READY, SET, GO OUTSIDE!

Cold Science

Your breath turns to steam, snow glitters on the ground, and snowballs do or don't stick together. Why do these things happen? All you need to do is look to science to find the answers.

Why are no two snowflakes alike?

A snowflake is a bunch of ice crystals stuck together. The shape of a snow crystal depends on how wet and cold the air is where the crystal forms. As it falls through the air, its shape and size may change as conditions change. This makes it unlikely that any two snowflakes will be exactly alike.

Why does my breath look like steam?

There's a lot of water mixed with the air you breathe out. When it leaves your lungs this water is in the form of water vapor, which is actually a gas. When this vapor hits cold air, the water molecules lose some of the energy that's kept them whizzing around as a gas, and stick together in clumps. The result is a smoky cloud made of tiny water droplets.

How come I can't always make a snowball?

The pressure you apply when forming a snowball melts a little of the snow and the water acts like a glue that helps the snowball stick together. When it is closer to freezing (32 degrees), there tends to be more water within the snowball. Very cold snow is drier and the snow can't get warm enough to melt even if you squeeze it very hard.

What's warmer: mittens or gloves?

If they're made of the same fabrics, mittens will usually keep your hands warmer. In a mitten, your fingers press together and share heat. In a glove, more of each finger is exposed to the cold air, which means they lose more heat.

Why is snow glittery?

The ice crystals in snow act like tiny mirrors, reflecting sunlight. Snowflakes can also separate light into a rainbow of colors, which means you may see colorful glints. A glass prism you may use in science class will do the same thing.

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We've made two snowflakes on this page identical. Can you find them?