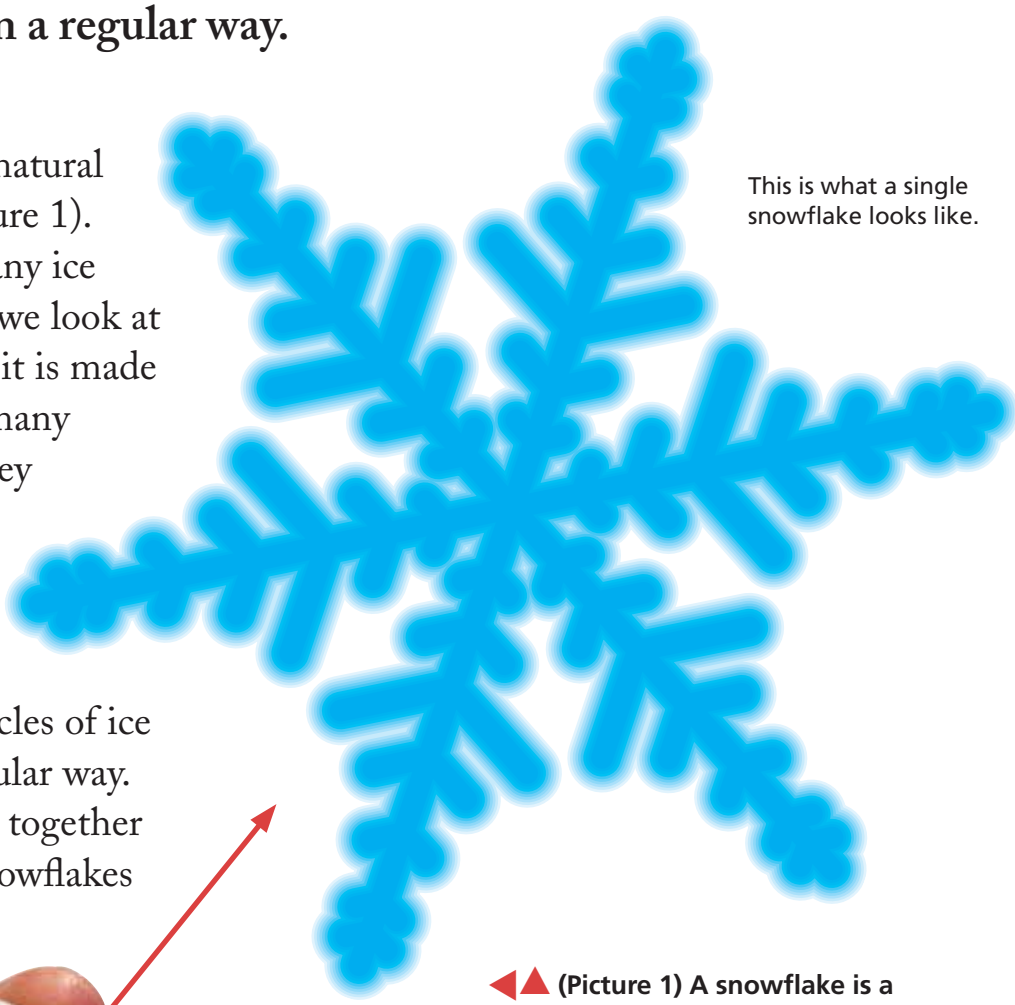
2 Crystals

CRYSTALS show us how solids are made of particles packed in a regular way.

One of the most beautiful natural shapes is a snowflake (Picture 1). Snowflakes are made of many ice crystals locked together. If we look at a single snowflake, we find it is made with six points. There are many shapes of snowflake, but they always have six points.

If you were able to look really closely at a snowflake, you would find that it is made of tiny particles of ice all locked together in a regular way. The particles can only lock together one way, and this is why snowflakes always have six points.



This is what a single snowflake looks like.

(Picture 1) A snowflake is a regular shape because it is made of ice crystals locked together in a regular way.

To get the crystals in a snowflake to form, they have to have room to grow. This usually happens when liquids turn into solids very, very slowly. Water turns into ice very slowly high in clouds.

Salt and sugar crystals

All crystals are made of particles locked together in regular ways. You can see

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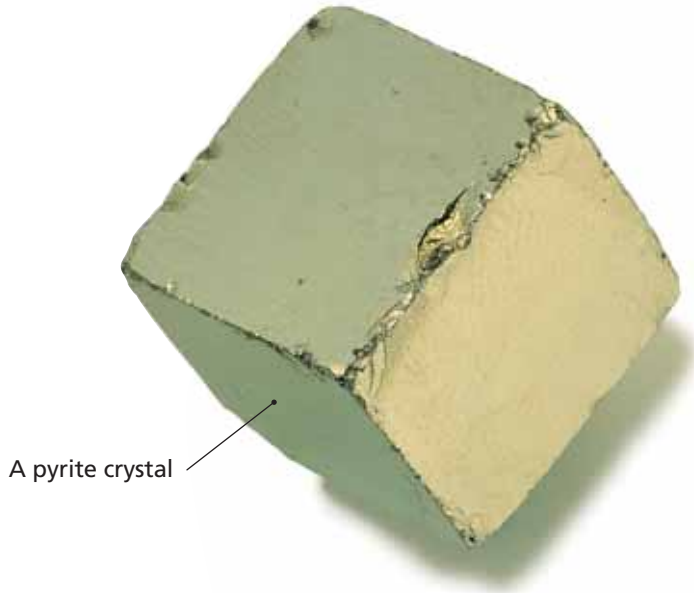
examples of crystals in your kitchen. Look closely at sugar grains or sea salt. These crystals are in the shape of cubes (Picture 2).

▼ **(Picture 2) These are grains of sea salt. Each grain is a cube. If you were able to look at the salt very closely, you would find that it is made up of box-shaped particles locked together. It does not matter what size the salt grain is, it will always be a cube.**

▲▼ **(Picture 3) Crystals have flat faces that reflect the light. When you look at the flat face of a crystal, you are looking at the natural way the particles are arranged. The crystals above are yellow sulphur. Look at the shiny surfaces. This tells you that the material is a crystal.**

The most famous crystals are gemstones, like diamond and ruby, but even pure metals form crystals.

Crystals all have regular shapes, such as a cube. The crystal below is a cube of a mineral called pyrite, which contains iron.



Gemstones

Some of the most beautiful crystals in the world also formed very slowly from liquids. They are called **GEMSTONES**. Gemstones form deep in the Earth, in places where the rock is **MOLTEN**. When the molten rock begins to cool, crystals start to form.

It takes millions of years for fantastic crystal gemstones to form (Picture 3).

Diamonds, emeralds, rubies and similar substances (called **MINERALS**) are all crystals, each with their own special shape.

Summary

- **Crystals are solids that have grown in a regular way.**
- **Crystals often grow in liquids as they cool.**
- **Crystals have flat, shiny surfaces.**