What are rocks made of?

MINERALS

Minerals in Granite

DEFINITION OF MINERAL

- It is a solid
- It is formed in nature

Is this a mineral?

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DEFINITION OF MINERAL

- It is a solid
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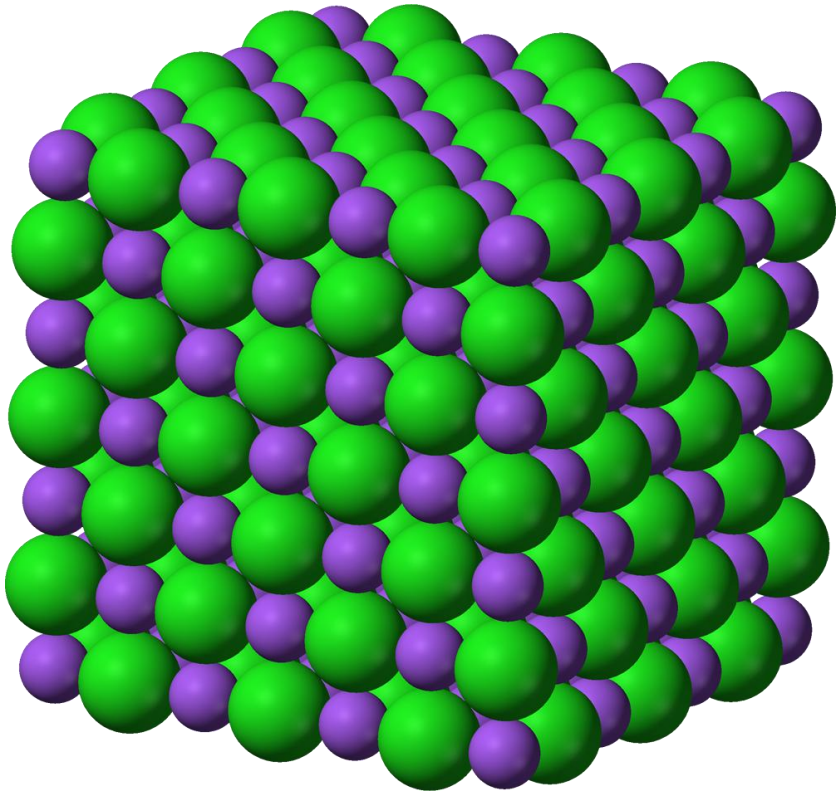
- It is inorganic
- It has defined chemical composition.

Calcite is always Ca_3CO_2

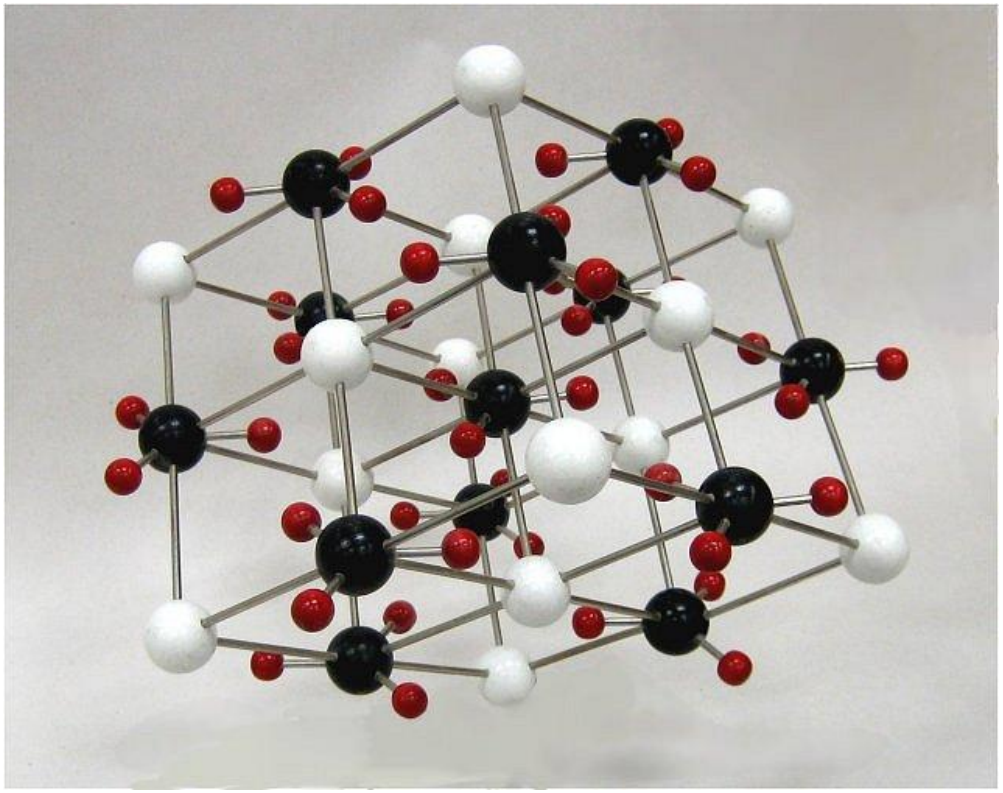
Quartz is always SiO_2

DEFINITION OF MINERAL

- It is a solid
- It is formed in nature
- It is inorganic
- It has defined chemical composition
- It has a defined crystalline structure



Common salt or halite has two types of atoms ordered in cubes



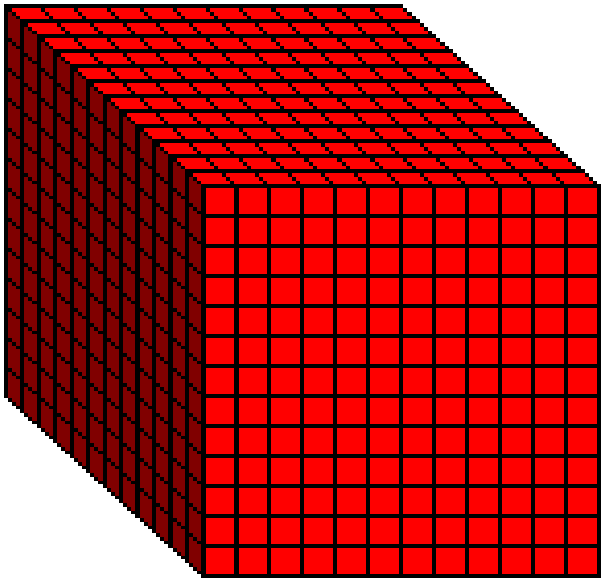
Calcite has three types of atoms ordered in rhombohedrons

Why many minerals have a geometric shape?

Why many minerals have a geometric shape?

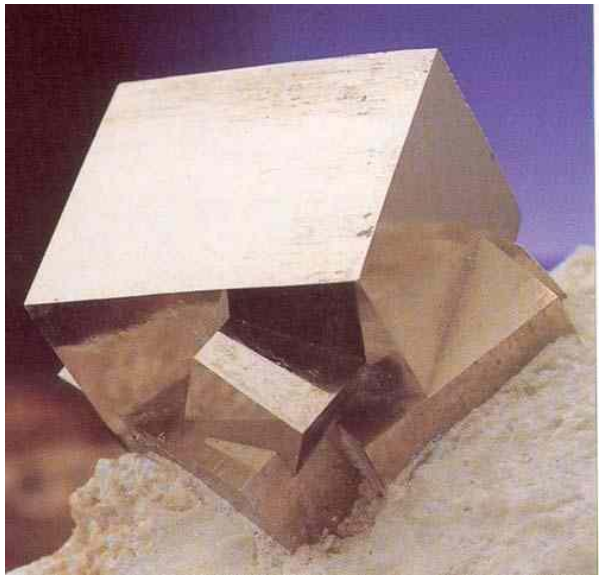
Because atoms are arranged in a pattern repeated over and over again.

Crystals grow adding new atoms



Watch video http://www.youtube.com/watch?v=-fGD4NHgp6c

But sometimes we find irregular minerals. Why?



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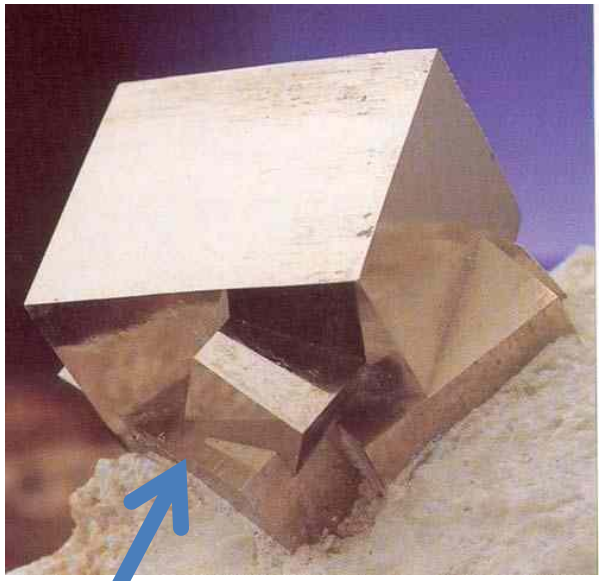


Crystals need time, space and rest

Watch video: http://www.youtube.com/watch?v=XK48zWEsDy4

These minerals had a lot of space to grow: a very big cave

They had a lot of time to grow: several million years

Lava cools down and solidifies quickly.
Are big minerals forming from lava?

Lava cools down and solidifies quickly.
Are big minerals forming from lava?

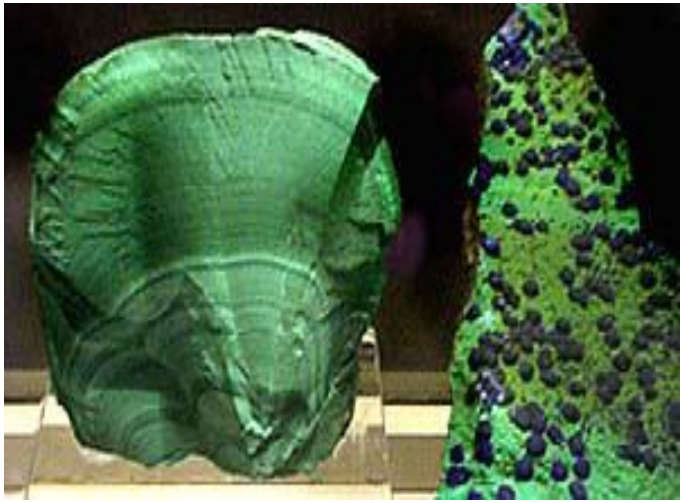
No, because good minerals need time

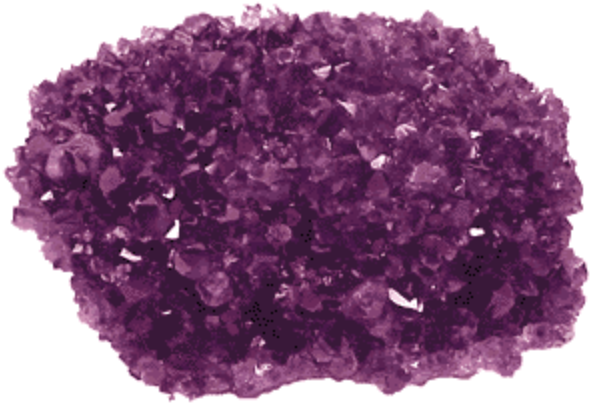
Identifying Minerals

Minerals have certain properties that can be used to identify them:

1. Colour.
2. Luster.
3. Hardness.
4. Density.
5. Crystal shape.

What **colour** do you see?



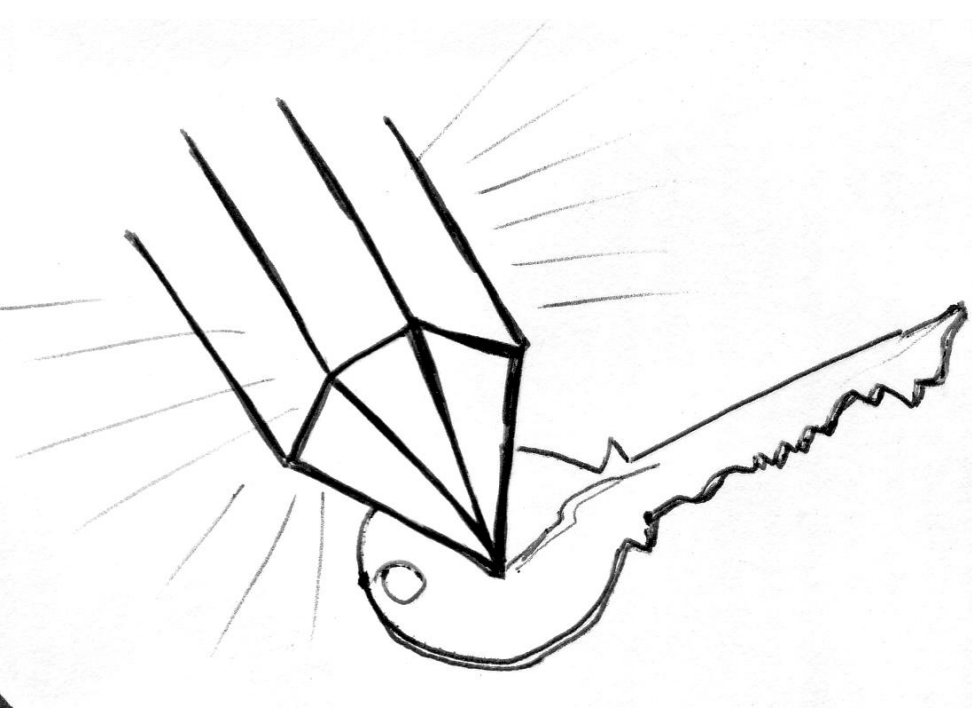


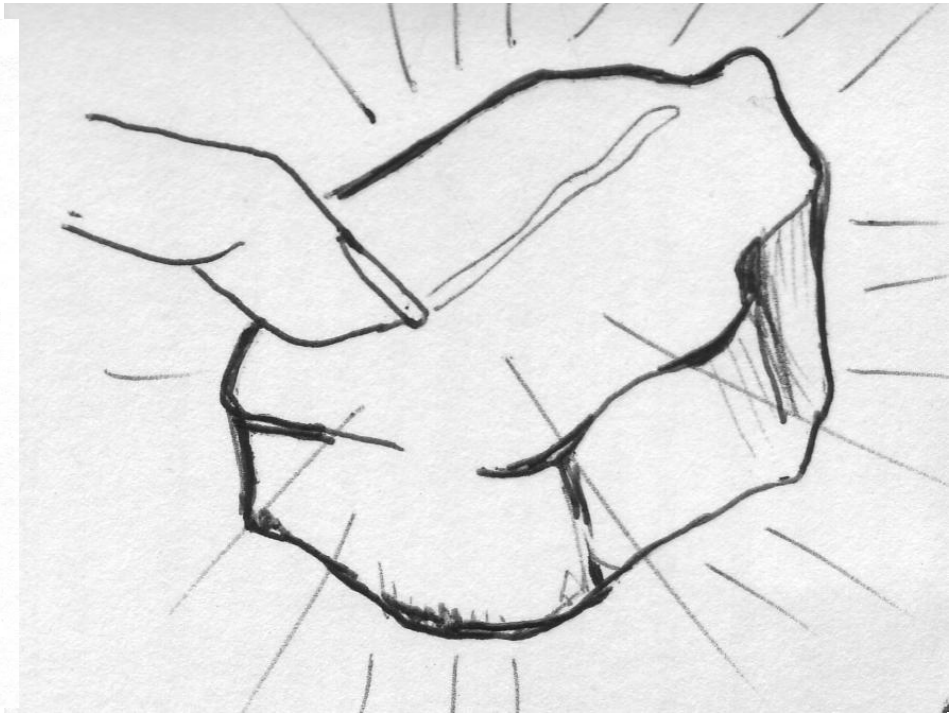
2. Luster: how minerals reflect light

- Shiny or dull? Metallic or glassy?

3.Hardness: resistance to scratching.

Soft or hard?





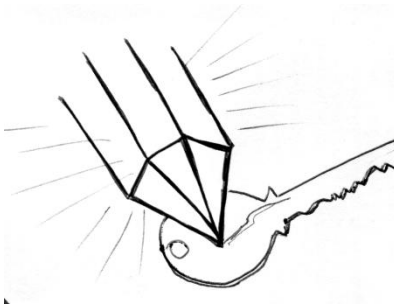
Mohs scale

1. Talc (talco)
2. Gypsum (yeso)

Scratched with a fingernail

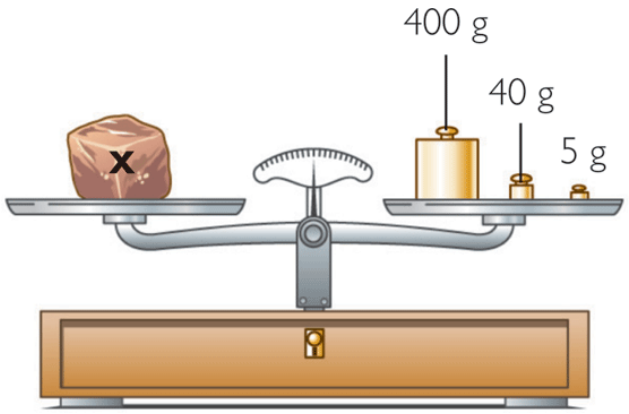
3. Calcite (calcita)
4. Fluorite (fluorita)
5. Apatite (apatito)
6. Feldspar (feldespato)
7. Quartz (cuarzo)
8. Topaz (topacio)
9. Corundum (corindón)
10. Diamond (diamante)

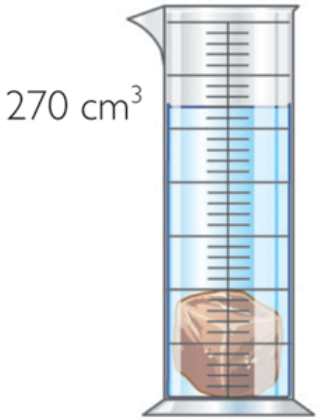
They scratch steel



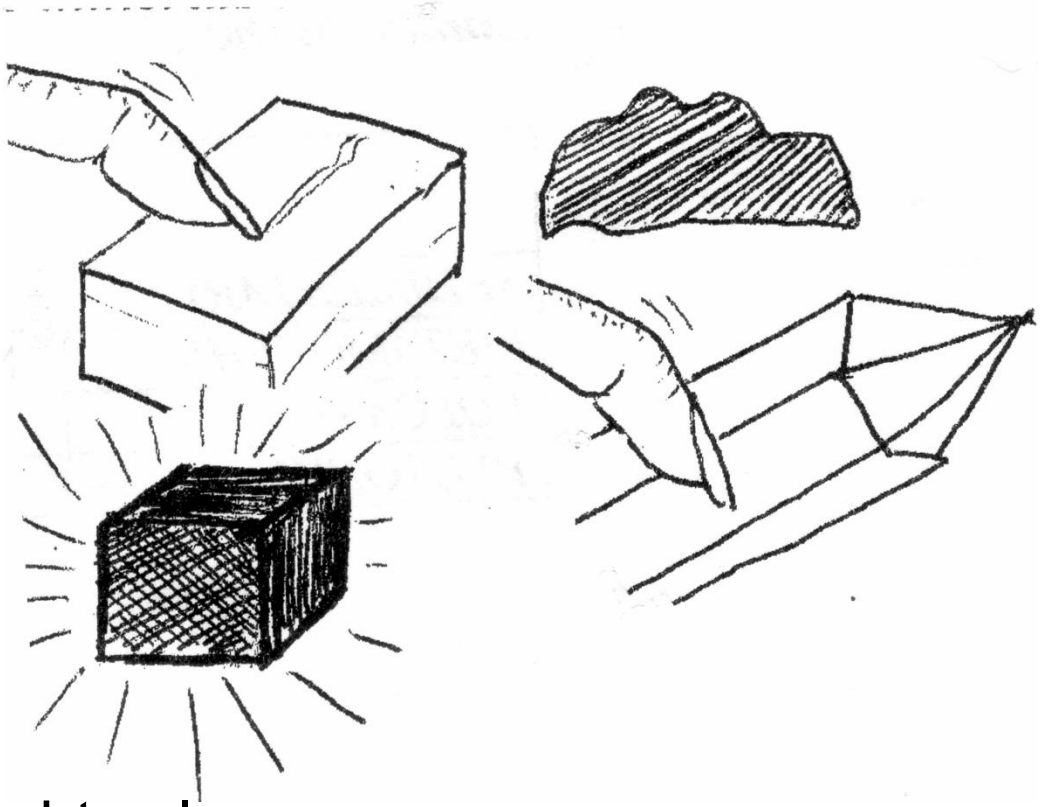
4.Density: heavy or light?

Water:	1.00
Halite:	2.18
Quartz:	2.65
Calcite:	2.7
Pyrite:	5.0
Galena:	7.5
Gold:	19.3





Use the dichotomic key to get the name of the minerals in the picture:



1a: It is light colour…….. Go to 2
1b: It is dark……..……..Go to 3
2a: You can scratch it using your fingernail……. Gipsum
2b: You can’t scrach it with your fingernail……..Quartz
3a: It is shiny…….Galena
3b: It is dull……..……..Magnetite

1. In nature, minerals are found in…
2. Why do some minerals have a geometric shape? Because the atoms…
3. Name five properties we use to identify minerals.
4. A property that indicates how heavy a mineral is…
5. The German mineralologist who created the hardness scale was...
6. If you can scratch it with your fingernail, the mineral is…
7. The hardest mineral is…
8. The opposite of shiny is…
9. The opposite of soft is…
10. The opposite of heavy is…
11. Describe this mineral:

    What does this mineral look like?.

Hardness: 7
Density: 2 g/cc

Types of mines

Underground mine

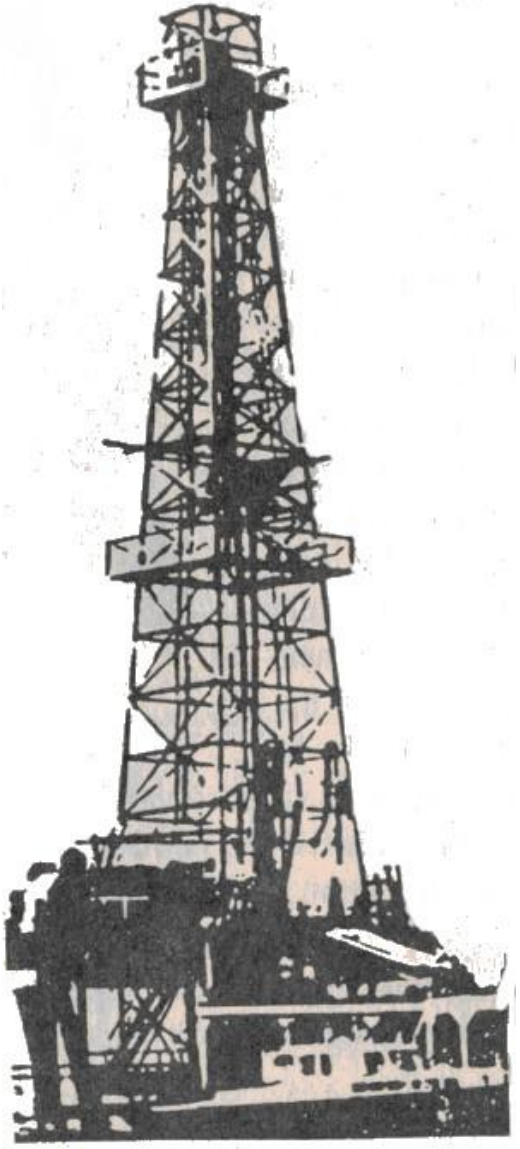
Open pit mines

The use of minerals and rocks: building

The use of minerals and rocks: buildin

The use of minerals and rocks: buildin

The use of minerals and rocks: energy



The use of minerals and rocks: metals

The use of minerals and rocks: glass

The use of minerals: jewellery