6. Example Correct Response: Three Facts: 1) Thirteen Lined Ground Squirrels live in grasslands of relatively short grass. 2) They like to pause and stand upright to look around for danger. 3) These animals make burrows in the ground.

Sketch of the Thirteen Lined Ground Squirrel in its Habitat.

Scrapbook of a Small Mammal

by Jessica Morano

1. How the Visual–Spatial Intelligence is Supported: The student arranges images, text and crafts on each page of the scrapbook to make a pleasing assemblage.

2. Objective: The students will be able to create a mini scrapbook including 4 pages that contain facts about 1 small mammal.

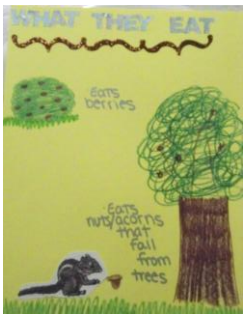
3. Authentic Task: Many adults engage in scrapbooking as a hobby. They do it in their free time at their own home or with friends. Some adults who teach classes on the art and techniques of scrapbooking.

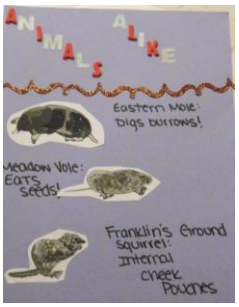
4. Instructions: 1) Choose one of the small mammals as a focus for the scrapbook. 2) Choose three headings that you want to use in your scrapbook. For example, consider ideas such as "Diet", "Hibernation", and "Characteristics." 3) Research the animal to find facts to put on the pages with those headings. 4) Make a cover with a title. 5) Label all pages with the correct headings. 6) On the last page, use the heading "Animals Alike". On this page compare your animal to other similar animals. 7) Cut and paste realistic pictures of the animals to illustrate your ideas. You may also draw additional pictures and add details to your pages. 8) Add facts on each page. 9) Put the pages in order. 10) Fasten the pages together to form a scrapbook.

5. Criteria: 1) The pages need to be fastened together to form a scrapbook with a cover and title. 2) The four pages of the book each need to have a heading, two facts, and at least one color illustration. 3) The "Animals Alike" page should compare at least three other small mammals compared to the focus animal. 4) The scrapbook should be colorful and neat

6. Example Correct Response:

Example Scrapbook Pages on Eastern Chipmunk





Map of a Small Mammal's Territory

by Amanda Redinbaugh

1. How the Visual-Spatial Intelligence is Supported: The student considers the spatial layout of the environment in making a map of the animal's territory.

2. Objective: The student will be able to create a map of a small mammal's home territory that includes where it lives, the type of food the animal eats, the animal, and an interesting fact about the animal.

3. Authentic Task: Naturalists and scientists map the territories of animals and study how these intersect with the territories of others in the environment.

4. Instructions: 1) Choose a small mammal. 2) Research to find information about the animal's home, territory, environment, and lifestyle. Draw color pictures on a piece of paper to represent the parts of that animal's territory. Include the elements of the environment that supply shelter, food, water, and a place to make a nest or burrow. 3) Use arrows to show how the animal might move throughout the mapped area.

5. Criteria: 1) The map should include the territory, home nest or burrow, mammal, food source, water source, and vegetation. 2) The color drawings should be completed to the best of the student's ability.

6. Example Correct Response:

Map of the Meadow Vole's Territory

Musical Intelligence

Song about a Small Mammal

by Courtney Holubar

1. How the Musical Intelligence is Supported: The student uses rhythm and rhyme to make a song with words telling information about a small mammal to a familiar tune.

2. Objective: The students will be able to compose a song that is set to the tune of a familiar song that contains facts about the lifestyle and habitat of a small mammal.

3. Authentic Task: Many singers and composers create music about a certain theme or experience using melodic or contrasting notes and/or dramatic tempos to make the music more meaningful and memorable.

4. Instructions: 1) Each student is given a copy of the song about the Meadow Jumping Mouse that is sung to the tune of "I'm a little teapot." Students sing the song. 2.) Students brainstorm some other well-known songs with tunes they might use. 3) Each student or pair of students chooses a small mammal and makes a list of facts about the animal. 4) Students work to replace the original words of the song with facts about the small mammal, being sure to keep the rhythm and rhyme of the original song. 5) Student perform their songs for the class.

5. Criteria: 1) Student can sing the words of the song clearly. 2) The student can sing the lines of the song in order which tell facts about the Meadow Jumping Mouse. 3) The student can sing the lines to the melody of the nursery rhyme "I'm A Little Teapot". 4) Correct facts should be included.

6. Example Correct Response:

The song should be sung to the melody of "I'm a Little Teapot" with the following words that give information about the Meadow Jumping Mouse.

Song: I'm a Little Meadow Jumping Mouse

I'm a little Meadow Jumping Mouse,
I dig a burrow for my house.
If you try to scare me I'll jump high,
Six to eight feet and I'll be bye-bye.

I'm a little Meadow Jumping Mouse,
I eat fruits and berries when I leave my house.
My body is shorter than my tail,
So look for me on the wooded trail.

Rap about a Small Mammal

by Julia Lynn Soyer

1. How the Musical Intelligence is Supported: The student uses rhythm and rhyme to make a rap that tells information about a small mammal.

2. Objective: The student will be able to compose a rap that features facts about one of the small mammals, employing rhythm, rhyme and creativity.

3. Authentic Task. Rap musicians are creative writers who convey information through their songs. This task practices creativity skills that strengthen the writing process. The writing process is used by musicians, song writers, poets, authors, teachers, and students.

4. Instructions: 1) Choose one of the small mammals that seems interesting to you. 2) Use books from the media center or reliable internet sources to find and record notes of information on the mammal. 3) Use the information obtained to create a minimum length six lined rap about the chosen mammal. The student may use resources such as a dictionary, thesaurus, and rhyming dictionary to assist in the writing process. The rap must have rhythm, for example, at least 3 pairs of rhyming words end the phrases or sentences. The rap must also have a flow based on the syllables per line/sentence. 4) Share the rap aloud in class to peers.

5. Criteria: 1) The rap must be at least 6 lines long. 2) There should be some pairs of rhyming words. 3) The rap needs to have rhythmic flow using syllables in each line. 4) The information about the mammal in the rap is accurate and displays knowledge obtained through research.

6. Example Correct Response:

Northern Short-Tailed Shrew

They call me the Northern Short-Tailed Shrew:

I eat three times my body weight too.

My toxin stuns my un-expecting prey,

And I'm only active 16% of the day!

I'm mostly deaf and blind, oh no!

Only 10% of my family will survive through the snow.

Jingle about a Small Mammal

by Kylie Smedley

1. How Musical Intelligence is Supported: Student must use rhythm to create an effective jingle.

2. Objective: The student will be able to create an original jingle containing information about a small mammal and perform it for the class.

3. Authentic Task. Creating a jingle is an authentic task used by many artists, such as song writers and poets. This task practices using imaginative thinking skills and could use complex thinking

4. Instructions: 1) Choose a small mammal to investigate and for which to compose a jingle. 2) Choose a song or other jingle on which to pattern the rhythm of your jingle.3) Practice your jingle until you can perform it well for your class. You may want to record your jingle as an audio or video file and put it on a CD with a CD cover you design.

5. Criteria: 1) The jingle must focus on a small mammal. 2) The jingle must tell 3 different correct facts about the animal. 3) The jingle must rhyme or go in rhythm with the jingle tune.

6. Example Correct Response:

Jingle about Small Mammals: The Deer Mouse

(Sing or Speak to the Tune of the theme song for ***Dora the Explorer***)

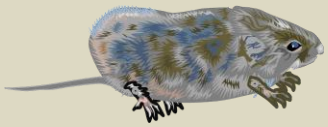
Do-do-do-do Dora! Do-do-do Dora! Do-do-do Dora! Do-do-do Dora!
Deera Deera Deer mouse!\
otherwise known as field mice

With Bulging eyes!
And long tails!
I'm only 5!
Soy solo 5!
I stay awake all year long!
Hey! Hey!
Dee-ee-ee-ee Deer Mouse! Dee-ee-ee-ee Deer Mouse

I eat many bugs! I eat many bugs!

DEER MOUSE!

Interpersonal Intelligence Area



Game of Small Mammal Facts

by Holli Hosch

1. How Interpersonal Intelligence is Supported: Interaction during the game allows students to practice communication and social skills.

2. Objective: The students will apply the information that they learned about small mammals to create a game**.**

3. Authentic Task: Playing and creating games is an authentic task used by many teachers and adults.

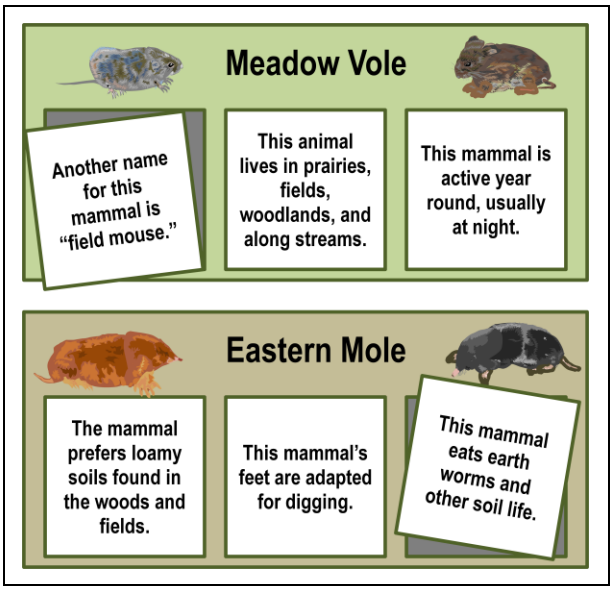
4. Instructions: 1) The students work in groups of three. 2) Each group of students is given three blank game boards and nine blank fact cards. 3) Choose three small mammals for the focus of the game. 4) Cut out the three game boards and the nine fact cards. Each member of the group receives one game board and three fact cards. 5) On each game board, write the name of one of the chosen mammals. (Each card will have a different name of a mammal.) 6) Glue a picture of the mammal next to its name on the game boards. 7) On each fact card, write a fact about the animal. 8) Decorate the game boards to look neat and interesting, then laminate them or back with mat board or cardboard.9) Play the games, using the directions that follow.

Game Directions: 1) Each student receives a game board. 2) The fact cards are placed face-down in the middle. 3) The youngest player goes first. 4) The first player draws a card and reads it aloud. 5) The player has to decide if the fact matches up with the animal on his/her game board. 6) If it does, place it on the game board. If it does not go with the animal on the game board, place the card back into the pile and it is the next player's turn. 7) This process continues until everyone has filled up their game boards with correct facts animal facts.

5. Criteria: 1) Each student needs to create one game board and three fact cards. 2) The game boards should be colorful and interesting and have the mammals name and a picture of the mammal. 3) The fact cards should have appropriate facts written about the mammals. 4) Students should show at least one resource they used to create the fact cards.

6. Example Correct Response:

Two Example Game Boards with Fact Cards Resting on Top.



What Small Animal am I?

by Brooke Weir

1. How Interpersonal Intelligence is Supported: Interaction during the game allows students to practice communication and social skills.

2. Objective: The students will be able to correctly identify a mammal posted on a headband crown by using clues about the mammal and give other students clues about the mammals displayed on their headbands.

3. Authentic Task: Interacting with others to obtain information is a problem-solving skill used by most professionals such as doctors, lawyers, police officers, and psychologists.

4. Instructions: 1) Students in the class should be familiar with the lifestyles of the small mammals. 2) The teacher asks the students to sit with their eyes closed. The teacher then places a headband crown with the name of a different small mammal on each student's head. 3) The students walk around the room and give at least five different students facts about the mammal found on each of their headband crowns. Every time a student tells a peer a fact, that peer must respond by also telling a fact about the

student's animal. 4) As soon as a student thinks he/she knows what mammal is on his/her headband crown, then the student goes to the front table and takes one of the pictures of his/her mammal. 4) Once all students have chosen a picture, then each student may takes off the headband crown to check if correctness. 5) After the game, each student tells five facts about the animal he or she was wearing. 6) The game may then be repeated with the teacher mixing the crowns and then distributing them.

5. Criteria: 1) Students must tell peers at least five facts about the different mammals. during the game. 2) After the game is over, each student needs to tell five different facts about his/her animal to the group.

6. Example Correct Response: A student is given the mammal named Franklin's Ground Squirrel on his/her headband. Peers provide the following five facts about Franklin's Ground Squirrel: 1. It lives near the creek. 2. It lives in a prairie. 3. It likes to climb shrubs and trees. 4. It eats green plants and seeds. 5. It eats seeds, insects, small mammals, and babies of ground nesting birds. The student decides it is a Franklin's Ground Squirrel and takes the matching picture. After the game has been completed, the student tells these facts: 1) Franklin's ground squirrel's head is a somewhat different color than its body. 2) This animal lives in a burrow. 3) This animal can climb bushes and trees. 4) This animal is a rodent. 5) This animal sometimes eats bird eggs or baby birds.

Working Together to Write and Perform a Play

by Anna Janssen

1. How Interpersonal Intelligence is Supported: Students need to negotiate roles and wording during the script-writing and performing process.

2. Objective: The student will be able to write a script and perform a skit about small mammals collaboratively with two to three classmates.

3. Authentic Task: Professional television, play, and movie actors and performers use drama and scripts.

4. Instructions: 1) Form a small group of three students. 2) As a group, browse the list of small mammals and pick out three or four different small mammals on which to base the skit. One group member may be the narrator. 3) Once the mammals are chosen, use books and websites to find information about these animals. 4) Once enough information is acquired, begin writing the script. 5) Discuss what types of interactions may take place between these mammals. Animals are allowed to be personified and given voices to display feelings, thoughts and interactions. 6) The skit can be about a particular event, a typical day for these mammals, how they interact, etc. The plot can be silly or involve fantasy as long as true facts about the animals are being delivered. 7) Write or type the skit as it comes to mind and then revise it. 8) Perform the skit for peers.

5 Criteria: 1) The skit needs to have three or four main characters which are all different small mammals or their predators. 2) There needs to be at least three accurate facts about each mammal incorporated into the skit. 3) There needs to be a recognizable plot in the skit.

6. Example Correct Response:

Playing Hide and Seek
Main Characters: Franklin's Ground Squirrel, Plains Pocket Gopher, Meadow Jumping Mouse
Scene: In the meadow by the creek.
Narrator: Franklin, the Franklin's Ground Squirrel, Paul the Plains Pocket Gopher and Molly the Meadow Jumping Mouse are playing their favorite game, hide-and-go-seek. Franklin is the one counting while the other two are hiding.
(Franklin comes into the scene, eyes covered.)
Franklin: 97…98…99…100! Ready or not, here I come!
Narrator: Since this is primarily where Franklin lives, in prairies along creeks, he knows this area really well.
(Franklin continues to look for the other two.)
Franklin: Where could you two possibly be?
Narrator: All of a sudden, Franklin heard the sound of moving water.
(Franklin looks toward the creek.)
Franklin: Somebody must be hiding in the creek!
(Franklin creeps closer.)
Franklin: Is that you, Molly? I know you are a good swimmer!
Molly: *(Still out of the scene, but giggles.)*
Franklin: I can hear you… *(Continues to search, and finds her.)* There you are!
Molly: Aw, Franklin! How did you find me? Was it my large ears that gave it away?
Franklin: No, I could hear you swimming!
Molly: Aw, OK. Have you found Paul yet?
Franklin: Nope, would you like to help me?
Molly: Sure!
(The two search for awhile, walking around yelling Paul's name.)
Narrator: One hour later.
Molly: Franklin, I'm getting kind of worried about Paul. Even though I'm active at night, I don't think he is. It's getting dark!

Franklin: I'm getting kind of worried too, Molly. What if somebody (whispers) ate him?!
Molly: Oh, Franklin! Don't say that!
Franklin: I know, Molly I don't want to think it but you never know!
(The two of them stand still and look very sad.)
Franklin: Wait! What if he's hibernating?
Molly: Franklin, don't be silly. Just because we hibernate doesn't mean all of our friends do. Paul doesn't hibernate!
Franklin: Oh yeah, you're right.
(The two stand there for a minute or so again.)
Molly: I have an idea, Franklin! Paul kept saying he really wanted to dig some burrows today. Remember how he does that? Sometimes he just gets in the mood and can't stop. I bet he forgot all about our game!
Franklin: That's a good point, Molly! We better start looking for some burrows!
(The two start looking some more. They walk up to a bush.)
Molly: Do you think he'd be up in that bush, Franklin? You should check since you can climb them.
Franklin: Well I don't think he can climb bushes so let's keep moving.
(Molly stops and points to something ahead.)
Molly: Franklin! Look! Something's over there… It looks like it's walking backwards!
(Paul enters scene and is walking backwards.)
Paul: Huh? Is someone there?
Molly and Franklin: Paul!
Paul: What's up guys?
Molly: Paul, we thought you were dead!
Paul: What do you mean, dead?
Franklin: Did you forget about our game?
(Long silence.)
Paul: Oops.
Molly: Yeah, oops! We were so worried!
Paul: 'm sorry, guys… I totally forgot. I got so tied up in digging burrows.
Franklin: Told ya.
Paul: Really, I'm sorry. Can I make it up to you guys somehow? Like, maybe another game of hide-and-go-seek?
Molly and Franklin: No!
Paul: OK, OK. What do you want then?
Franklin: Maybe just some seeds and plants for me to eat. I have to start stocking up for the winter… time to hibernate, today was exhausting!
Paul: Alright, Franklin. Anything for you, Molly?
Molly: Show me that backwards walking thing again. That was kinda cool.
(Paul walks backwards and they all laugh.)
Molly: Please don't ever scare us like that again.
Narrator: And so everyone was happy once again. Especially Molly and Franklin, because it was about hibernation time. In the meantime, Paul was able to dig as many burrows as he wanted without getting into trouble by his friends. The End.

Making, Administering, and Analyzing the Results of a Survey

by Jenna Ostert

1. How Interpersonal Intelligence is Supported: This activity allows a student to interact with friends, neighbors, or relatives and practice communication and social skills while administering a survey.

2. Objective: The students will be able to create and analyze the results of a survey on eastern chipmunks to determine what relatives, neighbors, or classmates know about the animal.

3. Authentic Task: Creating and giving a survey is an authentic task used by many professionals involved in marketing and politics. Adults are often asked to take surveys to show how they feel about different products and political issues. Some businesses often ask people to take a survey to evaluate their business practices and service.

4. Instructions: 1) Research information on Eastern Chipmunks in books, magazines, or online. 2) Create a survey of questions that will reveal what a person knows about the Eastern Chipmunk. 3) Administer your survey to friends, relatives or neighbors. Begin by introducing yourself and telling about your project. Ask if the person is willing to take the survey. If so, then allow the person to complete the survey. Either way, end the conversation by thanking the person for his or her time. 4) Collect the information from the survey and analyze it to determine which questions were answered correctly most frequently and which incorrect ideas were often mentioned. Create a report to tell what you found out by administering the survey.

5. Criteria: 1) The survey should have 10 questions. 2) There should be a variety of formats for the questions (fill in the blank, true/false, and multiple choice. 3) There should be a key that provides correct answers to the questions.

6. Example Correct Response: The survey below is an example of the questions and correct answers.

Example Eastern Chipmunk Survey

Eastern Chipmunk Survey

Fill in the Blank

1) Eastern chipmunks can grow up to _____ inches long.
2) Eastern chipmunks eat things like nuts, bird eggs, and insects. (Can also use seeds, acorns, mice, slugs, baby snakes, birds and carrion.)
3) They make chatter or chip-chip noises to warn off other animals.

True/False:

4) Eastern Chipmunks are small ground squirrels with reddish-brown bodies. T If false why:
5) Eastern Chipmunks hibernate during the winter. F If false why: They take long naps but this is not true hibernation.
6) They store food for the winter. T If false why: _____.
7) They have pouches in their cheeks to help carry food. T If false why:

Multiple Choice:

8) Eastern Chipmunks live in: a) trees in dense forests; b) burrows in open woods and forest edges (Correct); c) marsh grass.
9) The stripe colors of Eastern chipmunks are: a) brown ad red; b) black and brown; c) black and white (correct).
10) Eastern Chipmunks are in the _____ family. a) rodent (correct); b) cat; c) insectivore.

Intrapersonal Intelligence

Comparing Oneself to a Small Mammal

by Brooke Reed

1. How the Intrapersonal Intelligence is Supported: The student must consider his/her own personal traits and strengths and then compare to a small mammal.

2. Objective: The student will be able to create a chart that compares himself/herself to a small mammal regarding foods eaten, physical features, home, and other characteristics.

3. Authentic Task: Creating a similarities/differences comparison chart is an authentic task used by some scientists and product evaluators in doing research. This task practices observing and comparing skills that strengthen research and learning skills used in many professions.

4. Instructions: 1) Choose one small mammal that interests you. Use clip art, your own drawings, or cut-out pictures to show what that animal looks like. Make sure the animal looks realistic. Find a picture of yourself at a similar size to the image of the animal you chose. Glue the images on the top of the chart. 2) Label each image with its name. 3) Write the words "similarities" and "differences" somewhere on the chart as headings. 4) Read books or information from Internet web sites to find out information about the animal. 5) Compare and contrast yourself with the animal by writing facts on the chart in different categories such as food, physical features, home and other characteristics.

5. Criteria: 1) the comparison chart needs to have realistic images of the small mammal and yourself. 2) The information about yourself and the animal needs to be accurate. 3) The scene and the entire page need to be aesthetically pleasing with neat application of glue and handwriting.

6. Example Correct Response:

Example Comparison Chart

Category	 Myself	 Eastern Mole
Similarities		
Survival Needs	Food, water, shelter	
Winter Survival	Active, Do not hibernate	
Eye Protection	Eye lids	Skin flaps
Animal Class	Mammals	
Food Storage	Buy food and store in cupboard or refrigerator	Paralyze worms and stack them in chamber
Differences		
Height or length	63 inches	6-8 inches
Diet	omnivore	insectivore
Saliva	No toxin	Toxin that paralyzes
Effect on Soil	Flattens it when walking	Digs tunnels and leaves mounds
Movement	Walk on two legs	Walks on all four legs

Badge Representing Traits in Common with Small Mammal

by Ashley Allen

1. How the Intrapersonal Intelligence is Supported: The student must consider his/her own personal traits and strengths and then compare to a small mammal.

2. Objective: The student will be able to find a small mammal that symbolizes some of his/her traits and create a symbolic badge.

3. Authentic Task: Knowing oneself guides adults through decisions in their lives.

4. Instructions: 1) Look through the information of the small mammals and their habitats to distinguish a trait that represents you as a person. More information may be found on the Internet or in books. 2). Find a clip art image, draw an illustration, or cut out pictures of the small mammal and glue it on your badge. 3.) Write your name under the animal. This could be your real name or a creative name made up to represent your small mammal. 4) On the rest of the badge, use clip art, illustrate, or cut out pictures of the trait that the small mammal possesses that represents you the best. 5) Cut out around the boarder of the finished badge. 6) On the back of the badge, write why you chose this small mammal and the trait that symbolizes you. 7) Share it with your classmates by explaining the trait that symbolizes you and try and have them guess the small mammal you are.

5. Criteria: 1) The badge should have an image of the small mammal on it. 2) A name of the student should be located on the badge and be school appropriate. 3) The trait(s) the student is trying to represent should be easy to distinguish by the illustrations on the badge. 4) The badge needs to be cut out. 5) There should be an explanation from the student on the back explaining why the student chose that small mammal to represent them.

6. Example Correct Response: Explanation of the badge shown in Figure X: The Eastern Chipmunk has chubby cheeks. As you can see with my other images, all of them have something in common and that is chubby cheeks. I chose to have this trait represent me because I have chubby cheeks.

Example Badge.

Naturalist Intelligence

Food Chain Tower

by Jenna Glanz

1. How the Naturalist Intelligence is Supported: Food chains show the interactions of animals and plants in nature.

2. Objective: The student will be able to create a tower of food chains that includes a total of eight animals, four in each chain with each animal connected to the tower in the correct order.

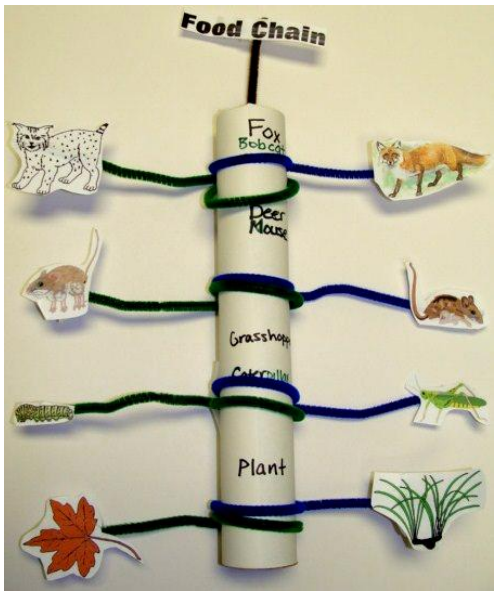
3. Authentic Task: Scientists study the diets and interactions of organisms in an environment. They often create food chain diagrams to understand how populations change.

4. **Instructions:** 1) Choose a main animal and 3 other animals involved in the main animals' food chain that interest you. Use drawings, clip art or cut out pictures to illustrate the animals. Make sure the animals and/or plants used in the food chain are realistic looking. 2) Cover a paper towel tube with attractive paper of your choice. Make sure the paper can be easily written on and read. 3) Use pipe cleaners, Popsicle sticks or straws to make four rungs on each side connected to the paper towel tube. 4) Read books or search the Internet to find out what the main animal eats and what eats what the main animal eats, etc. to create a chain. 5) Connect each animal in correct order onto the rungs using glue, staples or tape. 6) Write the name of each animal and plant/fruit/etc. on the paper wrapped around the tube near the correct rung. 7) Add a title to the top of your tower including the words "Food Chain." Use one of the connectors and either typed or neatly printed words.

5. Criteria: 1) Each food chain should show four organisms and there need to be two food chains. 2) The drawings, clip art or cut out pictures need to be realistic and each organism or plant part/ fruit needs to be correctly labeled. 3) The order of the food chain should be correct. 4) The tower needs to be aesthetically pleasing with neat application/use of staples, glue, or tape.

6. Example Correct Response

Example Food Chain Tower.



Small Mammal Trading Cards

by Megan Potratz

1. How the Naturalist Intelligence is Supported: Students explore basic facts about small mammal lifestyles.

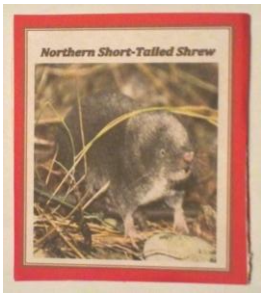
2. Objective: Given background information on the different small mammals of Iowa, students will design a trading card displaying an image of the animal along with basic information for one small mammal using a variety of technological applications with 90% accuracy.

3. Authentic Task: Many different professionals create trading cards to promote a product or sport.

4. Instructions: 1) Students choose one mammal to research. Each student will select a different small mammal. 2) Research the chosen mammal via Internet and trade book sources. 3) Students will find an image that will best represent their small mammal for their trading cards. 4) Students format the information for the back of the trading card. 5) Students reproduce several identical trading cards and trade with other students in the classroom to make a collection of facts about small mammals.

5. Criteria: 1) Overall product must look professional. 2) Every aspect of the trading cards must be completed using computer technology. Card must be formatted well with attractive font, organization, border, use of color, etc. 3) Animal image must be clear and representative. 4) Information on the physical characteristics, the mammals' habitats, and at least one interesting fact needs to be included.

6. Example Correct Response:



Comparing Animal Lifestyles

by Ashley Winninger

1. How the Naturalist Intelligence is Supported: Exploration and comparison of animal lifestyles is an activity in which naturalists, biologists, and nature interpreters engage.

2. Objective: The students will be able to show the relationships between multiple animals with a Venn diagram. The student will research and describe the different environments and food sources of those animals.

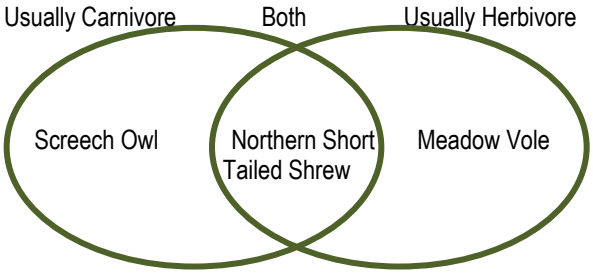
3. Authentic Task. This activity fosters critical thinking skills. Creating a Venn diagram and chart allows the student to examine and compare animal relationships.

4. Instructions: 1) Select 3-5 animals you would like to compare and contrast. 2) Make two different charts – one a Venn diagram, and the other a table. 3) First research information on the different animals, filling out a chart similar to Table X. 4) Place these animals on the Venn diagram. Are the animal's carnivores, herbivores, or both?

5. Criteria: 1) The chart needs to have accurate information on the animals. 2) The students should have at least three different mammals in the charts 3) The relative placements of the animals needs to be correct.

6. Example Correct Response: The table and figure below are examples of a correct response.

Animal	Environment	Diet	Interesting Characteristics
Northern short-tailed shrew	Lives in grasslands, forests, marshy areas	Earthworms, voles, mice, snails, insects, also eats fungi and seeds.	Velvety fur Toxic saliva used to kill prey
Meadow Vole	Grasslands	Mostly grasses, leaves, seeds, but some insects, snails and fungi.	When overcrowded, may resort to eating other meadow voles
Screech Owl	Meadows or woodlands with open areas	Small mammals, insects, snakes, birds	Carry prey back to nest in hollow tree; Rip prey into small pieces to swallow



Lift-the-Flap Life Cycles

by Kara Henik

1. How the Naturalist Intelligence is Supported: Exploration of various small mammal life cycles leads to understanding of cyclic occurrences within nature.

2. Objective: The students will be able to create a "lift-the-flap" diagram showcasing the life cycle of a small mammal. The students will identify key characteristics about the mammal at each cycle of life.

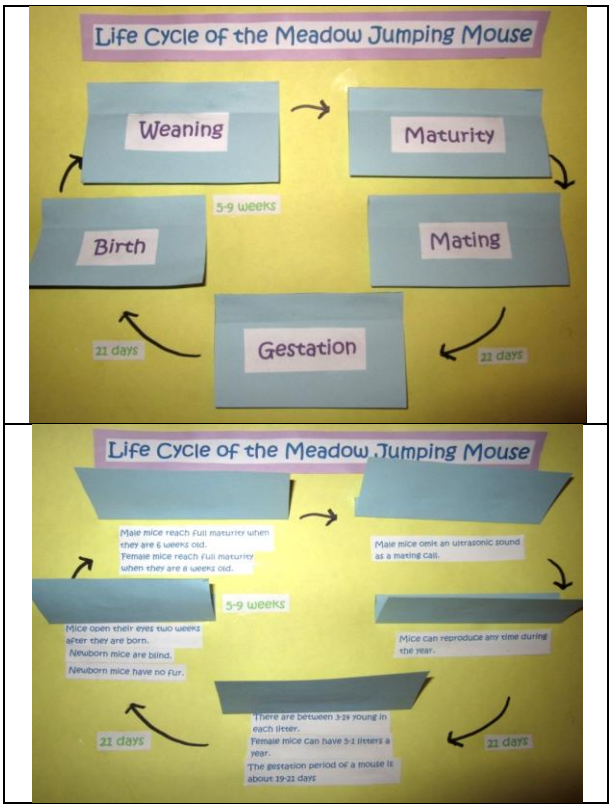
3. Authentic Task: Researching life cycles and presenting the information through interactive diagrams are authentic tasks used by museum directors, educators, and naturalists.

4. Instructions: 1) Choose a small mammal of Iowa to research. 2) Find information on the various stages of the animal's life cycle. Identify specific characteristics of the animal at each stage of life. 3) Type or neatly write information about each stage. 4) On cardstock or poster board, draw a cyclic diagram using arrows. Place the information about each stage around the cyclic diagram in

chronological order. Attach the information to the diagram with glue or tape. 5) Use words or pictures to identify each stage of the life cycle. These will be placed above the information. 6) Make sure corresponding pictures on flaps are large enough to cover the information on the diagram. Cut out the words or pictures and place them over the corresponding information. Glue or tape one side of the word or picture to the diagram, creating a flap. You should be able to lift the picture up to view the information underneath. 7) If you used pictures to cover the information, label each stage of the animal's life cycle. Type or neatly write a title for your diagram.

5. Criteria: 1) Each stage of the animal's life cycle should be placed in sequential order. 2) The information provided for each stage of life must be accurate. 3) All stages must be correctly labeled. Words and/or pictures must accurately depict the animal at each stage of life. 4) Flaps should be moveable to view the information underneath. 5) The diagram should be aesthetically pleasing.

6. Example Correct Response:



Form and Function of Animal Body Parts

by Alexandra Krekel

1. How the Naturalist Intelligence is Supported: Exploration of form and function of animal body parts leads to great understanding of animal adaptations to their environments.

2. Objective: The students will be able to find human tools that have the same form and function of body parts of a chosen small mammal and explain how these help the animal adapt to the environment.

3. Authentic Task: Knowledge of animals and how they function in an environment is needed by zoologists, scientists, veterinarians, and wildlife specialists. Engineers, designers, and inventors are concerned with form and function of human tools and inventions.

4. Instructions: 1.) Choose one small mammal on which to focus this project. 2.) Research how this animal functions in the environment. Ask questions like: How do these animals get their food? What body parts protect them in the wild? Where do they live? Do they have a specific characteristic that helps them to survive? This research is essential and the main part of this assignment. Pay close attention to body parts and be thinking of human tools that may link to this animal by having the same form (shape, texture, coloration, flexibility, configuration, etc.) and same function (way it is used, purpose). 3.) Find human tools or manufactured items that resemble the form and function of specific body parts of the animal, a minimum of three tools are required. Selected tools should be allowed in school, and students should obtain permission from a parent for the student to bring these objects to school. 4.) Find a picture of the small mammal being used, and label the body parts that will be used in the "tool box". 5.) Photograph each tool and label both its common household name, and how it is like the body part of the mammal. Labeling the body parts and tools with corresponding numbers might help. 6.) Organize these photographs and explanations on index or other cards to go inside the tool box. The picture of the animal should be large and come first in the index cards, so whoever is reading them has the picture to access when looking through the tool box. 7.) Make a key to go inside the tool box of the index cards and tool names.

5. Criteria: 1.) There needs to be a minimum of three tools in this tool box. Extensive research must be done on at

least five body parts. 2.) Each index card with the name of the tool should have a fact about the body part of that particular mammal, and how it corresponds to the way the tool is used by humans. 3.) The key should be bright and colorful so people want to look at this project. 4.) Each tool should be school appropriate.

Example Correct Response:

Mole Body Part: Mole's Fur is very short, dense and velvety. It *protects the mole* as it tunnels and rubs against the soil.	
Tool: A **chamois cloth** is a soft, dense, flannel cloth used for polishing cars without scratching the finish. It *protects* the car's surface from abrasion.	
Mole Body Part: Mole's Front Feet are shovel or scoop-shaped *to dig into the soil and push it aside.*	
Tool: A **scoop** is shovel-shaped to dig into a substance like flour or sugar and *pick up and move* this substance.	
Mole Body Part: Mole's Snout has a concentration of nerves and sensors that allow the mole *to probe areas of the soil to decide where to dig.*	
Tool: A **stud-finder** uses a sensor that can pick up small changes in density of a wall and therefore determine where wooden boards called studs are. This *allows a carpenter to decide where* to put a nail.	

Diagram of Small Mammal Habitat

by Jessica Simmons

1. How the Naturalist Intelligence is Supported: Students design a diagram of the animal's habitat to explain its lifestyle.

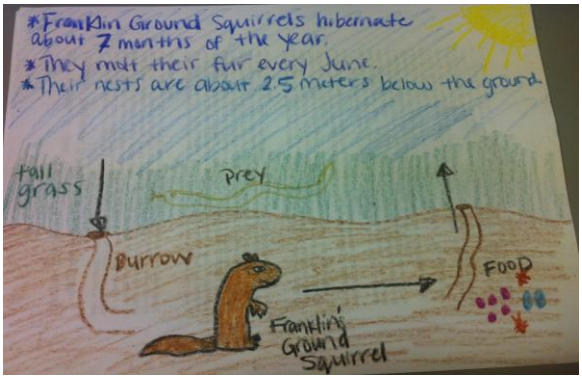
2. Objective: The students will be able to describe a small mammal's habitat, its predators, and what it eats as well as visually showing this by creating a diagram. Students will also include at least 3 interesting facts on visually.

3. Authentic Task: Scientists and people who are curious about nature make diagrams to show and to explain how animals live, what they eat, their predators, and their lifestyles.

4. Instructions: 1) Choose a small mammal that you do not know much about. 2) Draw or use a computer program to show your small mammal's habitat. Include a picture of your mammal, include what your mammal eats, and draw at least one predator of your mammal. 3) Include at least three interesting facts about your mammal somewhere on the diagram. 4) Use arrows or lines to show where your mammal might be moving throughout its typical day

5. Criteria: 1) The diagram should include (but is not limited to) either a drawing or a technology produced image that shows the small mammal, at least one of the mammal's predators, what the mammal eats, lines or arrows, and three interesting facts.

6. Example Correct Response:



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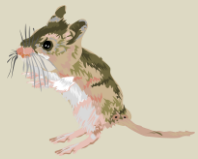

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The Appendix appears on the following pages 41-61.

Small Mammals of Iowa

Match the Jointed Animals to their Brief Descriptions

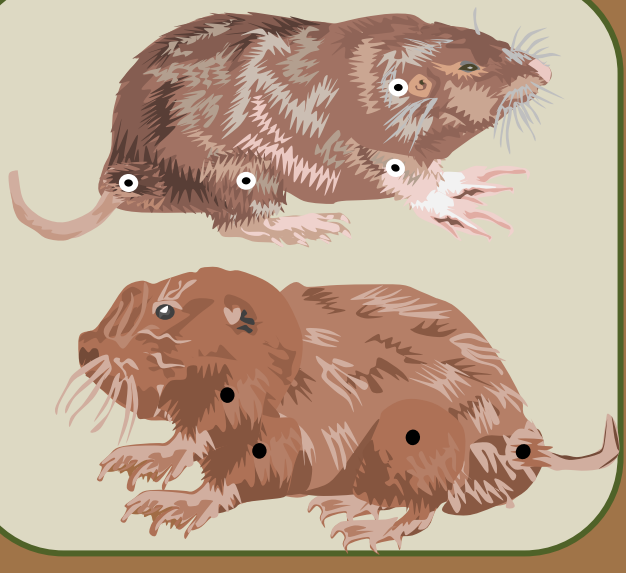
The reverse side of each card shows images of the jointed animals.

Eastern Chipmunk

- A small ground squirrel with a white stripe bordered by black on each side of reddish-brown body.
- Up to 11 inches long.
- Lives in burrow in open woods and forest edges.
- Eats acorns, nuts, seeds, insects, slugs, bird eggs, baby snakes, mice, birds, and carrion.
- Chatters and makes "chip-chip" sound.
- Stores food for winter.
- Rodent; internal cheek pouches.
- Has long winter naps but not true hibernation.

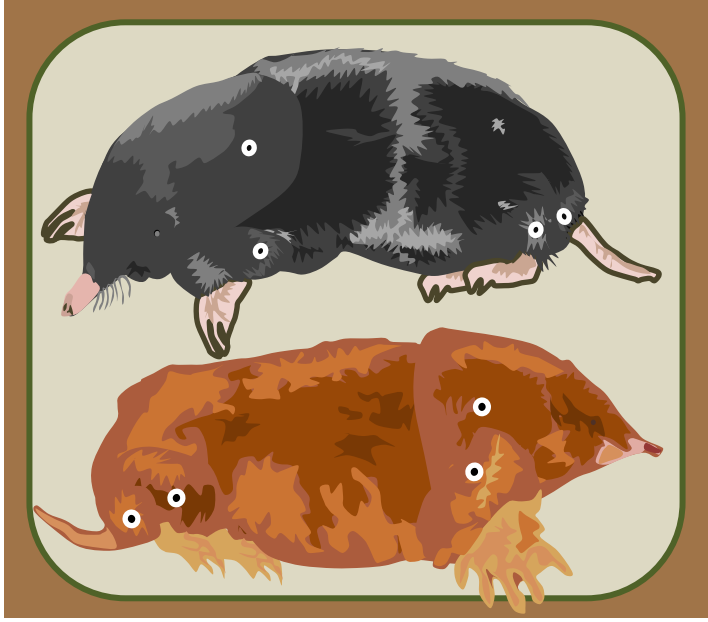
Plains Pocket Gopher

- Digs extensive burrow system in prairie or meadows.
- Can run backwards or forward.
- Tail is used as a feeler when backing through burrows.
- Large front feet with claws.
- Eats roots, tubers, carrots, bulbs, and stems of plants.
- Has long external cheek pockets that can be turned inside out.
- Lips can close behind front teeth so the gopher can dig with teeth.
- Heavy body; 5-9 inches long.
- Rodent. Does not hibernate.



Eastern Mole

- large shovel-shaped front feet.
- Eyes hidden by skin flaps.
- Prefers loamy soils of meadows.
- Leaves piles of dirt: molehills.
- Mostly eats earthworms, but will eat some insects, slugs, beetles, grubs, centipedes, & ants.
- Mole saliva contains a chemical that paralyzes worms; worms are often stacked in an underground room for later consumption.
- Aerates soil; does not eat crops.
- Predators repelled by strong odor.
- Insectivore, not rodent.
- Does not hibernate.; 6-8 in long.

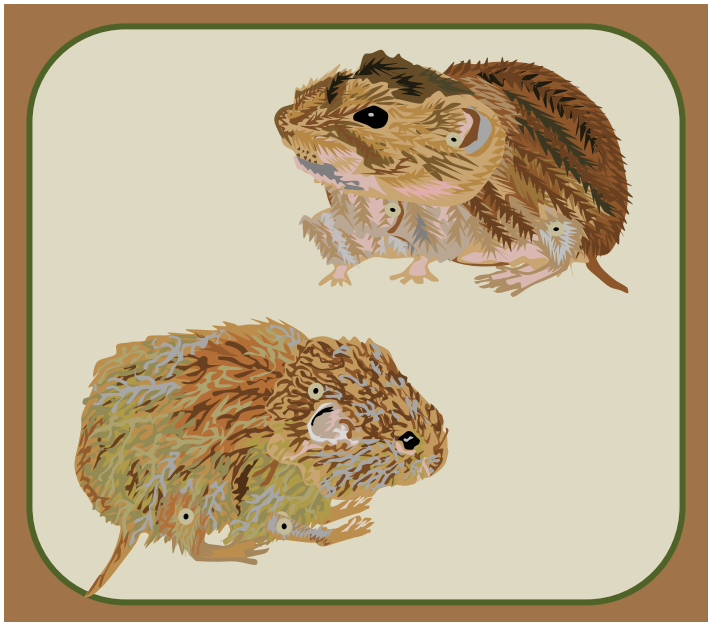


Franklin's Ground Squirrel

- Lives in the zone where prairie meets trees along creeks.
- Stores fat in body for winter hibernation in burrow.; has internal cheek pouches for moving seeds.
- Eats green plants, seeds, insects, small mammals, and babies of ground-nesting birds.
- Lives in colonies.
- May climb bushes or trees.
- Black speckled pattern on back.
- Rodent. 8-10 inches long

Southern Bog Lemming

- Chunky shape with a short, blunt snout, plush fur & short tail.
- Travels through runways made in the grass and underground tunnels.
- Lives in meadows, prairies, and bogs with dense vegetation.
- Nests lined with long grasses.
- Eats grasses, plants, fungi, and mosses; has green droppings.
- Silver-gray stomachs.
- Active mostly at night.
- Rodent, about 5 inches max length.
- Does not hibernate.

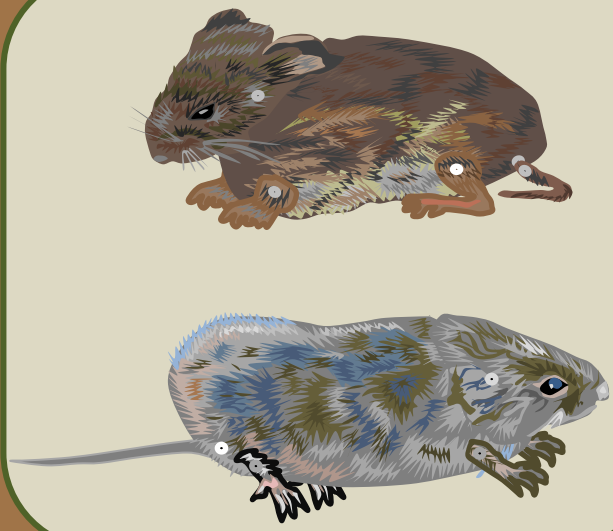


Northern Short-Tailed Shrew

- A predator that eats insects and other small mammals it encounters in tunnels; insectivore not rodent.
- Venomous: Saliva contains a toxin that can kill an animal of its size.
- Lives in forests, grasslands, marshes. Stores food.
- Small size (4-5 inches) with long snout for probing tunnels.
- Velvety fur in black or gray tones.
- High-strung with a fast heart beat; needs to eat 1-3 times its weight daily; does not hibernate.

Meadow Vole

- Sometimes called "field mouse."
- Lives in prairies, fields, woodlands, and along streams.
- Brown or gray color with tail less than half length of body.
- Cylindrical body shape with little paws that stick out.
- Makes runways in grass and tunnels in snow and ground.
- Gives birth to 12 litters a year.
- Eats grasses, seeds, flowers, leaves, tree roots and bark, and insects; does not hibernate.
- Stamps hind feet when threatened.
- Rodent; Up to 6 inches long.



Deer Mouse

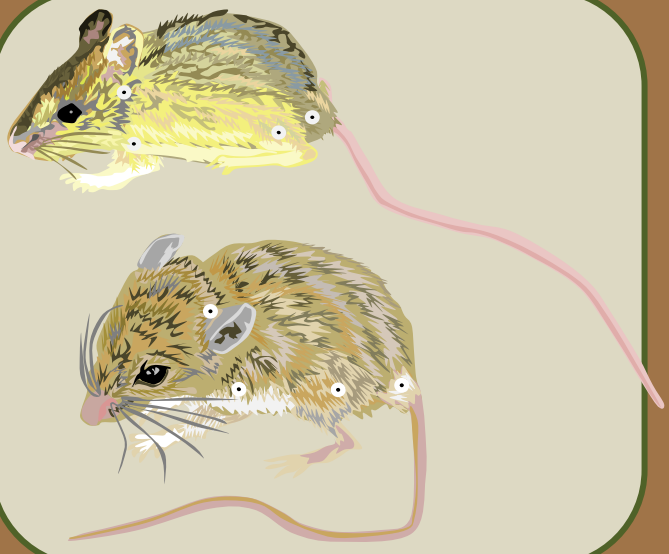
- Named for its two-tone coloring of brown upper and white stomach that is like a deer's coloring.
- good jumpers /runners like deer.
- Have large, bulging eyes and long tail almost as long as the body.
- Can be found in all habitats.
- Very long living – 5 years.
- Does not live in burrows.
- Eats insects and seeds. Gnaws antlers and bones for calcium.
- Rodent; does not hibernate.
- Body without tail: 3-4 inches.
- Small internal cheek pouches.

Thirteen Lined Ground Squirrel

- A slender ground squirrel (4-6 in.) with thirteen stripes on its back; some stripes are broken into dots.
- Lives in prairies and grasslands.
- Eats seeds, grass, insects, eggs, and small animals. Stores seeds.
- Has internal cheek pouches.
- Likes to stand upright on hind legs and look around.
- Stays in burrows on dark or cloudy days and at night.
- Produces only one litter per year.
- Rodent; hibernates in winter.

Meadow Jumping Mouse

- A small mouse with a tail longer than its body; tail + body up to 9 inches long.; rodent.
- Small, narrow head with large ears and many whiskers.
- Yellowish fur on sides of body.
- Prefers to live in moist grasslands.
- Can jump 6 to 8 feet if disturbed but can also hop and creep along.
- A good swimmer.
- Digs burrows; active at night.
- Eats seeds, fruit, berries, insects.
- Generally docile.; hibernates.

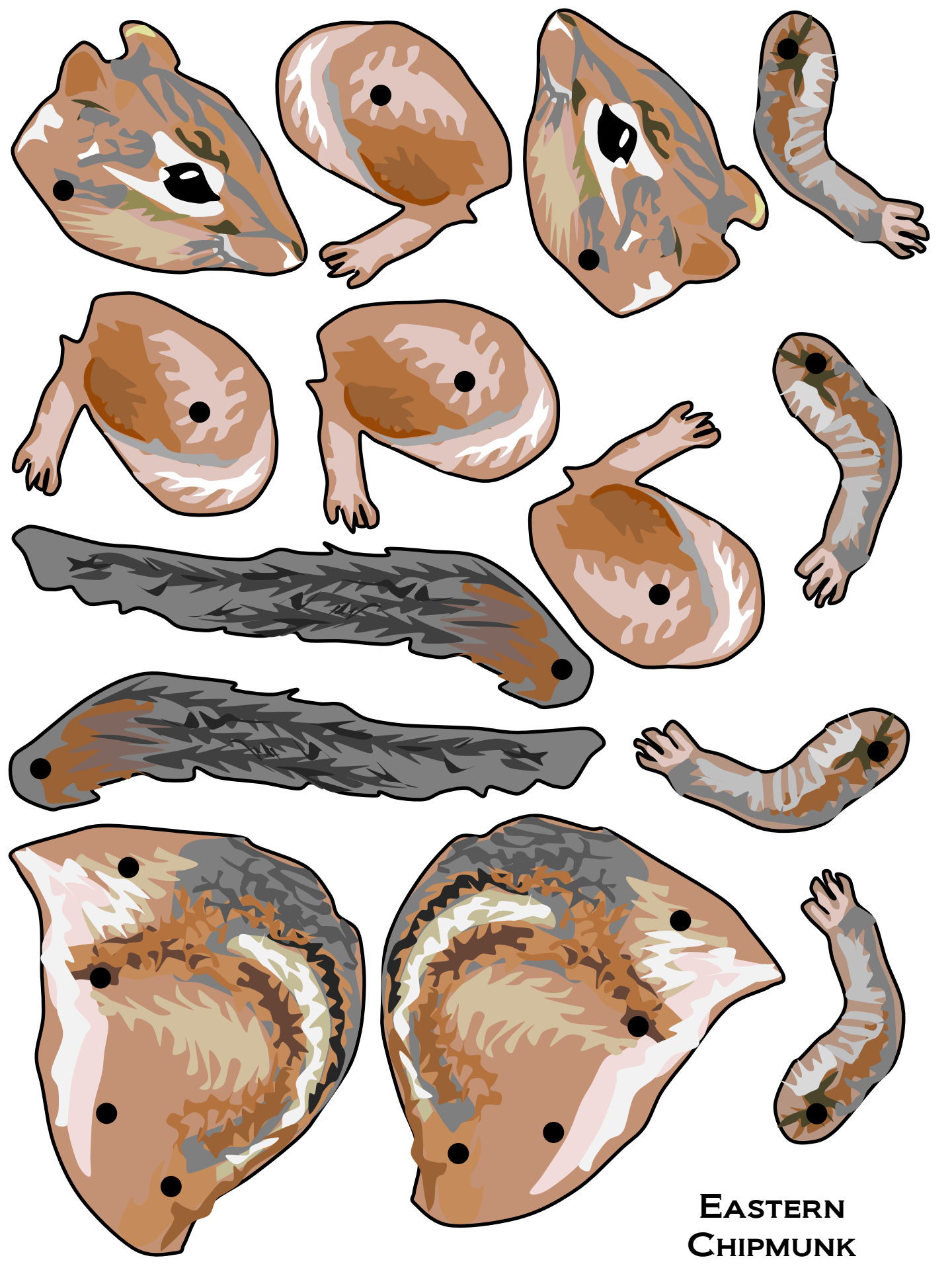


Northern Grasshopper Mouse

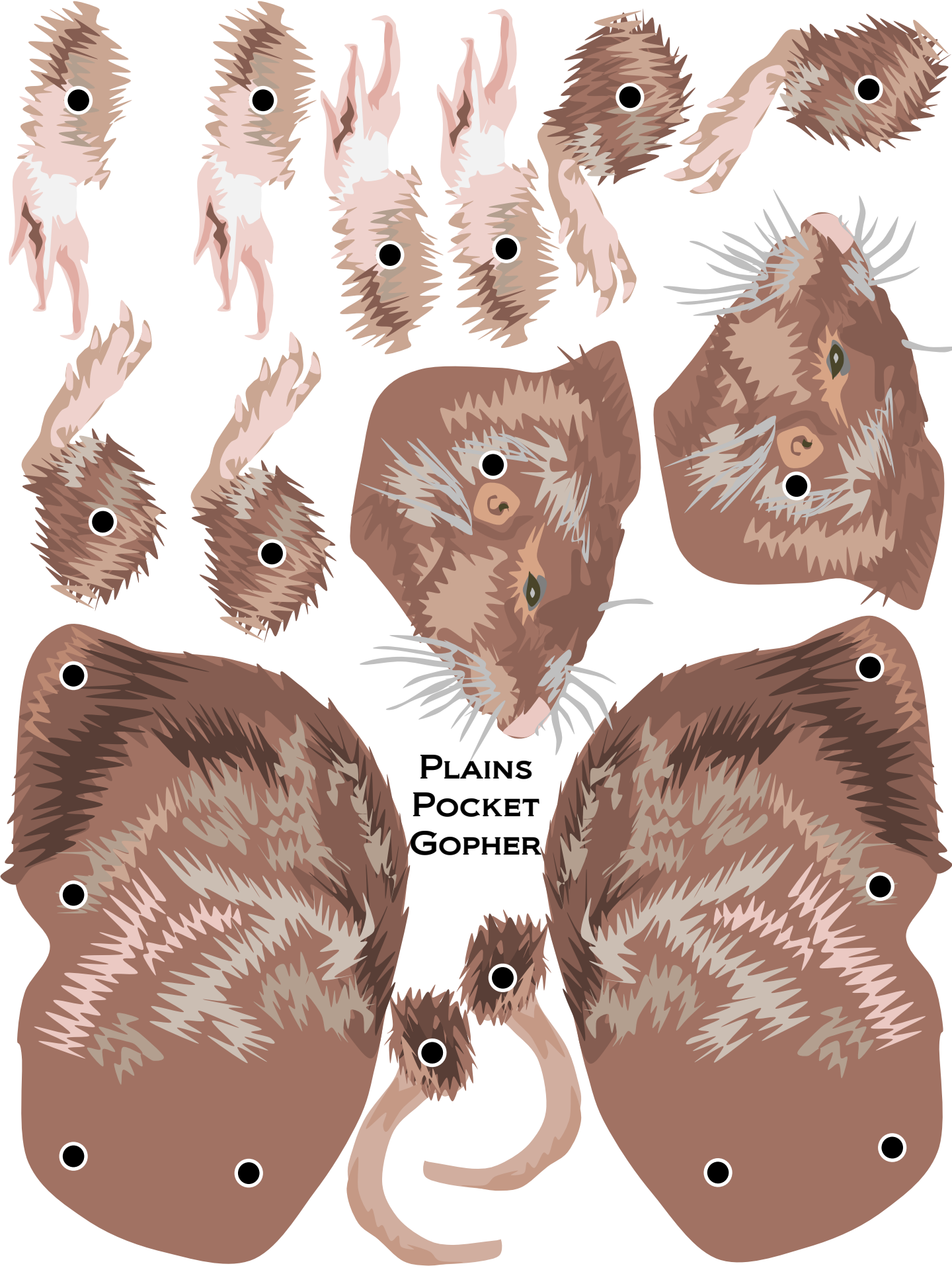
- A stocky mouse with a short tail that is highly territorial; 6 in long.
- This mouse "howls" at entrance to burrow to warn away others.
- So-named because of grasshoppers in diet; also eats beetles, pill bugs and spiders; lives in grasslands.
- Rodent; incisors are piercing daggers because it also eats a lot of small mammals; predator.
- Often takes over a burrow after killing owner; called "Killer Mouse."
- Does not hibernate.


Thirteen
Lined
Ground
Squirrel


Thirteen
Lined
Ground
Squirrel

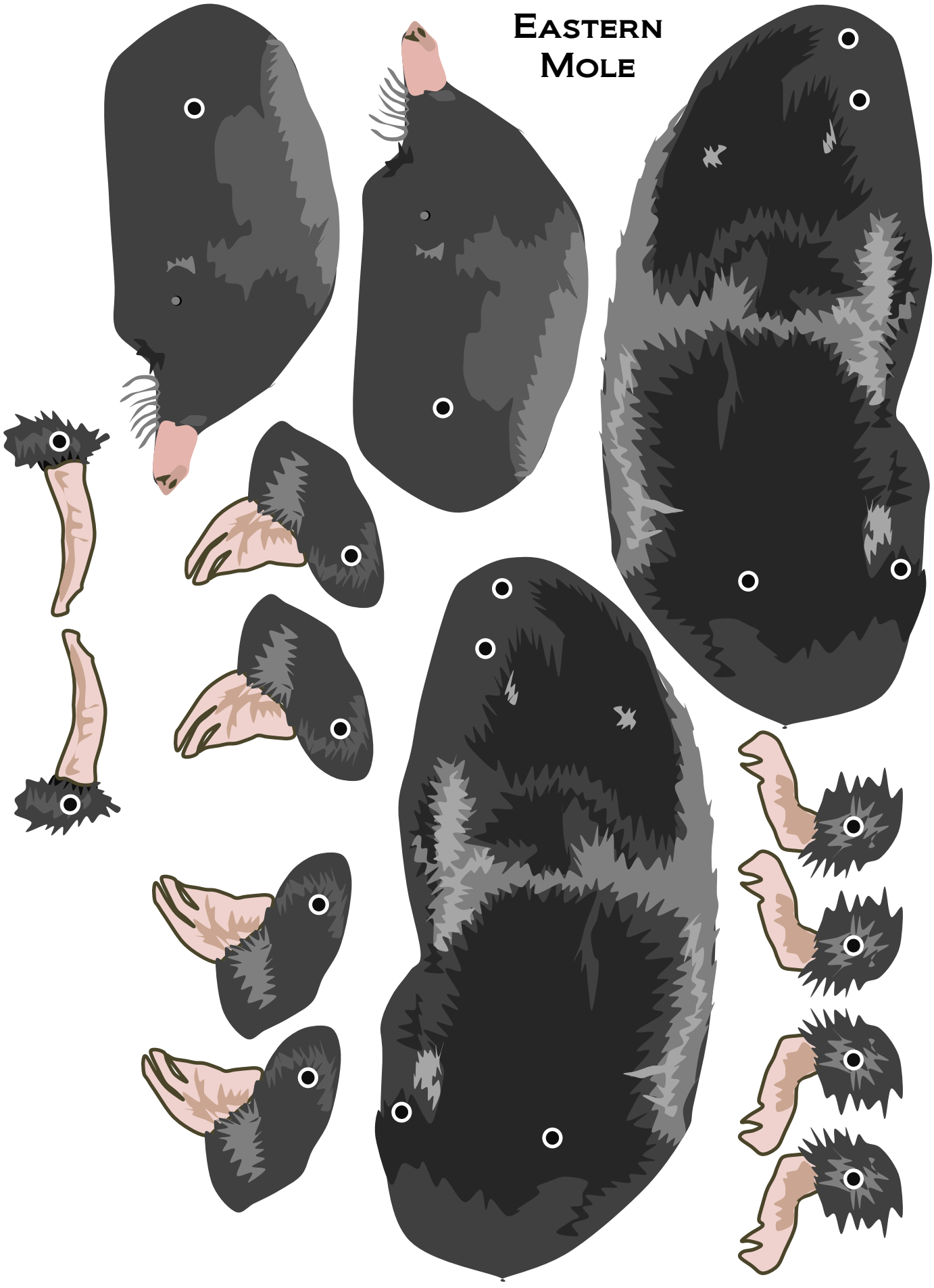

Eastern
Chipmunk

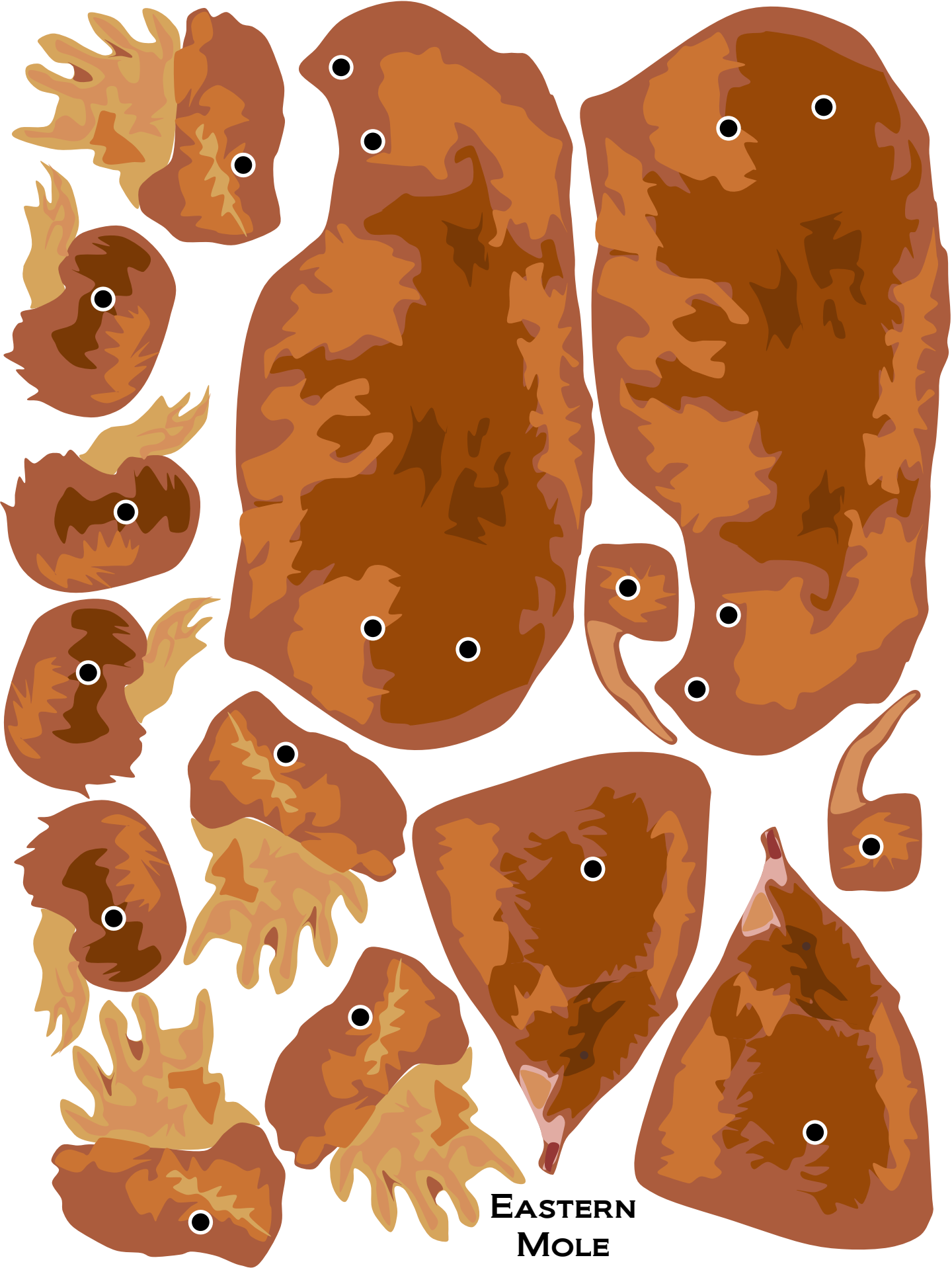

Eastern
Chipmunk


Plains
Pocket
Gopher


Plains
Pocket
Gopher

Eastern Mole



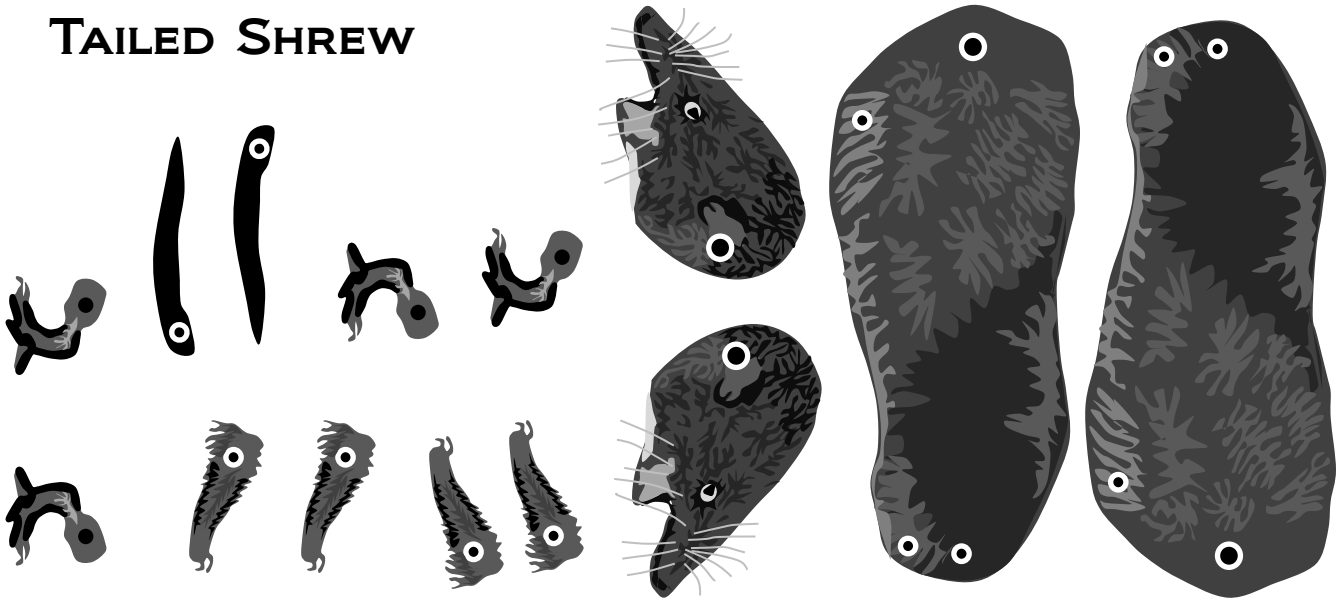

Eastern
Mole

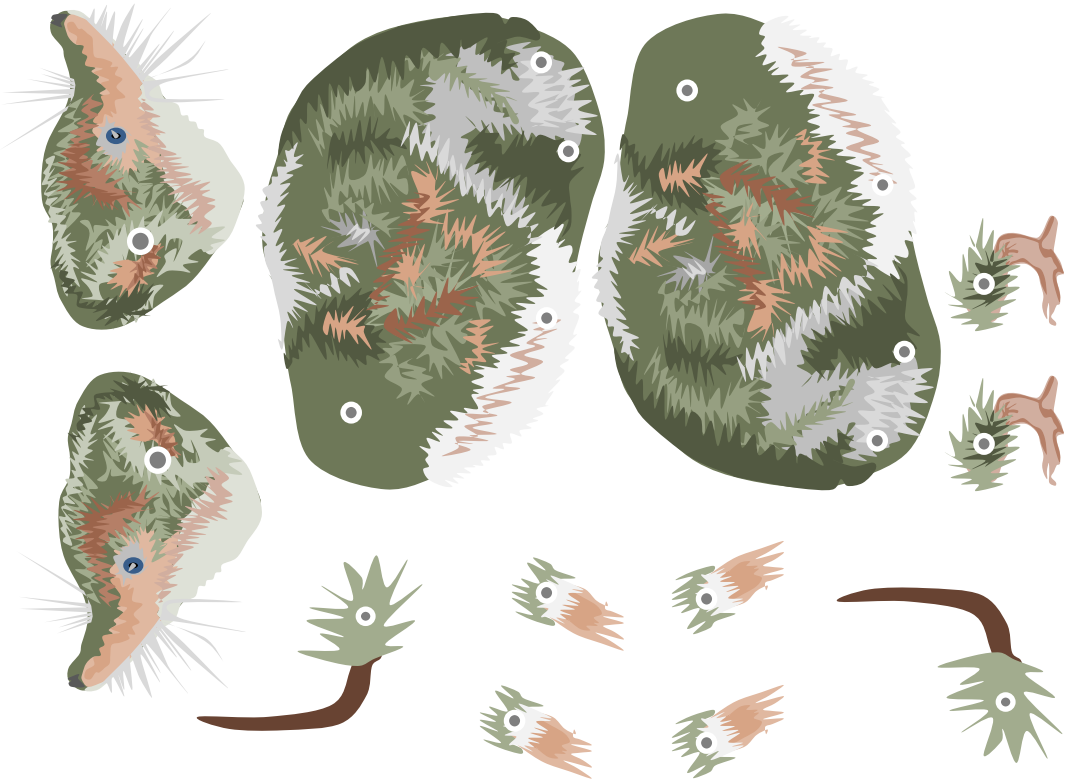

Franklin's
Ground
Squirrel


Franklin's
Ground
Squirrel

Southern Bog Lemming

Northern Short-Tailed Shrew

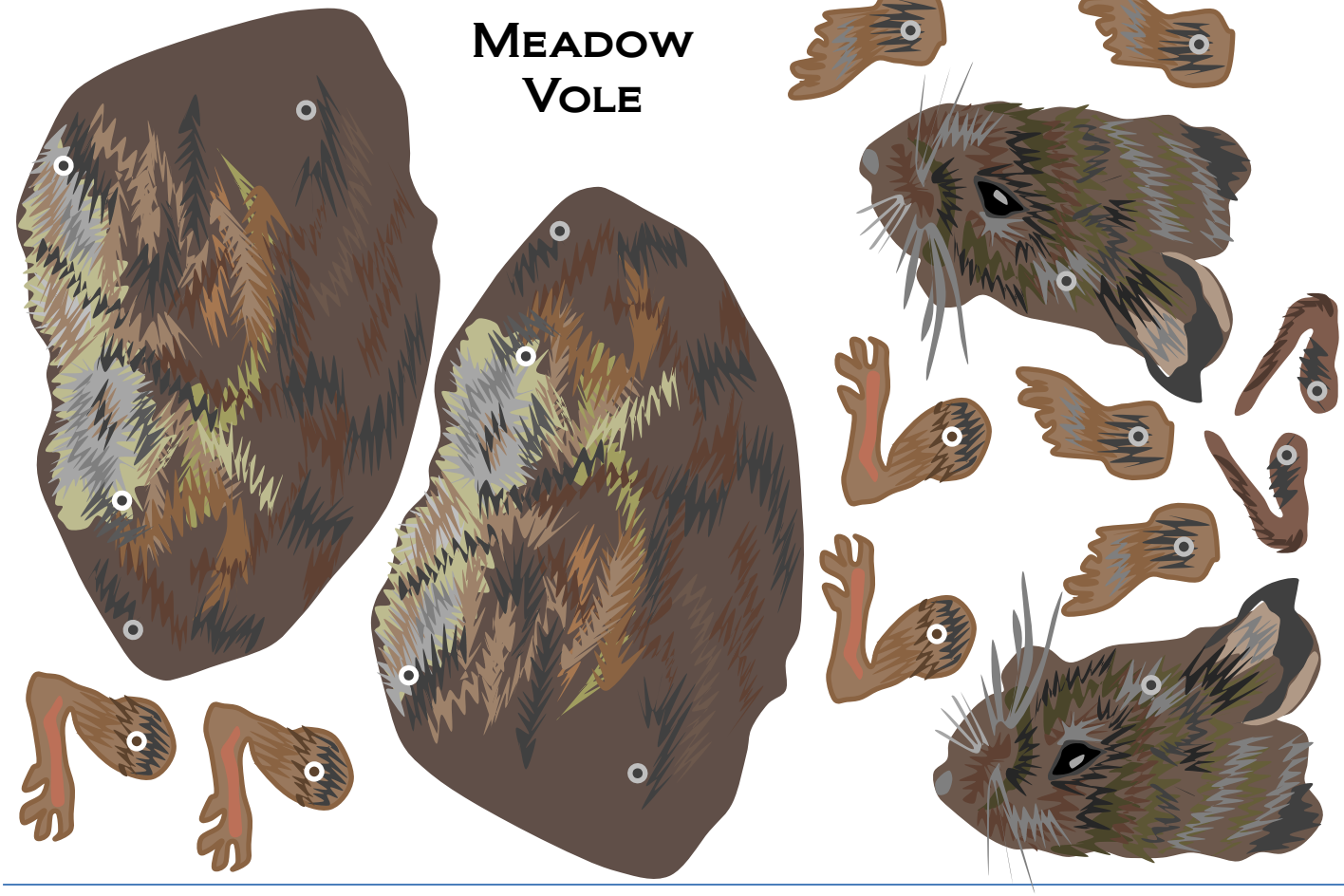




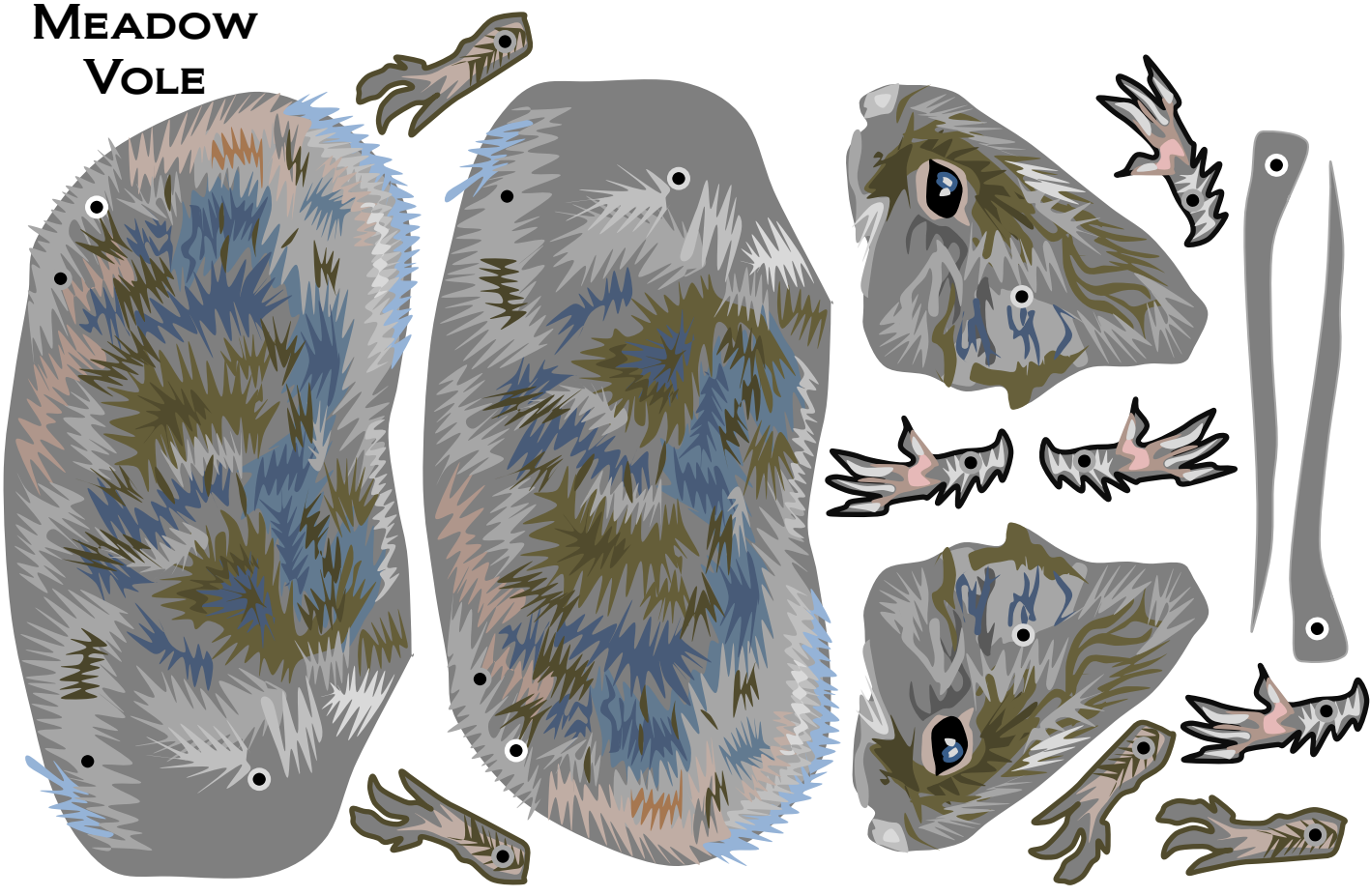
Northern Short-Tailed Shrew

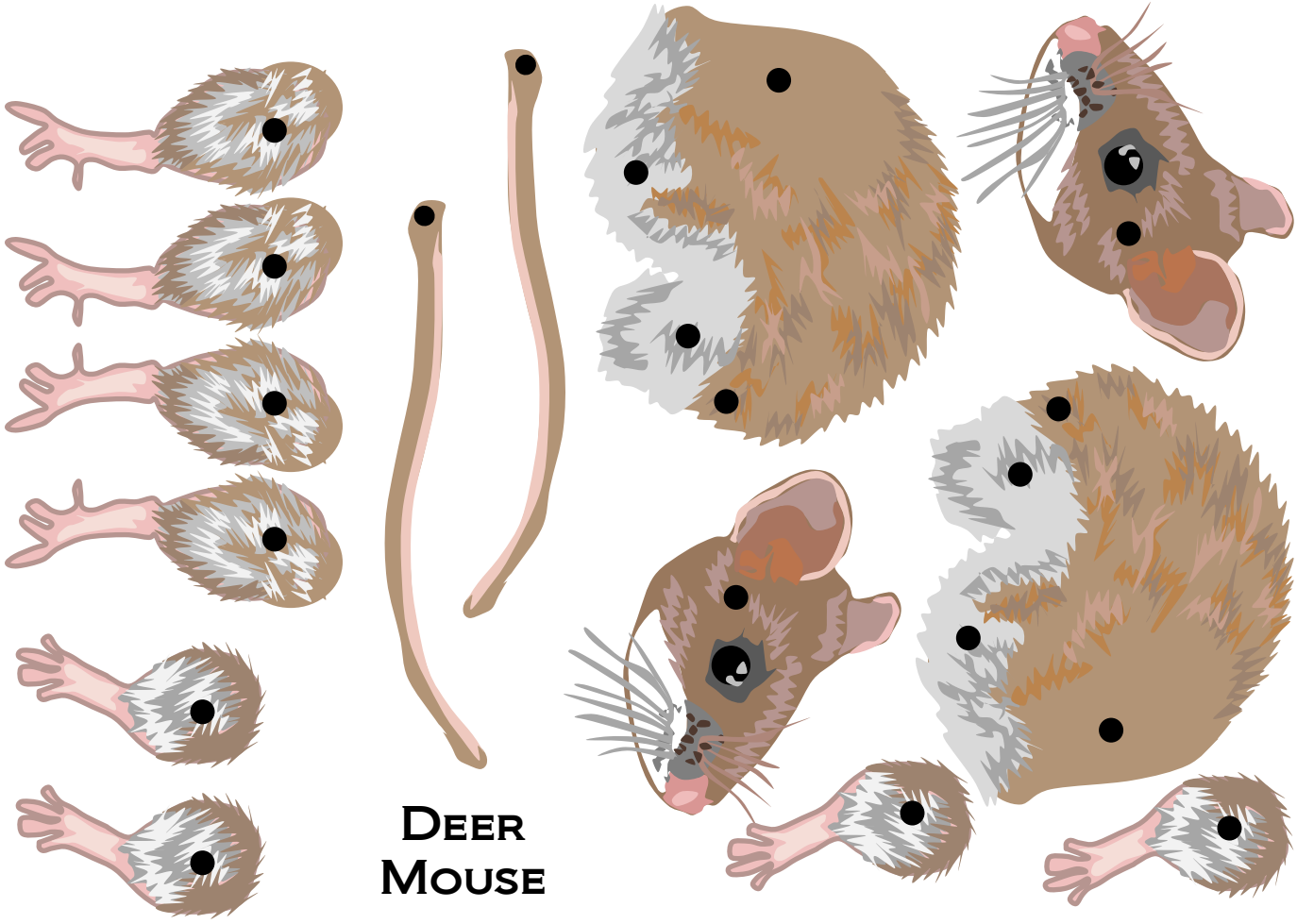
Southern Bog Lemming

Meadow Vole



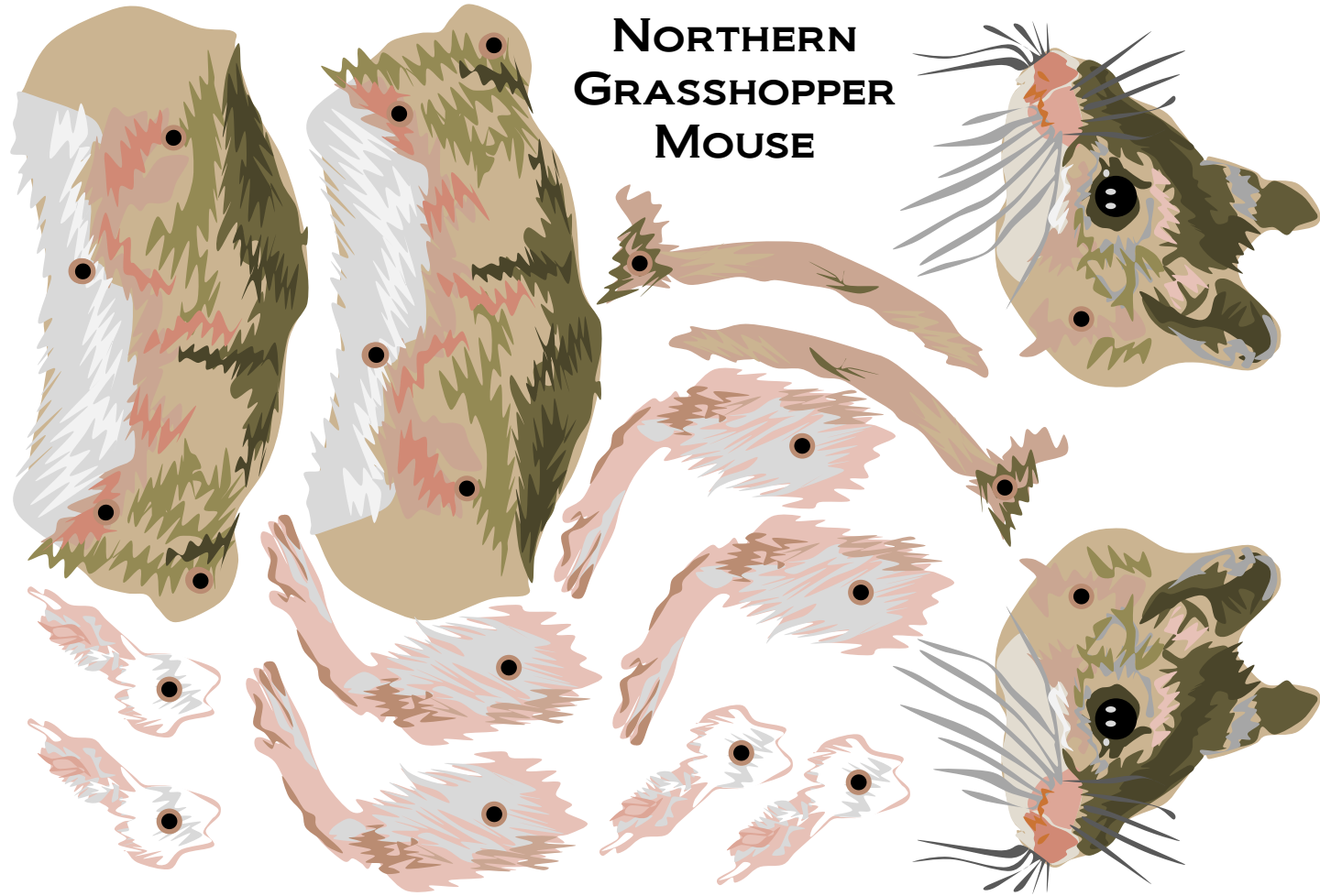
Meadow Vole

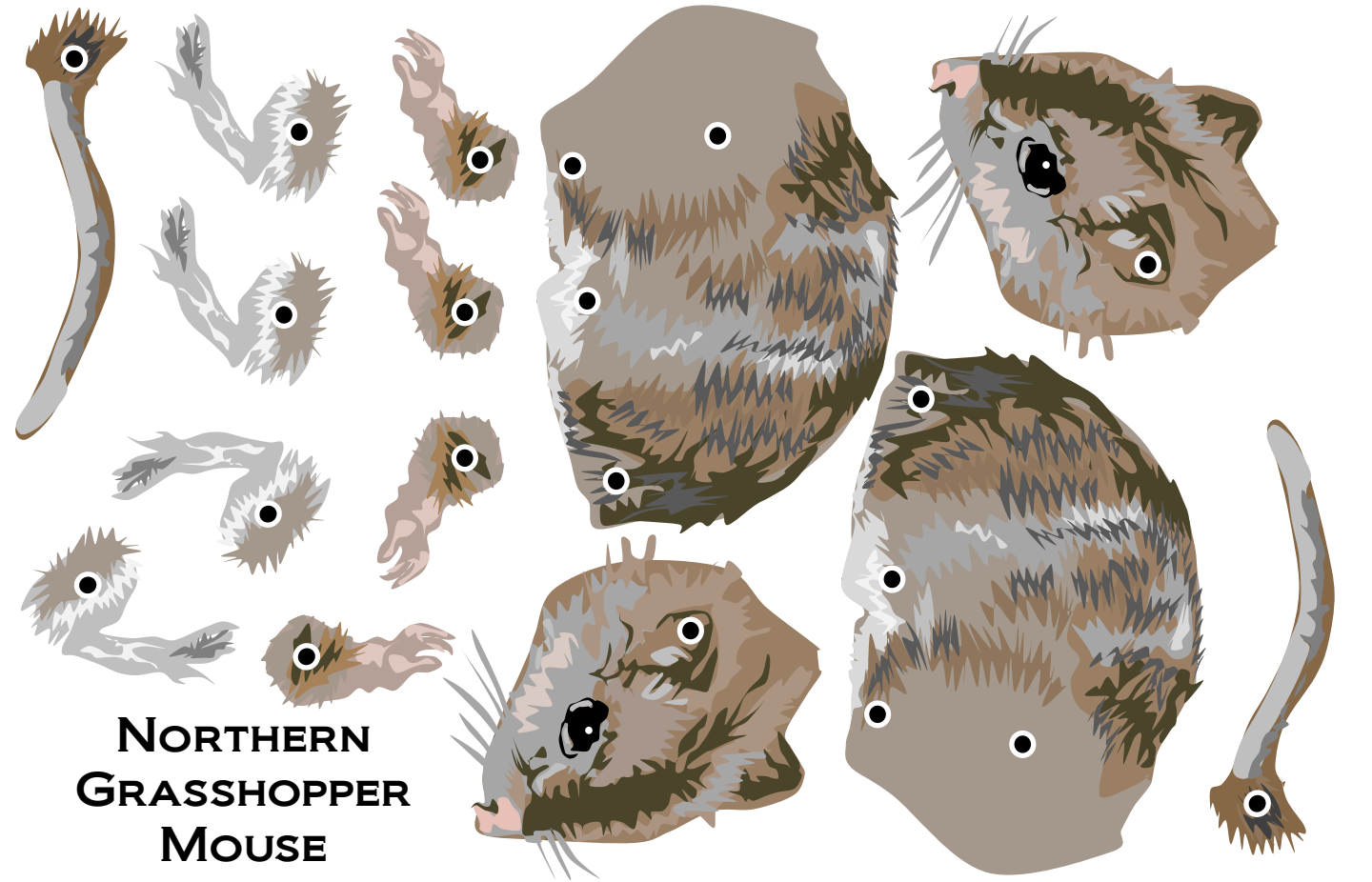



Deer
Mouse


Deer
Mouse

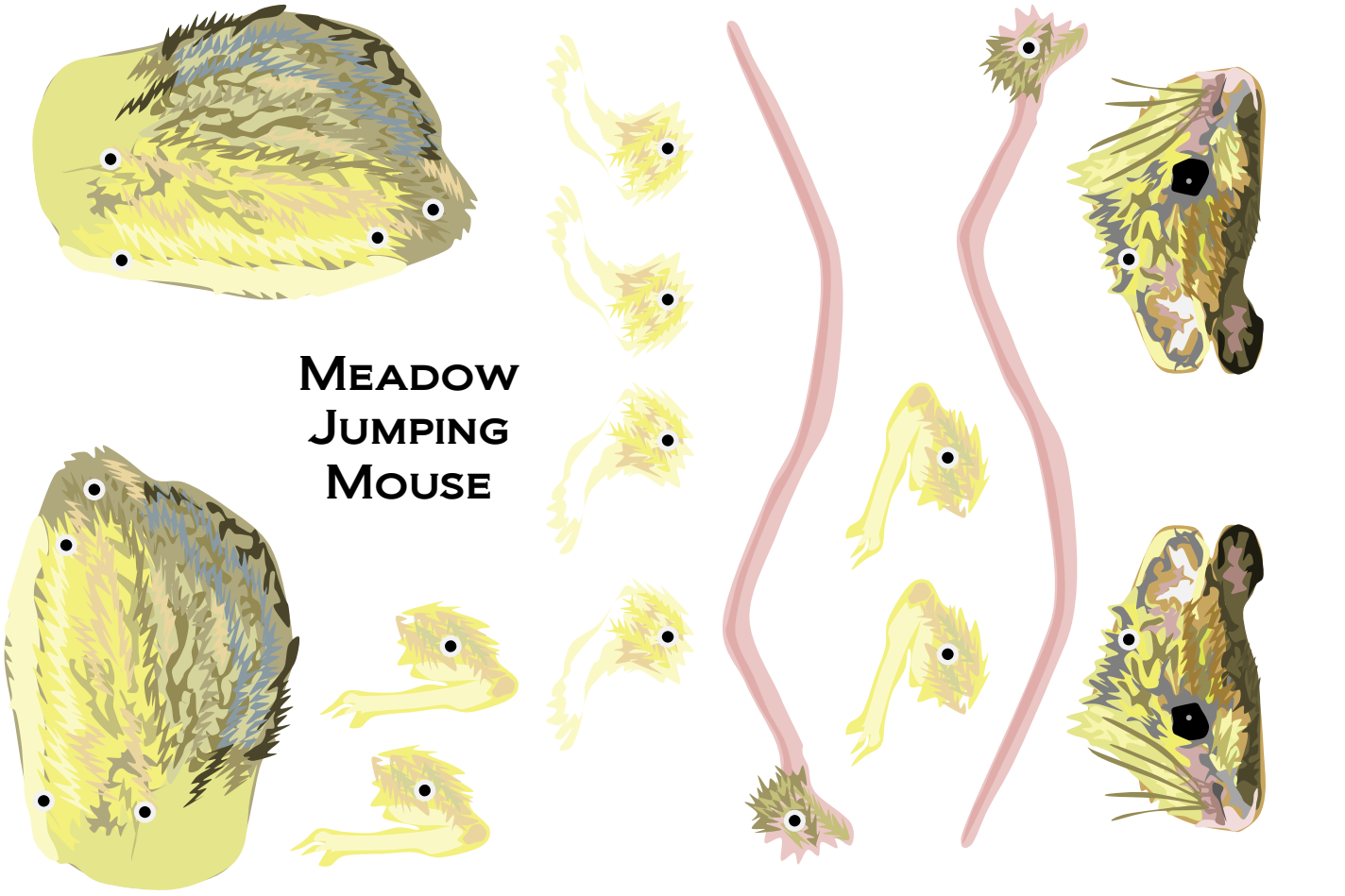
Northern Grasshopper Mouse





Northern Grasshopper Mouse


Meadow
Jumping
Mouse


Meadow
Jumping
Mouse