

Winter Break Boredom Busters



How Do Animals Keep Warm in Winter?

Have you ever noticed that animals make changes in their behavior as the days turn colder and darker? Explore some of the adaptations that help animals stay warm in winter. How do they work for you?

Animals **hibernate**, **migrate** and collect and store food as they get ready for colder weather. Animal bodies also use special built in features (or adaptations) like **fur**, **feathers** and **fat** (sometimes called blubber) to withstand sub-zero temperatures and icy winter weather.

Fur and feathers - If you have an animal at home you may notice its feathers or fur changing as the days get colder. Animals like dogs grow thicker coats and birds can fluff up their feathers, capturing warm air close to their bodies.

Fat - Animals that live in cold climates often have thick layers of fat that don't allow the cold through. Animals in the Arctic and Antarctic can have a special layer of fat covering their bodies that is more than 12 inches thick!

Try the following winter animal experiment and see how these adaptations work for you

- **Set Up:** Set out a plate or bowl and place a layer of ice in it. Gather your bag of blubber (shortening), your bag of feathers, and your empty bag. Set the three bags next to your container of ice.
- **Step 1:** Insert one hand into the empty bag and then lay your hand gently on top of the ice in the container. How does it feel? How long can you hold your hand there before it feels too cold?
- **Step 2:** Spread out the shortening in it's bag so it is in an even layer but you can't see through it. Lay the bag of shortening on top of the ice and lay your hand on top of it. Can you feel the cold through the shortening? How does it compare to using your bare hand? Remove the bag from the ice.
- **Step 3:** Lay the bag of feathers (or other insulating material) on top of the ice and lay your hand gently on top. How does it compare to your bare hand and to the shortening/fat? Remove the bag from the ice.
- **Step 4:** Now try combinations of the insulating materials. Try adding air to your empty ziplock and layering it in between fat and feathers. Can you still feel the cold through three layers of insulation? What is the best combination of insulating materials?

Materials:

- Ice cube tray full of ice
- 1 plate or shallow bowl
- 1 empty zip top storage bag (sandwich or quart size)
- 1 zip top bag filled with $\frac{1}{3}$ to $\frac{1}{2}$ cup shortening (blubber)
- 1 zip top bag filled with feathers or another insulating substance (cotton balls, fake fur, use your imagination!)

To take this experiment to the next level, create an insulated glove that you can put on your hand and dip into ice cold water. First, insert your hand into the clean, empty zip top bag and then insert your bagged hand into the blubber bag. Fold the top of the inner bag over the top of the blubber bag and tape it down. Now insert your hand + blubber bag into the feather ziplock, distributing the feathers around both sides of your bag. Fill a bowl with water, add lots of ice cubes and see how your insulation works. Make sure to compare your insulated glove with your bare hand for best results!

