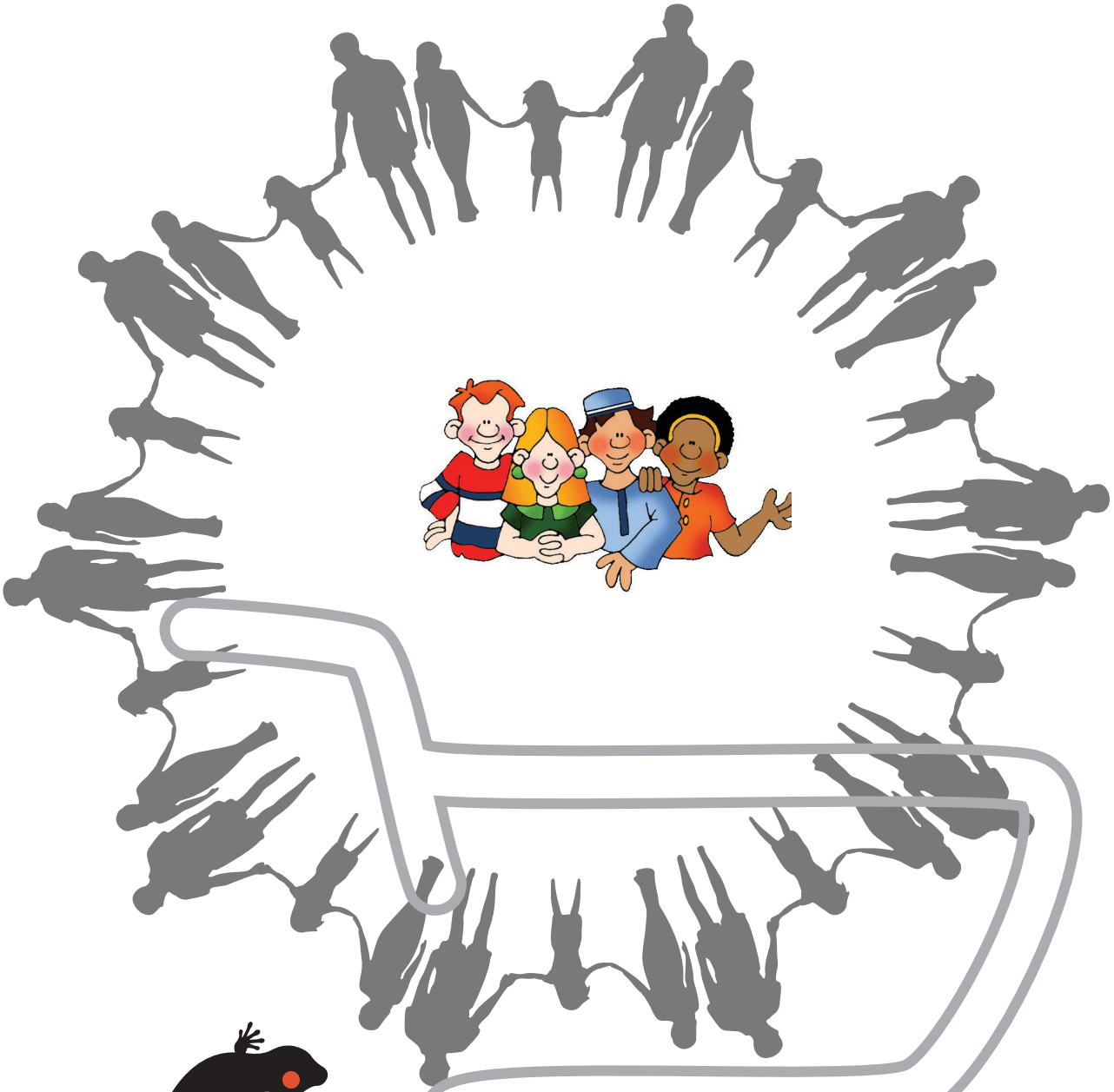
PARENT HELPER GUIDE



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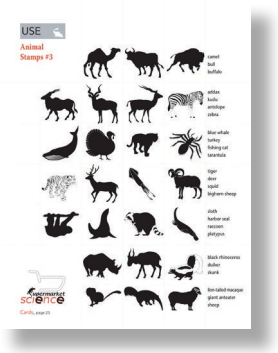
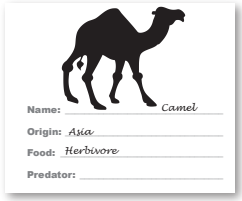
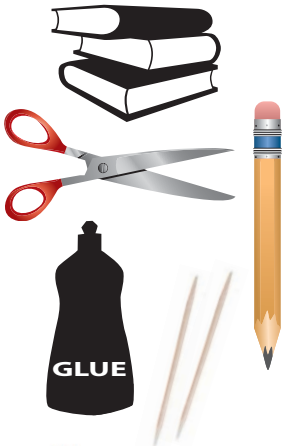
TEACH

Introduction to Supermarket Science Materials

What You Need:







Parent Helpers

How to Use This Book

Supermarket Science Materials are organized into thematically linked sets with experiments and activities as well as background information that makes them easier to do. There are also a bunch of simple, fun art and writing projects. All of the activities can be done alone or in conjunction with other project sets. Choose activities that are developmentally appropriate to your children.

All Supermarket Science Materials are primarily geared toward students in elementary and secondary schools, as well as their parents and teachers, but can be expanded to higher grades. The activities are designed to advance the understanding of concepts of biology, ecology, geology, and sociology based on local resources like a backyard or a local grocery store. All of the materials in this set and others link the Core Curriculum Standards. Use the Core Curriculum Standards to focus the activities to a particular grade level.

There are also LEARN, SHOW, USE, DO, and TEACH pages. LEARN pages are designed to be given to the students. They contain explanations, stories, or diagrams. SHOW pages usually present interesting photographs or illustrations that demonstrate specific concepts. USE pages are created as supplemental materials for the activities and experiments. Animal Cards and Map Cards are examples of USE pages. And finally, the DO pages contain the actual activities and experiments. Please use the back of these pages as scrap and add additional pages as needed.

On some pages, there are icons of animals. For example, an activity about elephants might have an elephant icon next to it. These icons can be used as keys to link information between all of the Supermarket Science Materials.

Most DO pages have a What You Need list of items in the margin under the title of the activity. This is a quick reminder for what children should have while doing the activity. It might look something like a list on the right: Animal Stamps pages, Animal Cards pages, research books, pencil, scissors, glue, etc.

Some of the activities in this set use of cards from the Supermarket Science Cards or Stamps USE pages. Creating taxonomies is part of the scientific process. Card games and activities allow kids an opportunity to practice this skill.

There are many activities which can be done using information about animals and habitats. This set shows some possibilities. We encourage you to come up with others. Think of these activities as inspirational examples, jumping off points.

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Introduction to Supermarket Science Materials

Words in red are vocabulary words. They are used in a word puzzle DO pages.

Main Ideas

In these activities, children are asked to analyze data and to come up with a scientific conclusion through logical reasoning.

Research

- Research basic information using visual and written information provided in these pages (a given source), a library, or some online source. We recommend Wikipedia.org.

Precision

- Each label, name, or word has a specific meaning that all scientists in the same field understand to mean exactly the same thing.
- Descriptions of objects and events need to be precise enough to limit misunderstanding and misinterpretation by the readers as much as possible.
- "Fuzzy thinking" is not allowed!

Logical Thinking

- There are two pathways in science: deduction and induction. Deduction is a process which puts together bits of data and evidence to build a theory—it's bottom up reasoning. Induction is the process which starts with an idea and then looks for data and evidence to support it—it's top down reasoning.
- Logical reasoning is a formal way of thinking (usually deductive) where each successive thought is built upon the previous one. As long as each link in a chain of logical reasoning is true, the end conclusion is true.

Classification

- Objects can be grouped according to physical characteristics based on visual analysis, but there are many other ways of creating classifications (e.g. by eating habits).

Do More

Teaching writing, math, and reading is easier in a context rather than in isolation. Ask your children to write a short story about what they've learned or to draw an illustration or both. There are infinite number of ways of expanding these activities to meet the needs of different kids at different stages of their development. We hope teachers, parents, and students will make more activities using the materials found in these sets.

Ask students if they can think of other games or activities that they can do using the cards or the facts they have learned while working on Supermarket Science Materials. For example, kids can create a set of cards for dinosaurs and do the activities in this book with those animals. The continents on the Map Cards can be cut out and moved to show their positions during the earlier epochs of Earth. The dinosaurs can be placed on this modified world map, provided that those animals existed during that time. The modern day atlas of animals can be compared with the dinosaur atlas. And finally, there are many black and white illustrations. Ask children to augment them with more details and color. Such focus helps find details and extends the value of these materials. Feel free to cut things out—you can always print more.

For example, if kids make their own connect the dots drawings, please share those creations with others. Such recognition would make those kids proud and encourage them to make more.

Kids can share their work online. SupermarketScience.com will try to post kids stories, art, and projects. How are these different from each other?

Animals in Zoos

One way to expand on the ideas presented in this set of activities is to visit a local zoo. Zoos recognize the differences in animals' adaptations for survival in the wild and try to accommodate them. Zoo habitats are carefully designed to approximate the natural habitats of the animals that live there. The food is prepared to meet the dietary diversity of each animal and served at the appropriate time of day. Animals are placed in groups or allowed to live alone depending on their behavioral adaptations. There's lots to notice if one pays attention during a visit to a local zoo.

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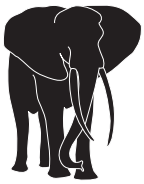
The Supermarket Science Animal Guide

There are dozens of animals listed in the Supermarket Science Animal Guide. These animals were chosen to show the diversity of animals on Earth: carnivores versus herbivores; Australian animals versus animals found on the North and South American continents; marine animals versus animals living on land; etc. There are more Animal Stamps than there animals in the this Animal Guide. But you can always add more!

Another important consideration for including an animal in this guide was whether or not these animals can be seen in the local zoos or neighborhoods by the children doing these activities. There are millions of fascinating animals that deserve to be noticed or at least known—don't let this limited guide stop you or your child from exploration of life on our planet!

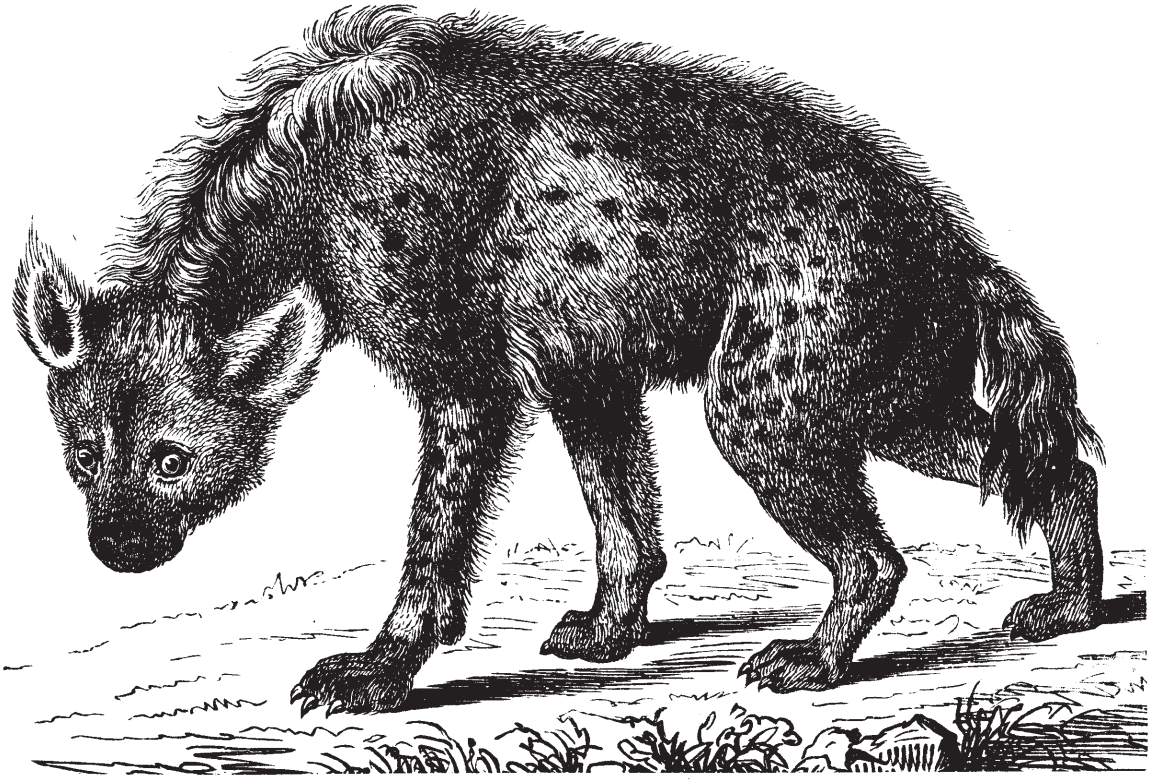
This animal guide has only a very limited amount of information about each animal—some of the Supermarket Science Activities require children to do research using library books or the Internet. There is plenty of space next to the animal descriptions to pencil in a reference or a good source of additional information. Development of research skills is one of the educational goals of Supermarket Science Curriculum.

All animals in this guide are arranged into groups by their geographic location. The same animal may be listed in several different groups—rabbits are found on every continent and so are most of the domesticated animals. This grouping reinforces the concept of multiple classification systems. Some of the Supermarket Science Activities require sorting the animals into multiple groups based on criteria like type of habitat (e.g.: African Savanna, rainforest, desert, marine habitat), place of origin (e.g.: Africa, Madagascar), family (e.g.: primates, bears, birds), adaptations (e.g.: type of camouflage, ability to live with little water), food (e.g.: herbivores, carnivores, frugivorous), conservation status (e.g.: endangered, extinct, abundant), and others.



Next to most animal descriptions, there are icons of those animals. For example, references about elephants have an elephant icon next to them. These icons can be used as keys to link information between all of the Supermarket Science Activities and the Supermarket Science Animal Cards and Animal Stamps. All those can be download at SupermarketScience.com.

There are also illustrations on most pages. Kids are strongly encouraged to color them and to draw additional information: food, babies, predators, prey, or other environmental clues about how these animals live. Researching those details is a valuable skill for all educational activities.



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Animal Adaptations Generally

This set of Supermarket Activities is geared toward kids of all ages—elementary through high school age—and their parents and teachers. It is organized by "talking points"—main themes and ideas that students are expected to learn during their school careers. The easier concepts are presented on SHOW pages.

Each talking point has several pages devoted to it. Those pages are divided into three content types: general introduction, relating ideas of the talking point to kids' lives, and how these ideas work in the wild. All ideas are explored through question and answer format: a teacher or a parent or even a child can lead the discussion by posing questions to the others. The answers are provided below each question. These questions are meant to be sample questions, just like the answers are just partial answers—good starting points. There are many questions that can be asked to explore the talking points listed here, and we strongly encourage you to expand upon the selection given here.

Talking Point for Animal Adaptations

Different Animals, Different Strategies: an introduction to the diversity of adaptations

Different Diets, Different Strategies: adaptations to food gathering and processing

Neighborhood Survival Strategies: adaptations to habitat conditions

Baby Survival Strategies: adaptations to raising a family

The Dating Game Strategies: adaptations to mate selection

What is an Animal Adaptation?

An animal's adaptation is a set of characteristics such as body features, behavioral attributes, and other strategies that are advantageous to that animal's survival. Each animal has many different adaptations that allow it to live in a particular habitat, gather food, find a mate, and foster an offspring. In particular, adaptations can be divided into external (color, size, shape, specific features, etc.), internal (bone composition, lung capacity, acuteness of hearing, number of stomachs, intelligence, etc.), and behavioral (social or solitary animal, nocturnal or diurnal, grooming habits, vocalizations, etc.).

To start thinking about animals' adaptations, ask the following questions:

What does an animal eat and how is its body adapted to eating that diet?

How does an animal get its food and what special "tools" or things it does to get it?

How does an animal escape danger?

How does an animal live in its environment and how is its body adapted to it?

How does an animal raise its young and keep them safe?

For example, an animal living in a cold climate has special adaptations to keep from freezing—thick fur, slower metabolism, blubber or thick layers of fat, warm bloodiness, and even blood that contains antifreeze! But there are many more.

Adaptations and Habitats

A habitat is a set of environmental conditions and a collection of living organisms that depend on those environmental conditions and on each other for survival. Living organisms are adapted to life in particular habitats—ocean fish can't live in a fresh water ponds, orangutans can't live in a desert, polar bears can't live in a tropical rainforest. By looking at the physical characteristics of a living organism (e.g., the body shape, the color of skin, the type of teeth, the amount of fat and blubber, the size and shape of the bones, the types of muscles, and so forth), we can tell a lot about the kind of habitat the animal comes from and what it needs to survive.

Adapted to Live Together

Living organisms don't live in isolation. They depend on one another for survival—destroy one living organism and other plants and animals that depend on it for food or protection or procreation will die as well. A habitat is a delicate balance of living organisms and the environmental conditions that sustain them. Sometimes, altering the composition of living organisms in a habitat will change its environmental conditions—destroy all the plants, and the water cycle will be disturbed, turning a tropical environment into a desert.

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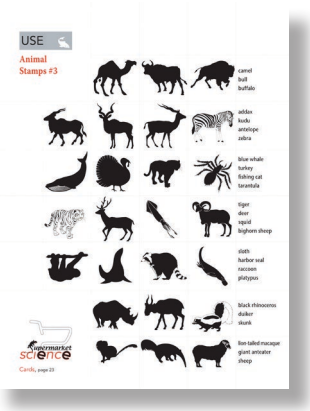
Predator Versus Prey Anatomical Differences Activities



Summary

In these activities, kids examine the physiological adaptations of animals to the life they lead in the wild. In particular, the focus is on the placement of the eyes:

- eyes facing forward give predators better depth perception, which they require for tracking and catching prey
- eyes on the side of the head increase the field of view of prey animals, allowing the animals to scan for predators on both sides simultaneously thus increasing their chances of survival

There are several predator prey activities, with each activity building on the ones that come before—it's best to complete all of the activities in the order that they are presented: *Things to Make*, *Spot Danger*, *Track Prey*, *2 Eyes are Better than 1*, *Double Vision, Double Fun*, *Float the Dime*, *Plot Your Vision*, *Record Your Vision*, *Match the Predator to its Skull*, *Match the Herbivore to its Skull*, and the full collection of food web DO pages.

To complete some of these activities, children will need to work to together in groups or get assistance from their parents to collect and record data. They will also need Supermarket Science Animal Guide, Cards, and Stamps available on the SupermarketScience.com site. For additional research into the lives of animals, consider visiting Wikipedia.org—just type the name of the animal into the search box. Research skills is one of the most important things that children need to master during their years of school. And they are empowering—humans now have knowledge at the tips of their fingers. Those who don't know how to do simple research and make decisions about validity of their sources will suffer later on in life when those skills become the difference between life and death (like in a medical situation) or just a job requirement.

These activities are difficult to accomplish with younger students without the help of parents. But there are many parts that even the younger kids will enjoy if given enough support. For more information about the educational needs of younger children, please go to the ABOUT section of the SupermarketScience.com and read a bit about Zombies!

Main Ideas

Food Webs

- compare the anatomical differences between predators and prey
- create a food chain starting with a top predator
- create a food chain starting with a producer
- create a food chain starting with any animal
- create a food web by combining multiple food chains

Collect Data

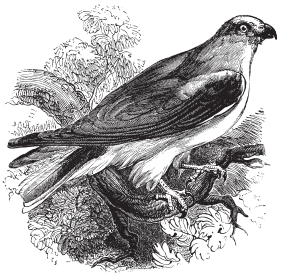
- collect data by performing experiments
- record data in a log sheet

Make Predictions

- make predictions based on visual analysis

Research

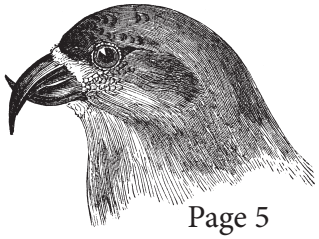
- research basic information about the animal using the Supermarket Science Animal Guide (a given source) and a library or the Internet (a new source)



Encourage your children to discuss the following questions:

What would happen if an animal in the middle of the food chain goes extinct?

Can animals from one habitat be substituted into the food web of another habitat?



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What You Need

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What You Need

Each child will need a set of Animal Cards and a set of Animal Stamps. There are extra blank cards to allow kids to expand their animal card decks as needed.

All children will need to create stamps for plants—the food source of the herbivores. At the bottom of most food webs and chains is the sun—a nutritional source for food producers. The same animal might be used several times in different food chains.

In elementary school, these activities work well when performed in groups of four to five students with adult supervision. At home, a parent can help their kids organize their materials and their thinking. Older kids can work in pairs or individually and to compare the food chains they create during the follow up group discussion. It is always good to discuss the activities afterwards—it not only helps children remember what they've done but also provides context to what they've learned and helps anchor new information in memory.

The materials you will need:

- Animal Stamps USE pages
- Supermarket Science Animal Guide and other research sources
- Pencil, scissors, glue or tape
- Additional paper; toilet paper rolls
- One zip lock bag (to store the unused stamps for later use)
- DO pages for the activities in this section
- *Parent Helpers* for each group of elementary school kids
- 3" x 11" strips of white paper to make binoculars (enough for each kid)
- 2 popsicle sticks and two small mirrors about 1" in diameter; these can be substituted with dental mirrors
- 36-foot rope (you can substitute the rope with a chalk circle of the same circumference)
- Spoon, hammer, tweezers, nuts, cereal, bowl, raisins, rubber bands, tall glass, chopsticks

Plot Your Vision and *Record Your Vision* activities should be done at the same time. *Match the Predator to its Skull* and *Match the Herbivore to its Skull* activities work best if done in pairs rather then by a large group.

Do More

Encourage the students to thing of other animal adaptations which involve the shape of the skull:

- the size and shape of the skull
- the presence of horns, antlers, or tasks
- the size, shape, and location of sinuses
- the size, length, and location of ear holes
- the size of sagittal crests on the top of the skull (for jaw muscle attachment)
- the size, shape, type, and number of teeth

Encourage the students to make more animal cards and stamps.

What animals can complete or expand their food webs?

Kids should compare the food chains they create with each other—a top predator has many food chains. Make imaginary food webs by mixing the food chains of different habitats (e.g.: rainforest and desert).

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Answers to Rule Problems

Solutions to "Paw to Prints" Activity

The paw prints belong to a mouse, a bear, and a lion.

Solutions to "Odd Man Out" Activity

The animals shown are: a lion, an ostrich, a koala, a sloth, a buffalo, a tiger. There are several possible answers to which animal doesn't belong. Ostrich is the only bird, and so makes a good "odd man out." But another answer can be based on the place of origin. There is one animal from Australia: a koala. There is one animal from North America: a buffalo. There is one animal from South America: a sloth. There is one animal from Eurasia: a tiger. But there are two animals from Africa: a lion and an ostrich. So either a lion or an ostrich can be an "odd man out."

Solutions to "Another Odd Man Out" Activity

The animals shown are: a lion, an ostrich, a rhino, a gorilla, a platypus, a Marabou stork, a giraffe, a gazelles, an elephant. All animals come from Africa except for duckbill platypus, which comes from Australia. Platypus is the "odd man out."

Solutions to "Make Your Rule!" Activity

Kids are asked to make a rule which includes a fox. Possible rules might be: animals which are mammals; animals which are carnivores; animals which are nocturnal; animals which can be found in San Francisco; animals which eat mice; and so on.

Since there are so many variations on the possible rules, listing and comparing the rules generated by the students in the class would make a good activity.

Solutions to "Rule Again!" Activity

Kids are asked to make a rule which includes a duck and a golden eagle. Possible rules might be: animals which have feathers; birds; animals which can fly; animals which can be found in North America; and so on.

Since there are so many variations on the possible rules, listing and comparing the rules generated by the students in the class would make a good activity.

Solutions to "Name that Rule" Activity

The animals shown in the first rule are: an anteater, a flamingo, a spider monkey, a sloth, a tapir. These are all animals from South America.

The animals shown in the second rule are: an alligator, a heron, a crab, a blue whale, a squid. These are all animals that require water to survive.

The animals shown in the third rule are: an oryx, a zebra, an antelope, a kudu, a buffalo. These are all herbivores. They are all large animals with hooves that require a lot of grazing land.

The animals shown in the fourth rule are: a cow, a rooster, a chicken, a camel, a cat. These are all domesticated animals.

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Answers to Rule Problems

Solutions to "Name that Rule, too" Activity

The animals shown in the first rule are: a cheetah, a cat, a tiger, a mountain lion, a lion, a lynx. These are all cats.

The animals shown in the second rule are: a dragonfly, a fishing cat, a fox, a bold eagle, an owl, a penguin, a seal. These are all carnivores.

The animals shown in the third rule are: a skunk, a pig, a raccoon, a bear, a crab. These are all omnivores.

The animals shown in the fourth rule are: an East African Crowned Crane, a heron, bats, a swan, a parrot, a humming bird, a dragonfly. These are all flying animals.

Solutions to "Complete the "Pattern I" Activity

The animals shown in the first rule are: a bull, an addax, a deer, a mouse. These are all animals with horns or antlers. They are all herbivores. They are all mammals. Any animal with horns, or a mammal, or a herbivore can complete the pattern.

The animals shown in the second rule are: a gorilla, a spider monkey, a Lion-tailed Macaque, a siamang. These are all primates. Another primate would complete the pattern.

The animals shown in the third rule are: a toad, a gecko, an alligator, a tree frog, a snake. These are all cold blooded animals. Another cold blooded animal would complete the pattern.

Solutions to "Complete the Pattern II" Activity

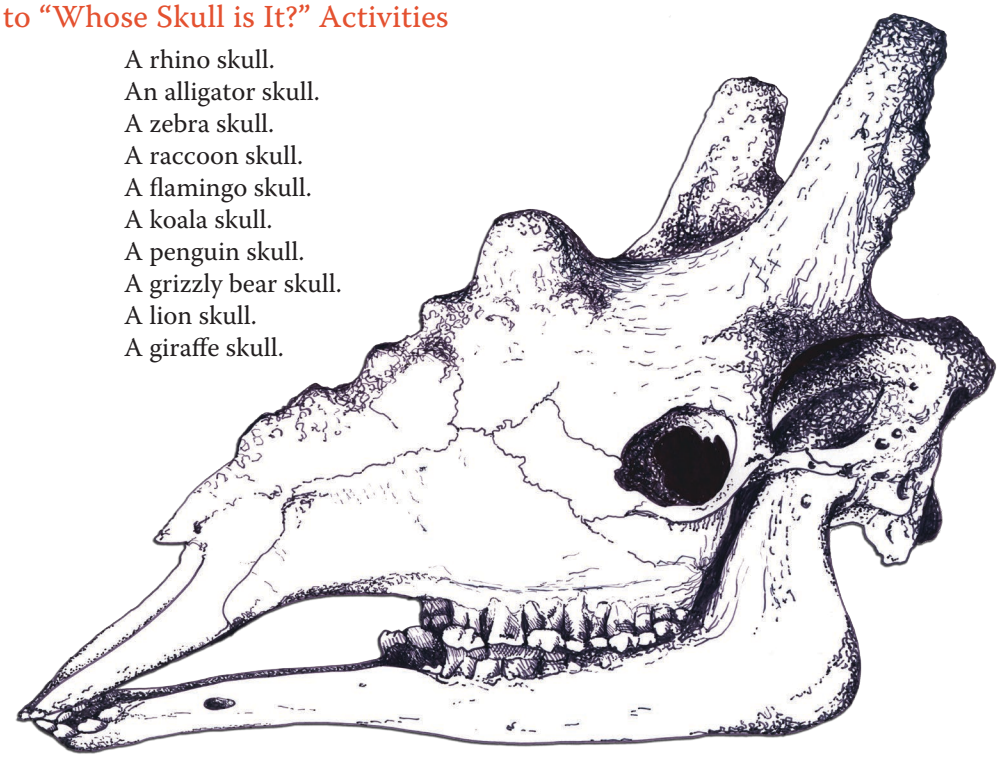
The animals shown in the first rule are: a golden eagle, a duck, a humming bird, a penguin, an ostrich. These are all birds. Any bird would complete the pattern.

The animals shown in the second rule are: a gecko, a lynx, a koala, a hippo. These are all nocturnal animals. Another animal active at night (like a bat) would complete the pattern.

The animals shown in the third rule are: a panda, a ring-tailed lemur, a snow leopard, a rhino. These are all endangered animals. Another animal which existence is threatened in the wild and which is close to extinction would complete the pattern.

Solutions to "Whose Skull is It?" Activities

A rhino skull.
An alligator skull.
A zebra skull.
A raccoon skull.
A flamingo skull.
A koala skull.
A penguin skull.
A grizzly bear skull.
A lion skull.
A giraffe skull.



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