

Pokies and Pricklies

Plants Adapt to Heat and Drought



A cactus is a xeric plant—xeric means it does well in a dry hot climate.

- The pad is the stem.
- The spines are the leaves.
- The fruit are called 'tunas' after the Spanish word for olive—aceituna.

The white is a scale insect called cochineal—we make natural red dye, as in Pom juice, from it. During the Revolutionary war, the Redcoats' coats were colored red with carmine or red dye from the cochineal.



The cactus has tiny spines called glochids that get stuck on your hands and clothes.

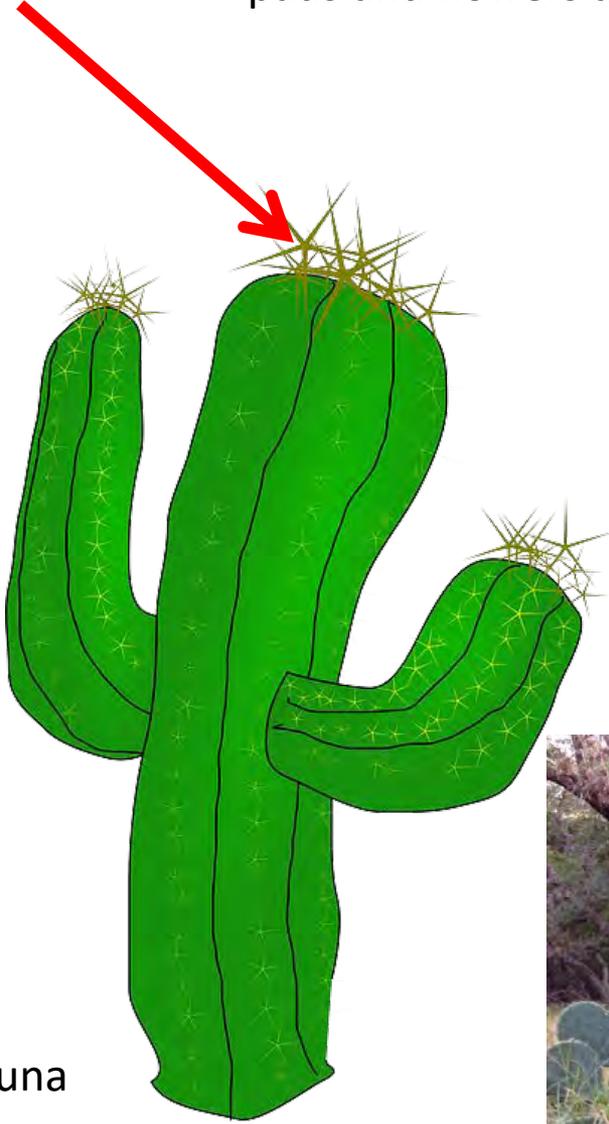


We can eat the tunas and pads.



The little bumps on the cactus are the areoles. The pads and flowers and fruits grow from the areoles.

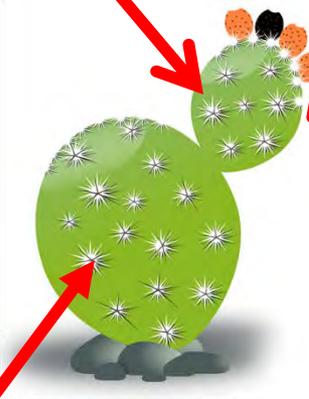
Spines=leaves



Flower



Pads=stem



Fruit=tuna



Areoles=bumps



Xeric adaptations—plants adapt to a dry environment and hot climate in many ways.

- Escape—annuals **begin to grow again (germinate) and bloom in the cool part of the year and re-seed strongly**—an example is the Texas bluebonnet.



- Evade—perennials have bulbs (parts of stems) like rain lilies, or tubers (parts of roots) like potatoes, to **store water** when it's wet and replace the water with the new rains. The underground part stays alive when water is scarce.



Xeric adaptation

- **Reduce leaf surface**—tiny leaves broken into little leaflets, or deeply toothed—
an example is the acacia.
- **Dropping leaves** like the mesquite.
- Shading leaves with **hairs** like the Artemisia.





Other adaptations

Rosette spiral structure to direct water to the root, like agaves, yuccas, aloes.

Leathery/stiff leaves with a waxy (cuticle) layer like the live oak.

Delayed growth and bloom like the penstemmons



Cactus, agave, yucca plants endure. They have ways to change their structure and how they function to minimize the heat and maximize the moisture.

They make their energy (big word alert—photosynthesis) in their stems.

Compact, round stems reduce the surface. Ribs direct water to the roots.

Waxy, hairy, spiny surfaces trap air, shade the surface, and downward leaves direct water to the roots

Roots near the surface absorb water quickly

They germinate, or make new growth, in cool months.



More adaptations
for heat and dry
weather
(draught).

Succulence means they store water in sticky tissues.

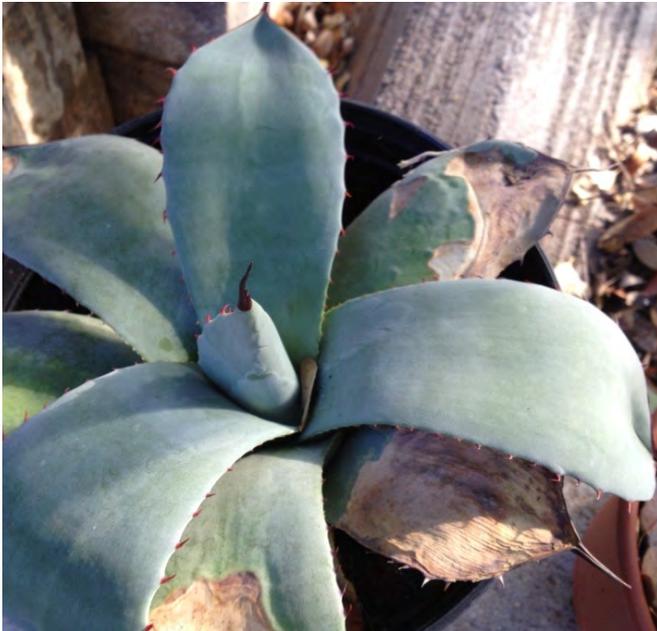
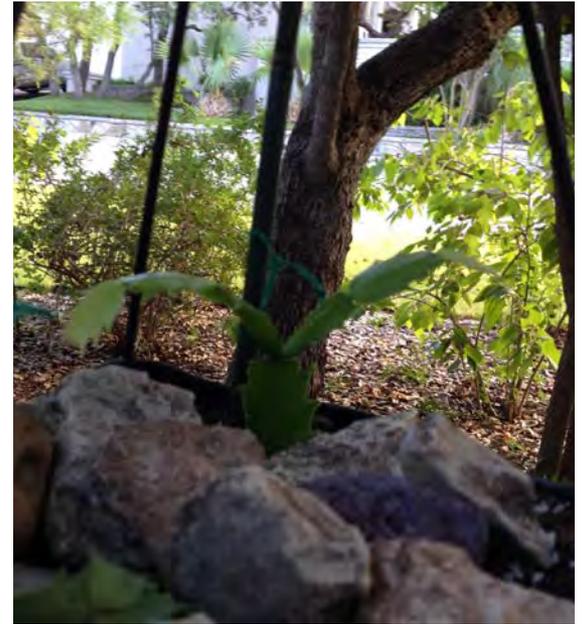
They reduce leaf area with thin small leaves or leaves with irregular edges.

Stomata, or breathing holes are sunken.

They make their energy and give off water at night when it's cool.

Demonstrating adaptations





Xeric plant shapes



More shapes





Fruits

Spines





Cactus in a tree

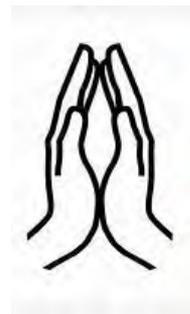




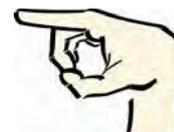
Spines, glochids and
areoles

You can sing the song to *Clementine*.

Oh, the cactus, oh the cactus (two flat hands)



Feel the sharp and pointy spine. (1 finger)



The cactus fruit are called tunas (fist)



And the green pads look just fine. (clap)





Casey Cactus

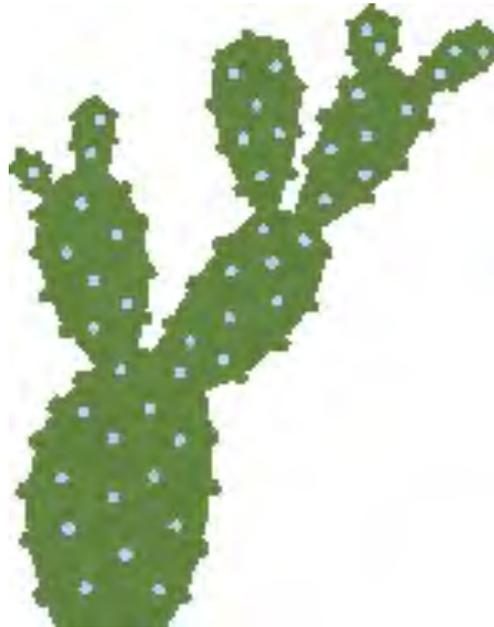
Parts of a cactus



Casey Cactus

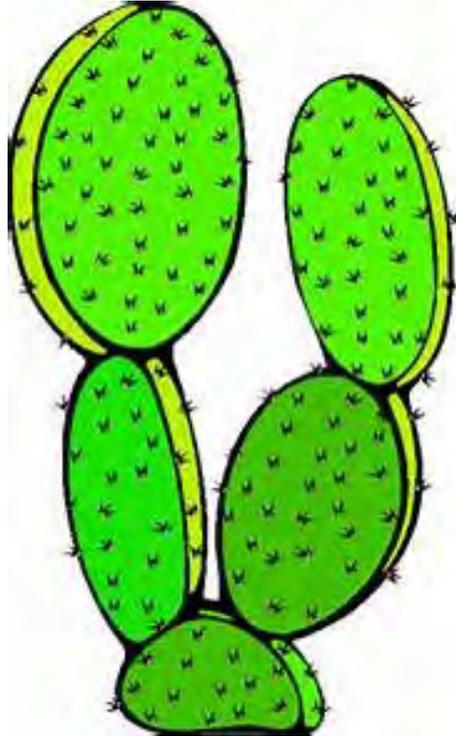


I'm a little cactus –pads green and flat.



You can sing this song to the tune of *I'm a Little Teapot* or read the story.

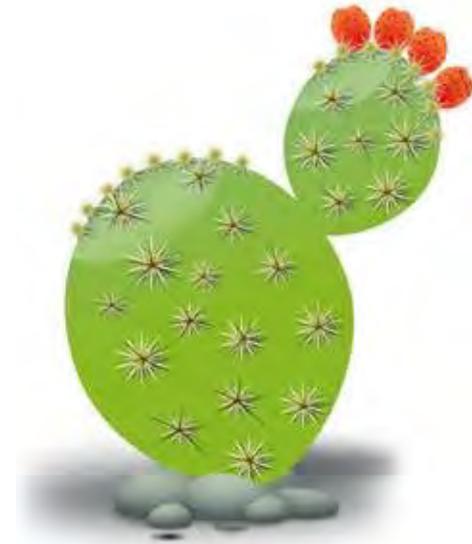
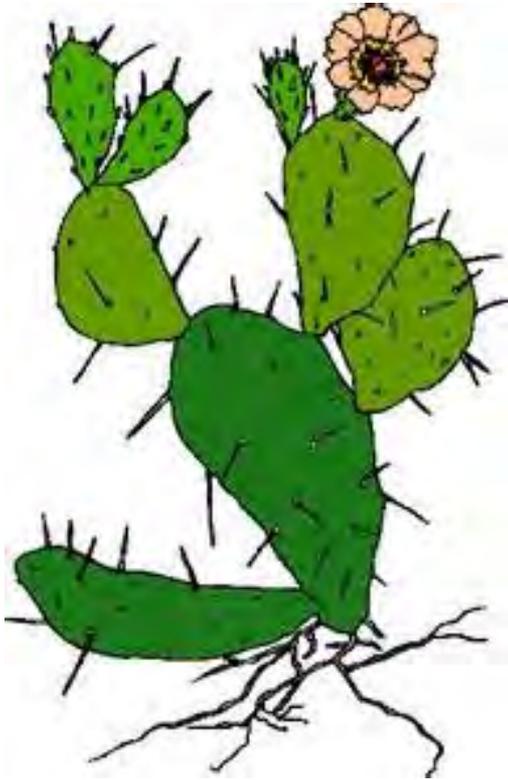
My pads are my stems, just think of that!



My spines are my leaves—I think they're cute.



My flowers are yellow, and my tunas are the fruit!



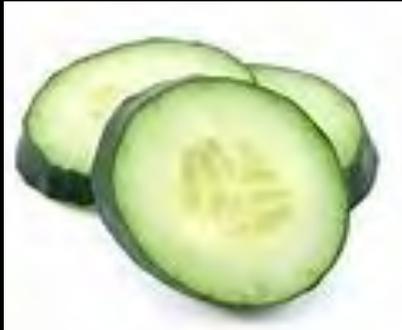
I spy plants hot and dry!

Take a XERIC—that means plants adapting to dry hot conditions—walk around your house.

Can you find:

- Plants with spines for leaves?
- Plants with waxy leaves or stems?
- Leaves with broken up edges?
- Leaves with tiny leaflets?
- Plants with hairs?
- Plants with rosettes?
- Plants that come out when it rains?

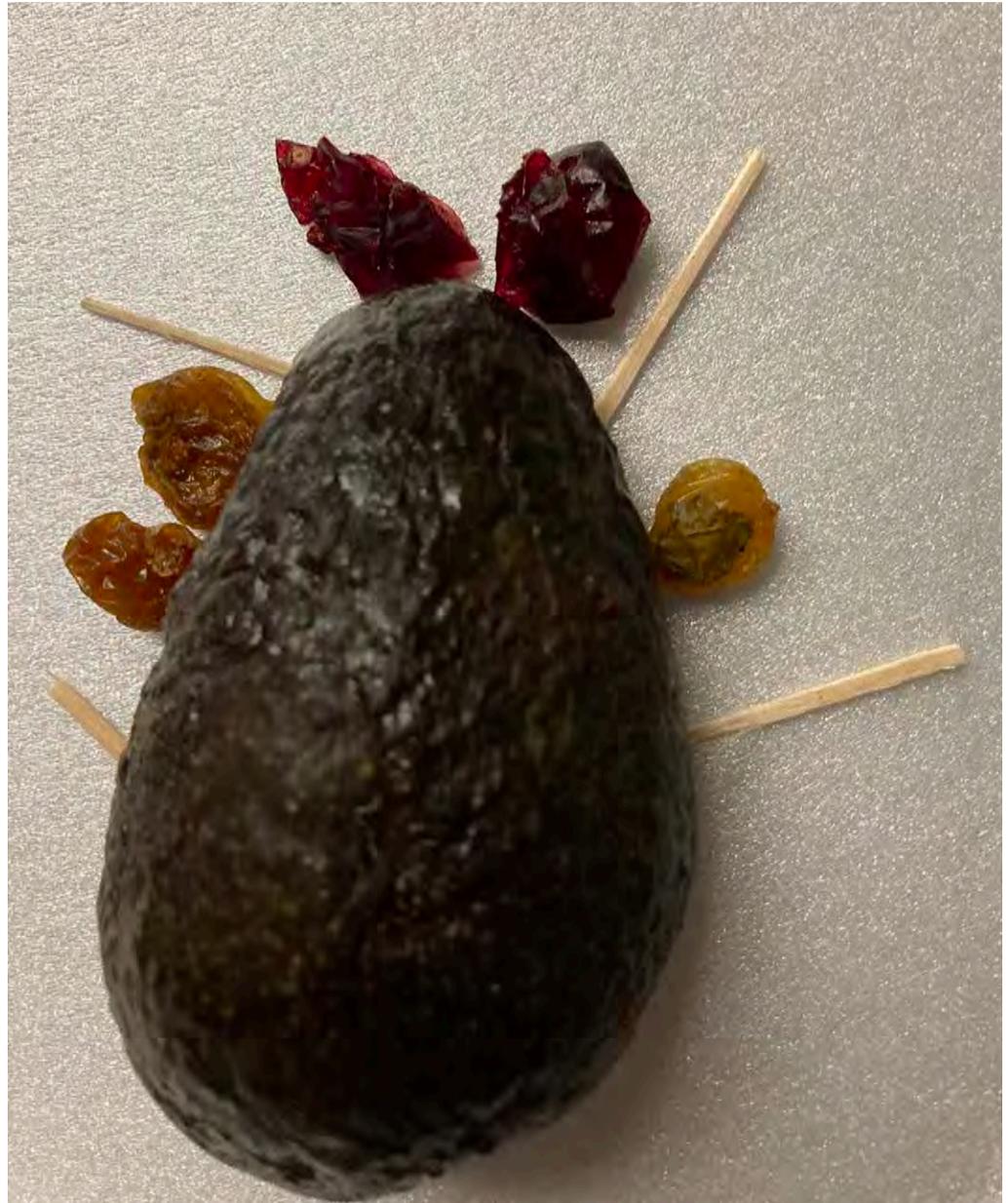




Big thinking—make an edible cactus!

- Let's make a cactus snack!
- What can you use for the pads?
- What can you use for the spines?
- What can you use for the fruits—tunas?
- What can you use for the flowers?

Yummy cactus-
-avocado for
the pad,
cranberries for
the tunas and
golden raisins
for the flowers!



Or cucumber
with a cactus
flower and
pear with a
fruit!



Cactus cookies!





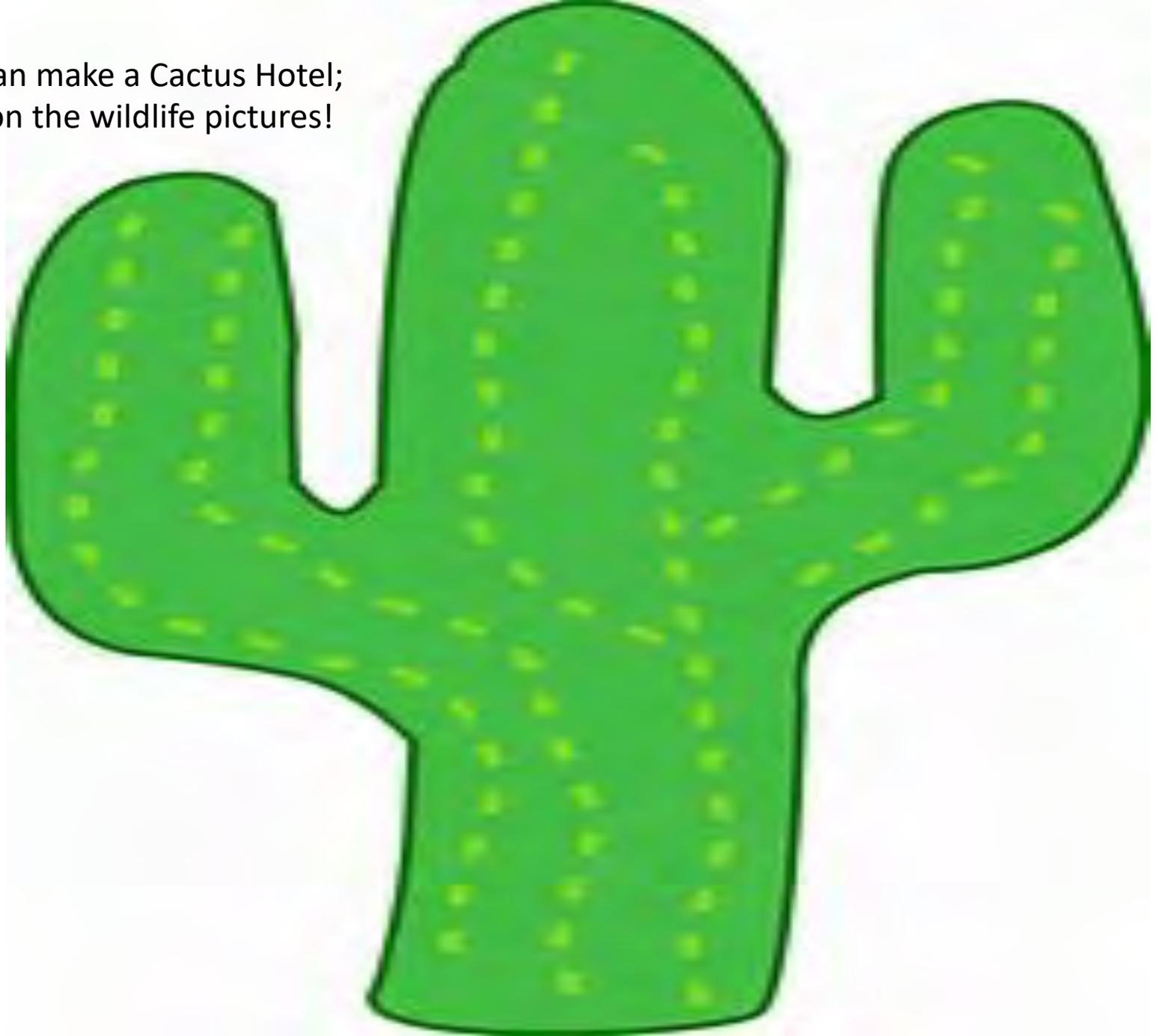
Cactus snacks—yum yum!

You can use cream cheese,
candy melts or frosting—
raisins, cranberries,
minichips, Skittles or
M&Ms!

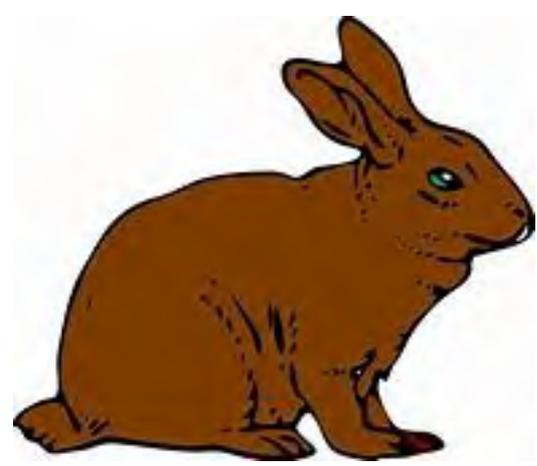
Be an engineer and design a cactus!
You can add flowers and tunas!



You can make a Cactus Hotel;
glue on the wildlife pictures!



Wildlife for Cactus Hotel



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Cactus crafts



You can be a
cactus
sculptor--
playdough for
the pads and
flowers,
toothpicks for
the spines,
and beads for
the tunas!



Cactus books



You can make a mini-book!

- Fold the paper in half
- Then in half again.

