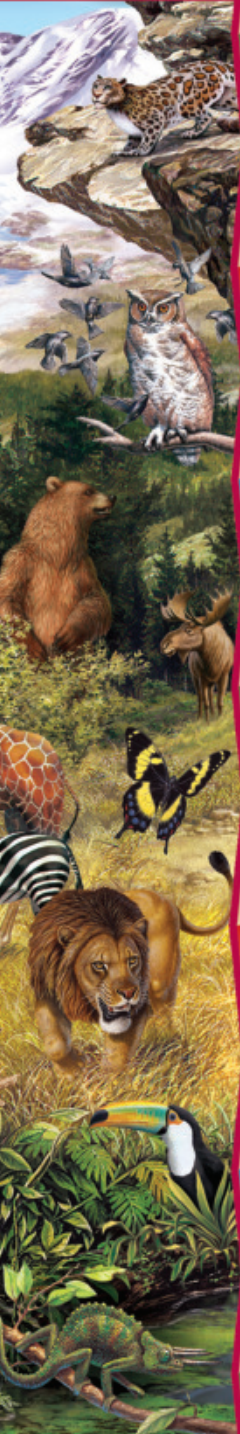





PANDAS



- A strange kind of thumb
- Their two-colored skin
- Helpless newborns
- and so much more!

Ranger Rick





Giant pandas are among the most beautiful and rare animals in the world. They are near the top of almost everybody's list of favorite animals. Whenever there are giant pandas in a zoo, people flock to see them.

It's easy to see why they are so popular. They look like big and cuddly Teddy bears, with soft black-and-white fur. They seem friendly and harmless, and even a little helpless at times. It almost seems like giant pandas were *made* for people to love.

Giant pandas can be large animals, as their name implies. When fully grown, they can be almost 5 feet long, and they usually weigh over 200 pounds. The biggest giant panda ever weighed was almost 400 pounds. But giant pandas aren't really giants in the same way that an elephant is a giant. One average elephant weighs more than thirty giant pandas.

All of the wild giant pandas in the world live in western China. They are found in dense bamboo forests high up in the mountains. The forests are so dense that it has always been hard for people to find out much about wild pandas. The pandas stay hidden in the forest most of the time, where people can't even see them. In many ways, the giant panda is still a mysterious animal.

The Chinese people are very proud that these beautiful animals are found only in their country. They have even made the giant panda a symbol for their country, in the same way that the bald eagle is a symbol for the United States. The Chinese call the giant panda *daxiong mao* (dah-shohng mah-oo), which means "large cat-bear."

The people of China are doing many things to protect their giant pandas. They have set aside areas of wild land as panda reserves. Chinese scientists are working with scientists from other countries to find out more about wild pandas. And it is against the law in China to harm a giant panda in any way.

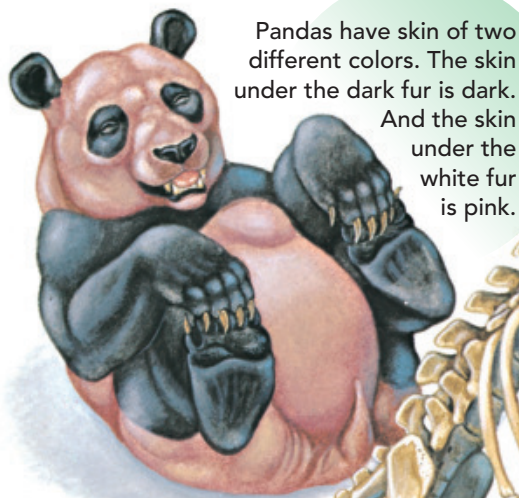
Many zoos would like to have pandas because they are so popular with zoo visitors. But only a few zoos outside China are allowed to have them, because they are an endangered species.



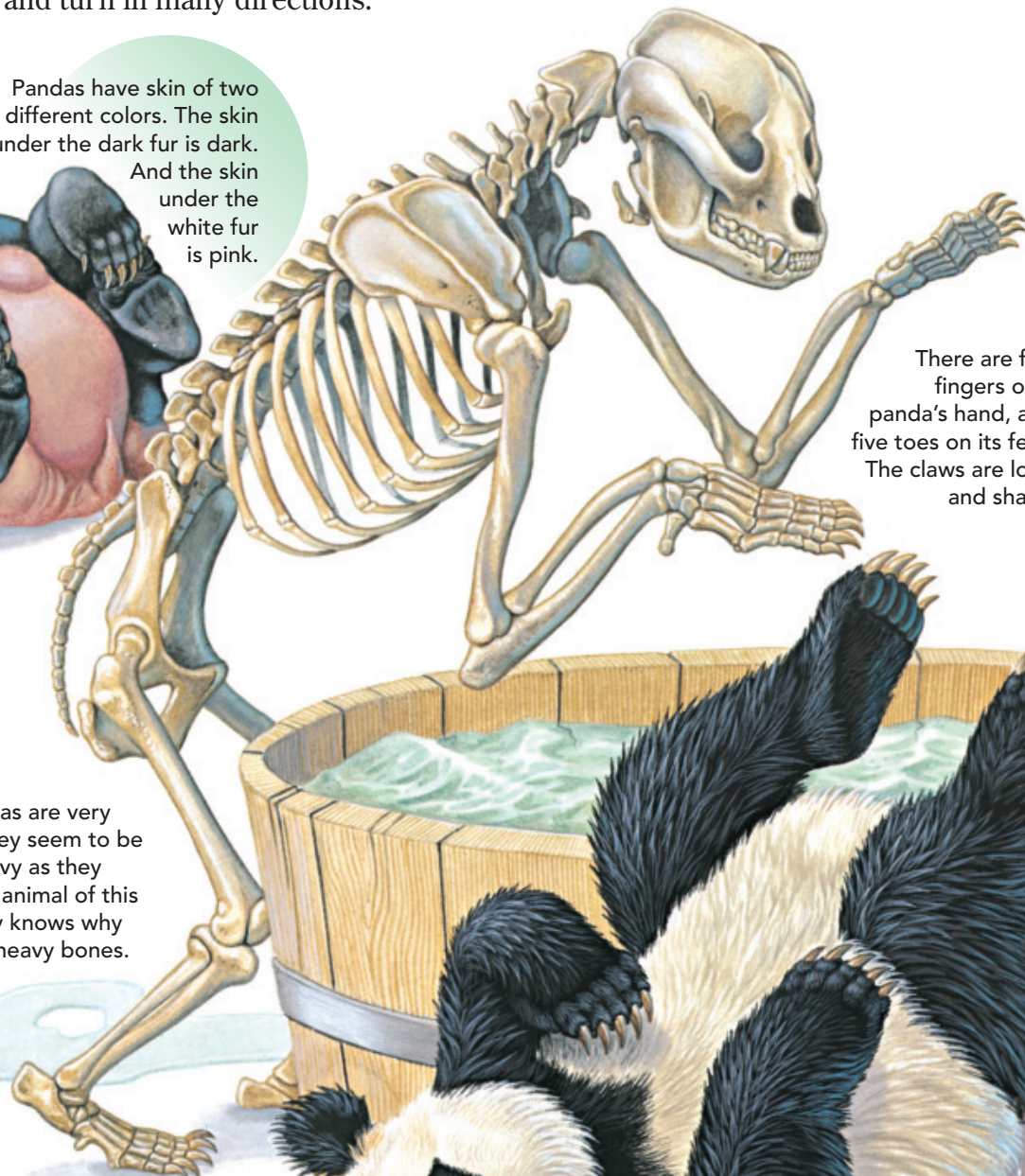
Giant pandas look like fun. Their beautiful black-and-white fur looks almost like a costume for a party. Their round ears and the black patches around their eyes make them look like delightful circus clowns.

Giant pandas have very flexible bodies. They can twist and turn in many directions.

They love to do somersaults—over and over and over again. They usually move very slowly. And sometimes they will stop in the middle of a roll and hold a pose for a long time. In zoos, they often play for hours with big rubber balls, plastic hoops, metal barrels, and other toys.



Pandas have skin of two different colors. The skin under the dark fur is dark. And the skin under the white fur is pink.



There are five fingers on a panda's hand, and five toes on its feet. The claws are long and sharp.

The bones of pandas are very large and thick. They seem to be about twice as heavy as they ought to be for an animal of this size. Nobody really knows why pandas have such heavy bones.

Panda fur looks soft, but it is actually very stiff and coarse. The fur on an adult is very thick and may be two inches long. Wild pandas clean their fur by rolling in dry dirt. In zoos, some pandas like to take baths.





Stuffed panda toys and Teddy bears are probably among the most popular toys of all time. Millions of children have owned them and loved them. This may be one reason why so many people love real pandas and bears.

People are attracted to round and cuddly images with big eyes. Like puppies, kittens, and human babies, giant pandas are appealing to most people—large or small. Pandas look friendly and helpless. They look round and cuddly. They are also very playful and often do things that are just plain cute. Who can resist a panda?



Big Eyes

Big Face

Looks Friendly

Round and Cuddly



The rear legs of pandas are not as strong as the front legs. This may be one reason why pandas don't seem able to run very fast. Even when they are being chased, pandas never move faster than a slow trot.

The front part of a panda's body is very strong. Pandas in zoos usually destroy their toys very quickly. Even the strongest toys are no match for a panda's strong hands and jaws.

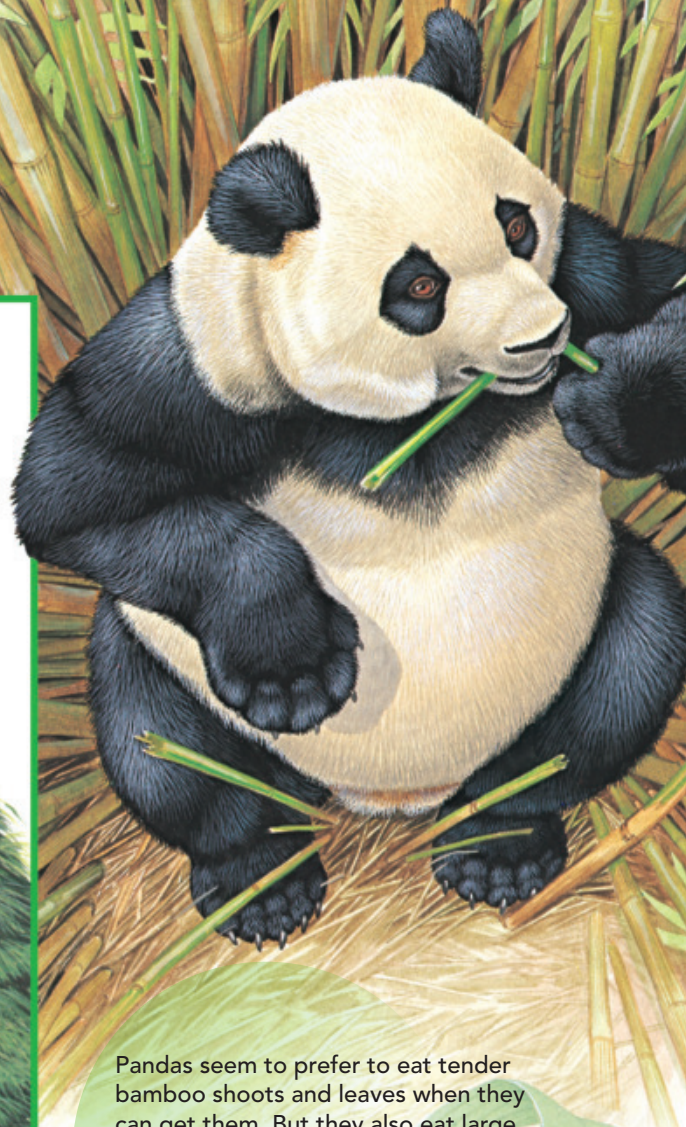
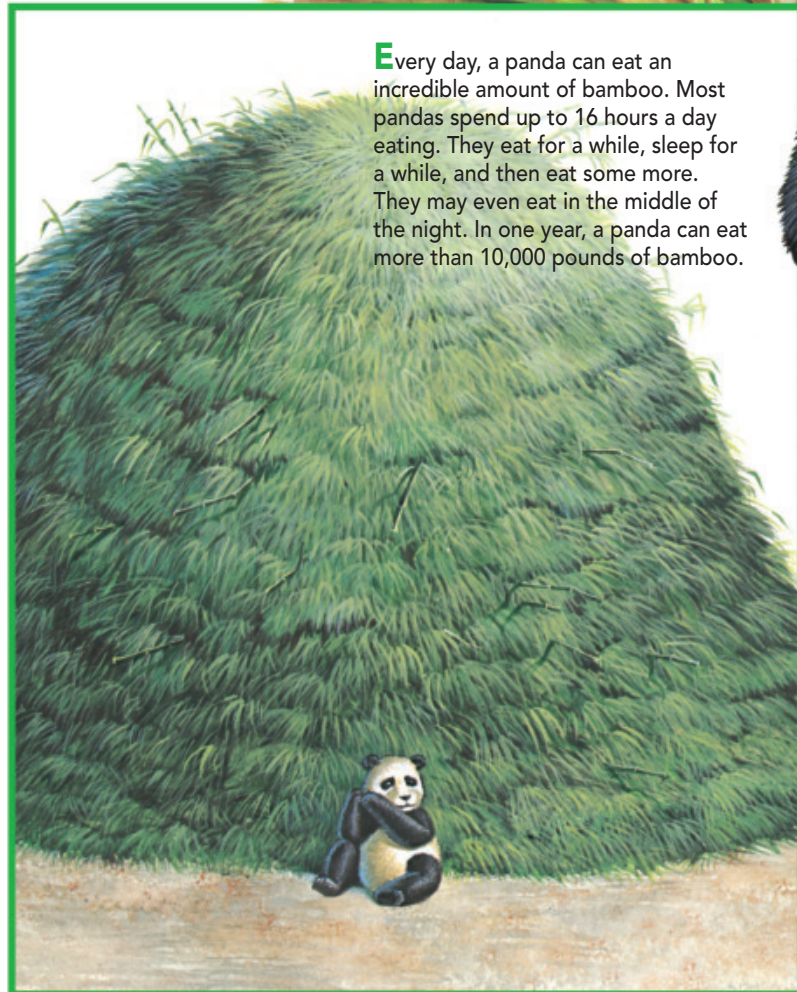
Bamboo is the most important thing in a wild panda's life. In fact, the life of a panda actually depends on bamboo—because bamboo is the main food that pandas eat. Some scientists say that 99 percent of all the food a wild panda eats is bamboo.

The panda's name may even be based on its fondness for bamboo. Some people believe that the word "panda" comes from a native word that means "bamboo eater."


Bamboo plants are really grasses that can grow as tall as trees. There are hundreds of different kinds of bamboo, but pandas only eat about 20 different kinds. Most of the time, they eat only 4 or 5 kinds that are most plentiful in areas where they live.

Everywhere a panda goes in a bamboo forest, it is surrounded by food. To eat, all it has to do is sit down and grab a nearby stalk of bamboo. Sitting in one place, it can bend dozens of stalks into its mouth. With very little effort, it can chew on more than 3,400 bamboo stalks every day. Very few animals have such an easy time getting their food.

Every day, a panda can eat an incredible amount of bamboo. Most pandas spend up to 16 hours a day eating. They eat for a while, sleep for a while, and then eat some more. They may even eat in the middle of the night. In one year, a panda can eat more than 10,000 pounds of bamboo.



Pandas seem to prefer to eat tender bamboo shoots and leaves when they can get them. But they also eat large stalks up to 1½ inches thick. The outer covering of these stalks is very hard. Pandas strip it away with their teeth and eat the softer pith inside.



To help it grab bamboo, a giant panda has unusual “hands.” Like a human hand, the panda’s hand has a special “thumb” that makes it possible to grab things very tightly. In fact, the giant panda is one of the few large animals that can grab things as tightly as a human can. But the panda’s “thumb” works in a different way from a human thumb, as explained below.



The panda’s “thumb” is not really a thumb at all. It is a large wrist bone called a *radial sesamoid* bone. And a panda does not wrap its “thumb” around things to hold them, as humans do ①. Instead, the panda wraps its five fingers around one side of a bamboo stalk ②. Then it pushes the radial sesamoid bone forward ③ to jam the bamboo against the fingers.

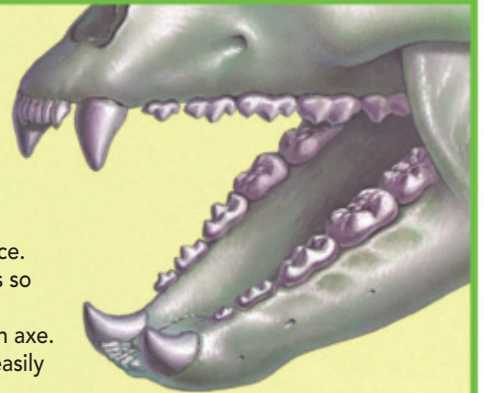


②

③



The whole head of the panda is a giant machine for crushing bamboo. The jaws are made of very strong, thick bone. And the huge cheek muscles can close the jaws with tremendous force. A thick stalk of bamboo is so hard that you would have trouble breaking it with an axe. But a panda can crush it easily and chew it to bits.



To chew bamboo, pandas have very big teeth. The teeth are wide and thick. They crush the bamboo and grind it up. Like humans, pandas get two sets of teeth—a baby set and an adult set. There are 42 teeth in the mouth of an adult panda. The cheek teeth of a panda are about seven times bigger than human cheek teeth.



Pandas sometimes eat other things besides bamboo. When they can get it, they will eat meat. And they seem to be very fond of honey. They also eat grass, vines, and roots. In the spring, they may even eat flowers.



Giant pandas can only live in places where there is enough bamboo for them to eat. And the kinds of bamboo that pandas prefer to eat are found high up in the mountains, where it can get very cold.

During the coldest part of the winter, there are often many feet of snow on the ground. But no matter how cold it gets, the bamboo stays green—and the pandas keep eating it. Pandas do not sleep in dens during the winter. They continue to wander through the snowy bamboo forests, eating as they go.



Like other animals that live in cold places, pandas seem to like the cold. In zoos, pandas are often given blocks of ice to cool them off when the weather gets hot. Many times, they will lie down on the ice and go happily to sleep.

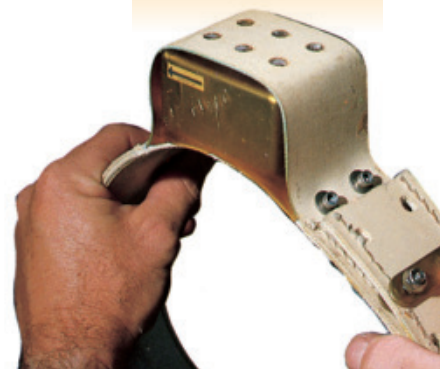
The bamboo grows so thick in panda country that it is often impossible for people to make their way through it. Pandas can crawl under the bamboo thickets and wriggle between tightly packed bamboo stalks, but people can't. For this reason, scientists who want to study wild pandas must often capture them first. To do this, they bait a trap with meat, as shown at left. When a panda goes inside to get the meat, the door slides shut.

Scientists put the trapped panda to sleep with a harmless drug. While the panda sleeps, it is weighed and examined. The scientists look at the amount of wear on the teeth, because this indicates the age of the animal. They check to see whether the panda has any diseases, and give it medicine if needed. Finally, they attach a radio collar to the panda's neck.



The radio collar is very strong and waterproof. It will keep sending signals for a year or more. The collar does not hurt the panda in any way.

Once the collar is firmly attached, the panda is allowed to wake up and is released into the forest. As it wanders away, the radio collar sends out signals. Scientists can use the radio signals to find out where the panda goes in the dense forest.



Bamboo grows best in places where there is a lot of water. And this is why it grows so well in panda country. During the winter, there is a lot of snow in the mountains—and during the summer there is a lot of rain. More than 50 inches of rain and snow may fall every year.



Thousands of years ago, there were bamboo forests all over eastern China. And for this reason, pandas were able to live in a very large area (orange on the map). But the climate in eastern China has grown drier over the years. And people have also cut down bamboo in many places to make room for farms. As a result, the bamboo forests are much smaller today, and giant pandas can only be found in a few small areas (red on the map) in parts of six isolated mountain ranges.



Pandas may play in the snow like children. One scientist found a place where a panda went sledding down a hill on its stomach. It "belly flopped" to the bottom, climbed back up the hill—and *did it again*.



Pandas at a picnic. No one seems to have told this group that pandas are solitary animals.



Panda mothers take very good care of their babies. As soon as a baby is born, its mother takes it in her arms like a human mother cuddling her child. The panda mother feeds the baby milk and never lets it out of her sight.

Baby pandas need this kind of protection because they are completely helpless when they are born. And there are animals in the forest that would like to eat them. (Scientists have found evidence that leopards and wild dogs eat young pandas.)

When predators try to attack a young panda, its mother may protect it by biting with her powerful jaws, as shown below. There is no doubt that panda jaws could crush bones as easily as they crush bamboo. For more about panda mothers and babies, go to www.zoobooks.com/learnmore.

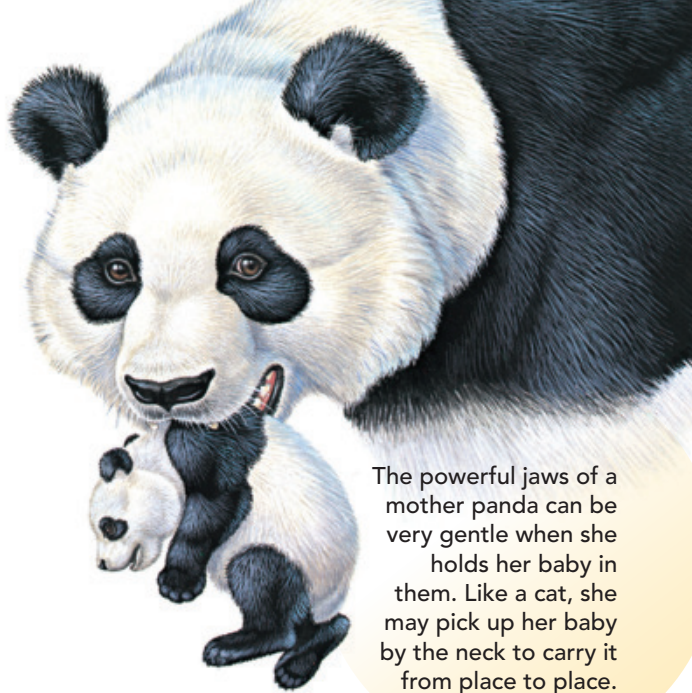
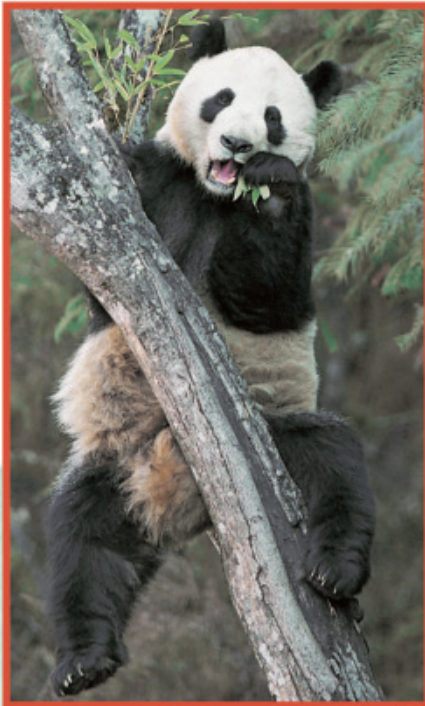


Most baby pandas are born in dens. The dens are often found in hollow trees. Mother and baby are probably very snug in their den, no matter how cold it gets outside.



Chinese leopards are probably too small to stand up to an angry mother panda. A fully grown panda weighs twice as much as a leopard.

Pandas sometimes climb trees to escape from danger. When they are young and small, they can scamper up a tree in no time at all. As they grow older and heavier, it becomes harder for them to climb. But even older pandas will climb trees to find a safe place to sleep.



The powerful jaws of a mother panda can be very gentle when she holds her baby in them. Like a cat, she may pick up her baby by the neck to carry it from place to place.



By the time a young panda is seven months old, it weighs over 20 pounds. It can run and climb trees, and it has started to eat bamboo. Eleven months later, it weighs 120 pounds, and it is ready to leave its mother.

When they are born, baby pandas are tiny. Their mothers are about 900 times bigger than they are.



Four Months Old
6½ pounds



Three Months Old



One Month Old



Newborn
4 ounces

The babies grow rapidly, as shown here. But they stay helpless for a long time. Their eyes don't open until they are about 40 days old. They become mobile when about 3 or 4 months old.

Giant pandas are mysterious. For 150 years, scientists have been arguing about what kind of animals they are. Some scientists once said that the giant panda belonged to the same family as the *raccoon*. (This was because many people thought the giant panda was related to a small raccoon-like animal called the red panda.) But others claimed the giant panda belonged

to the *bear* family. And a third group thought it should be in a family all by itself.

Currently, scientists agree that the giant panda is a bear. The red panda belongs to its own family—the Ailuridae.

On these pages you will see why the relationships were so difficult to determine.



ASIATIC BLACK BEAR
Ursus thibetanus



RACCOON
Procyon lotor



Giant Panda Cub



Bear Cub

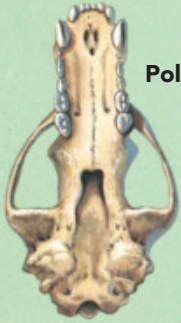
Newborn bears and newborn giant pandas look very much alike. Both are tiny and helpless, and covered with very fine hair.



RED PANDA
Ailurus fulgens



Red Panda



Polar Bear



Giant Panda

The teeth of giant pandas and red pandas are very much alike. The teeth of giant pandas are very different from other members of the bear family. But other bears eat different kinds of food than the giant panda eats. Bears have narrow teeth that are made for cutting and chewing. Giant pandas have wide teeth that are made for crushing bamboo.

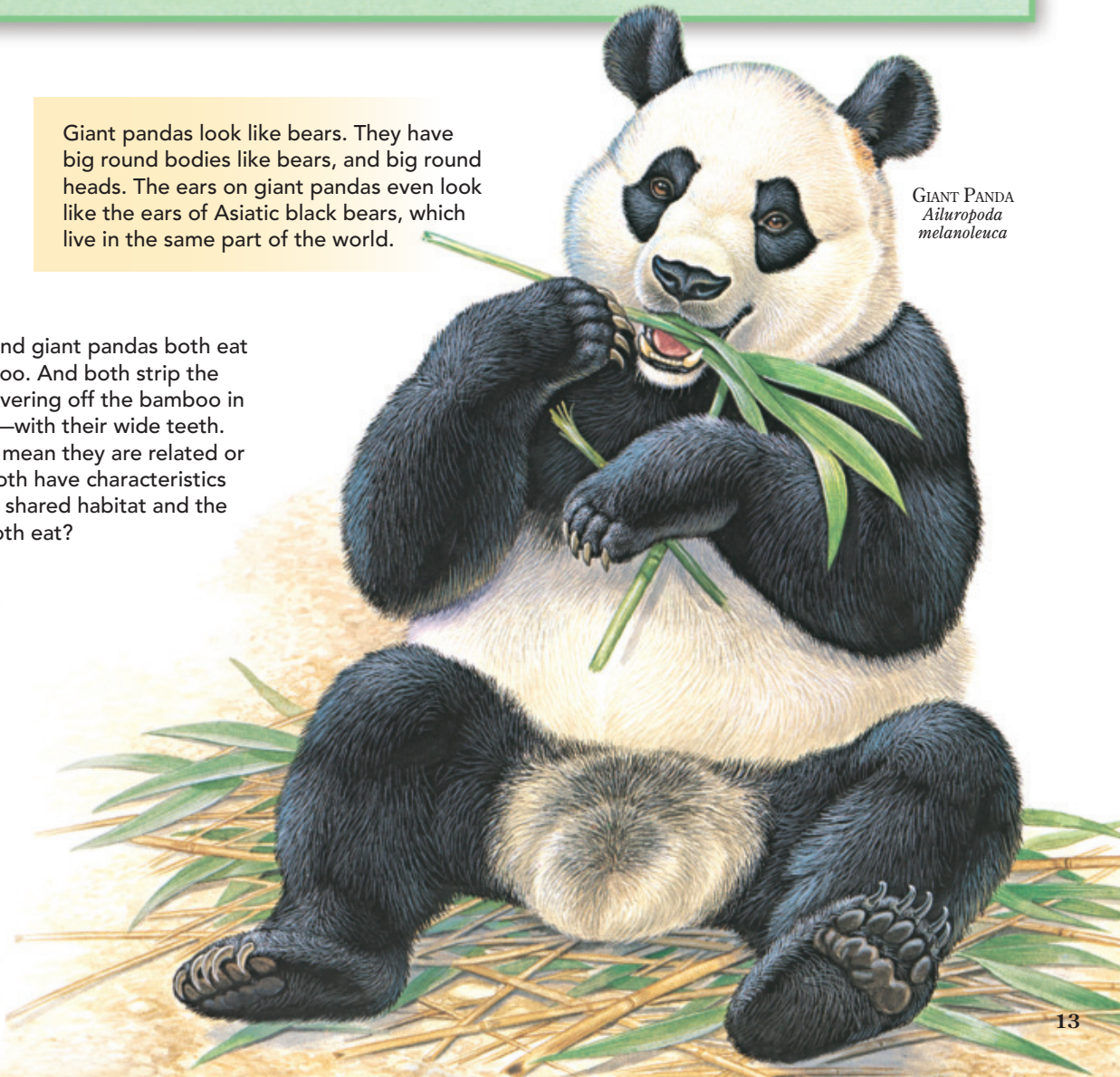


In recent years scientists have had new tools for studying relationships. DNA analysis indicates that giant pandas are more closely related to bears than to red pandas. Blood protein evidence suggests that red pandas require a place of their own and should not be grouped with either raccoons or giant pandas.

Giant pandas look like bears. They have big round bodies like bears, and big round heads. The ears on giant pandas even look like the ears of Asiatic black bears, which live in the same part of the world.

GIANT PANDA
*Ailuropoda
melanoleuca*

Red pandas and giant pandas both eat a lot of bamboo. And both strip the hard outer covering off the bamboo in a similar way—with their wide teeth. But does this mean they are related or simply that both have characteristics that suit their shared habitat and the foods they both eat?





Pandas have to do a lot of climbing. They live in mountains, so there is no way around their up and down life. When they are young, they like to scamper up trees. But the older and heavier pandas get, the more likely they are to climb trees to escape danger—instead of for fun.




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The future of giant pandas is hard to predict. They are one of the many species on our planet in danger of extinction, but their numbers are growing. Scientists believe that there are over 1,800 giant pandas now living in the mountains of western China.

To survive, these wild pandas will need enough land to live on, and enough bamboo to eat. The Chinese government has already done a great deal to help give the pandas these things. Large areas have been set aside as panda reserves (more than 60 of them)—and these areas contain some of the best bamboo forest remaining in China.

But the pandas are still not totally safe. There are people living in some of the reserves, and they want to cut down more bamboo to make room for farming. Other people would like to cut down the trees and bamboo in the forest to build houses.

The most serious danger for pandas may come from the bamboo plants that pandas like to eat. Each kind (or species) of bamboo plant lives and grows for a certain number of years—from 40 to 80 years. Then the bamboo plants of that species flower and die. When one species of bamboo dies, all of the bamboo of that kind dies at the same time. Entire forests of bamboo may die all at once, leaving the pandas that live in those forests without bamboo to eat.

This happened in 1975, when all of the umbrella bamboo died. With nothing to eat, more than 150 giant pandas starved to death. In 1983, all of the arrow bamboo died, and hundreds of pandas were in danger again. But this time, the Chinese and conservation agencies were able to help the pandas.

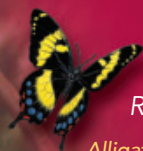
For several years, Chinese scientists have been studying pandas and their food supply. They hope to learn enough to make sure that wild pandas will always have enough living space and enough to eat. And they want to find ways to increase the number of pandas that are born in the wild and in zoos. (There are more than 300 pandas in breeding centers.) If they can do all of these things, the future of giant pandas may be bright after all.



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| Ducks, Geese & Swans | Parrots | Zebra |
| Eagles | | |
| Elephants | | |



ON THE COVER:
A Giant Panda

Giant pandas are lucky because they get to lounge around in their food! They rely on eating a lot of bamboo to survive, so the bamboo forests where they live make a perfect habitat for a panda.

Created and Written by
John Bonnett Wexo

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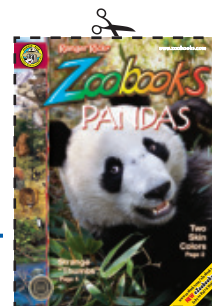
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Alexzandria
Claborn, age 7

I love to stare
At a panda bear.

They are black,
They are white,
And yet so bright.

They are so nice
It would hurt my eyes.



Madison Brown, age 10

All they do in the big wild zoo,
Is crunch and munch some bamboo for lunch.

Let's use paper with some extra care,
So our trees won't be any more rare.

Let us swear to save these bears,
All they need is some love and care.

Advik Baligar, age 5



Avery Tiburzi, age 8



Emelia Silverman, age 11



Matthew Malherbe, age 6

Little panda black and white
Silly panda three feet in height.
Oh poor pandas now endangered,
Their disappearance getting stranger.
We must work hard to save these creatures
For they have the most amazing features.

Lorelei Singley, age 10



Abhay Davuluri, age 7



Anna Vardidze, age 8

Save the Pandas



Millie Sikora, age 9

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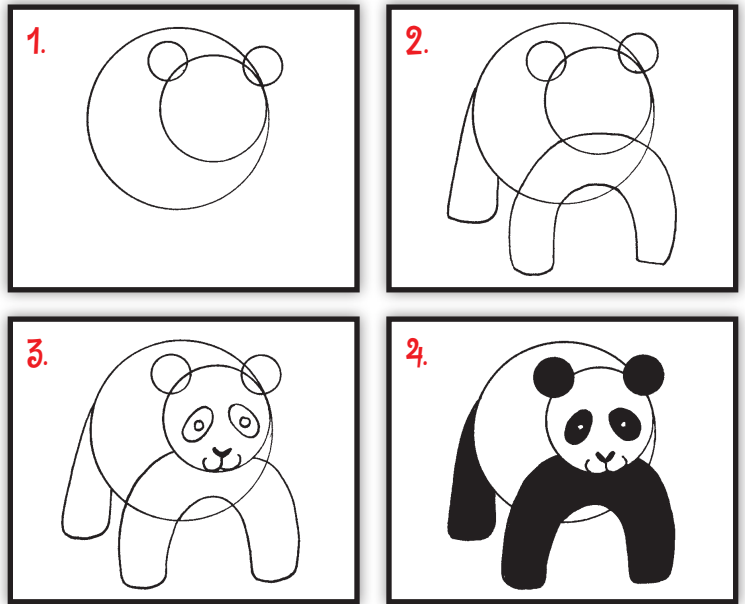
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entry information.



We want to see your
original poem, story, or
drawing by April 29, 2020
for "Insects"

Draw A Panda step-by-step

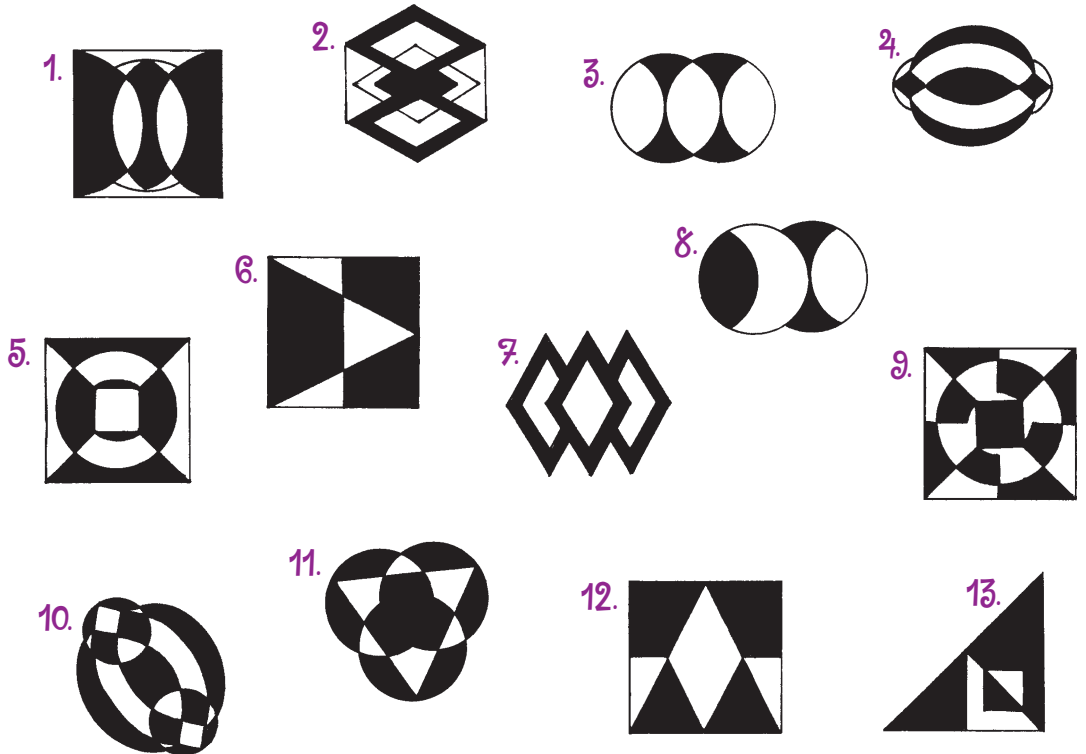
Have you ever wondered how to draw an animal that looks real? The answer is simple. Look for the main shapes and begin to draw them. Once you have the shapes down, you can add the details. Try using the steps on the right to draw your own panda.



Positive & Negative Images

The black and white contrast of its fur makes the panda a beautiful animal. Have fun with the contrasting positive and negative figures on this page. Match each figure on the left with its reverse image in the center. Write the correct numbers on the lines. Watch out! There are some figures in the center that might fool you.

- A. _____
- B. _____
- C. _____
- D. _____
- E. _____
- F. _____
- G. _____
- H. _____



Answers: A: 6; B: 4; C: 9; D: 8; E: 13; F: 11; G: 1; H: 2

Pand... Anagrams

An anagram is a word made by rearranging the letters of another word. Write your anagrams on the lines below.

1. lag _____
2. deal _____
3. ward _____
4. snow _____
5. chin _____
6. any _____
7. life _____
8. hint _____

9. kits _____
10. ape _____
11. saw _____
12. owls _____
13. peek _____
14. diet _____
15. gates _____
16. fear _____



17. leaf _____
18. read _____
19. rents _____
20. raw _____

Answers: 1. gal, 2. lead, 3. draw, 4. owns, 5. inch, 6. nay, 7. file, 8. thin, 9. skit, 10. pea, 11. was, 12. slow, 13. keep, 14. edit, 15. stage, 16. fare, 17. flea, 18. dear, 19. stern, 20. war

China's Bamboo Forests

How many pandas can you find hidden in the bamboo forest?



4 or more = Good; 6 or more = Very Good; 10 or more = Excellent

Answer:
The picture contains
16 pandas.

Picture This WORD SEARCH

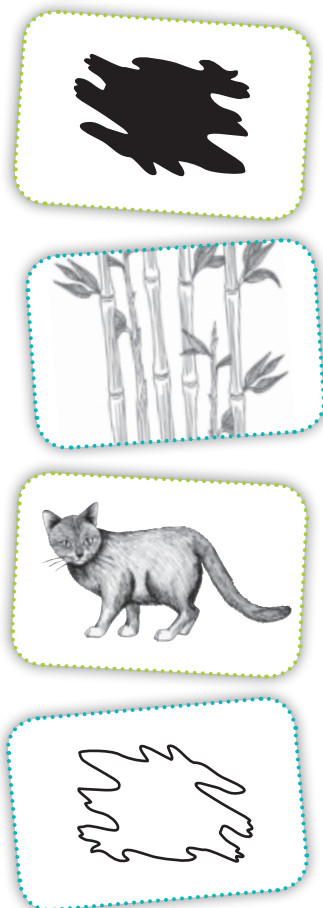
Try this puzzling word search! Use the pictures to find the words they represent in the word search puzzle below.
If you are stumped, look in the word list box for help.

Did not use word list:
Expert!
Used the word list only 2 times:
Terrific Worker!
Used the word list only 3 times:
Good!



I	T	S	O	K	W	D	E	N	A
B	A	M	B	O	O	R	T	U	Y
E	X	T	L	J	D	A	I	F	B
A	F	A	A	N	E	D	H	E	D
R	A	C	C	O	O	N	W	L	R
V	O	H	K	O	M	A	G	A	A
E	P	I	R	W	P	P	N	O	P
L	S	N	Q	C	A	T	A	K	O
S	W	A	J	R	W	B	L	A	E
O	H	D	I	W	A	C	E	F	L

Answers:
 I T S O K W D E N A
 B A M B O O R T U Y
 E X T L J D A I F B
 A F A A N E D H E D
 R A C C O O N W L R
 V O H K O M A G A A
 E P I R W P P N O P
 L S N Q C A T A K O
 S W A J R W B L A E
 O H D I W A C E F L



Word List Hints
 Panda Raccoon Paw
 Den Cat Jaw
 Bamboo Black China
 Bear White Leopard

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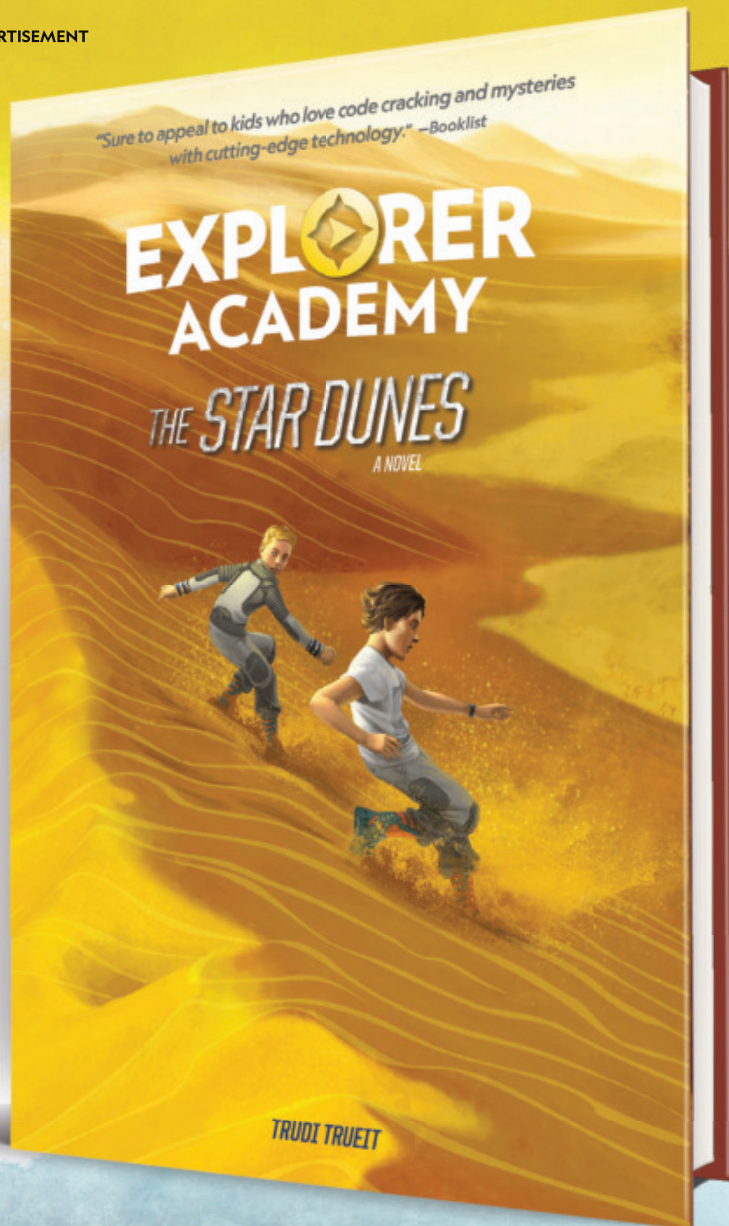
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