ROCK IDENTIFICATION GUIDE

1) Is it igneous, sedimentary or metamorphic?

a. **Igneous** rocks such as granite or lava are tough, have little texture or layering. Rocks like these contain mostly black, white and/or grey minerals.

b. **Sedimentary** rocks such as limestone or shale are hardened sediment with sandy or clay-like layers (strata). They are usually brown to grey in colour and may have fossils and water or wind marks.

c. **Metamorphic** rocks such as marble are tough, with straight or curved layers (foliation) of light and dark minerals. They come in various colours and often contain glittery mica.

2) Check the rock's grain size and hardness.

a. **Grain Size:** Coarse grains are visible to the naked eye, and the minerals can usually be identified without using a magnifier. Fine grains are smaller and usually cannot be identified without using a magnifier.

b. **Hardness:** This is measured with **the Mohs scale** and refers to the minerals contained within a rock. In simple terms, hard rock scratches glass and steel, usually signifying the minerals quartz or feldspar, which has a Mohs hardness of 6 or higher. Soft rock does not scratch steel but will scratch fingernails (Mohs scale of 3 to 5.5), while very soft rock won't even scratch fingernails (Mohs scale of 1 to 2).

The Mohs Hardness Scale

Mineral	Mohs relative hardness scale	Scratch test
Talc	1	Scrapeable with fingernail
Gypsum	2	Scrapeable with fingernail
Calcite	3	Scratch with copper coin
Fluorite	4	Scratch with nail
Apatite	5	Scratch with nail
Feldspar	6	Scratch with steel file
Quartz	7	Scratches window glass
Topaz	8	Scratches glass
Corundum	9	Scratches topaz
Diamond	10	Scratches corundum

Igneous Rock Identification

Grain Size	Usual Colour	Other	Composition	Rock Type
fine	dark	glassy appearance	lava glass	Obsidian
fine	light	many small bubbles	lava froth from sticky lava	Pumice
fine	dark	many large bubbles	lava froth from fluid lava	Scoria
fine or mixed	light	contains quartz	high-silica lava	Felsite
fine or mixed	medium	between felsite and basalt	medium-silica lava	Andesite
fine or mixed	dark	has no quartz	low-silica lava	Basalt

mixed	any color	large grains in fine-grained matrix	large grains of feldspar, quartz, pyroxene or olivine	Porphyry
coarse	light	wide range of color and grain size	feldspar and quartz with minor mica, amphibole or pyroxene	Granite
coarse	light	like granite but without quartz	feldspar with minor mica, amphibole or pyroxene	Syenite
coarse	light to medium	little or no alkali feldspar	plagioclase and quartz with dark minerals	Tonalite
coarse	medium to dark	little or no quartz	low-calcium plagioclase and dark minerals	Diorite
coarse	medium to dark	no quartz; may have olivine	high-calcium plagioclase and dark minerals	Gabbro
coarse	dark	dense; always has olivine	olivine with amphibole and/or pyroxene	Peridotite
coarse	dark	dense	mostly pyroxene with olivine and amphibole	Pyroxenite
coarse	green	dense	at least 90 percent olivine	Dunite
very coarse	any color	usually in small intrusive bodies	typically granitic	Pegmatite

Sedimentary Rock Identification

Hardness	Grain Size	Composition	Other	Rock Type
hard	coarse	clean quartz	white to brown	Sandstone
hard	coarse	quartz and feldspar	usually very coarse	Arkose
hard or soft	mixed	mixed sediment with rock grains and clay	gray or dark and "dirty"	Wacke/ Graywacke
hard or soft	mixed	mixed rocks and sediment	round rocks in finer sediment matrix	Conglomerate
hard or soft	mixed	mixed rocks and sediment	sharp pieces in finer sediment matrix	Breccia
hard	fine	very fine sand; no clay	feels gritty on teeth	Siltstone
hard	fine	chalcedony	no fizzing with acid	Chert
soft	fine	clay minerals	splits in layers	Shale
soft	fine	carbon	black; burns with tarry smoke	Coal
soft	fine	calcite	fizzes with acid	Limestone
soft	coarse or fine	dolomite	no fizzing with acid unless powdered	Dolomite rock
soft	coarse	fossil shells	mostly pieces	Coquina
very soft	coarse	halite	salt taste	Rock Salt
very soft	coarse	gypsum	white, tan or pink	Rock Gypsum

Metamorphic Rock Identification

Foliation	Grain Size	Usual Color	Other	Rock Type
foliated	fine	light	very soft; greasy feel	Soapstone
foliated	fine	dark	soft; strong cleavage	Slate
nonfoliated	fine	dark	soft; massive structure	Argillite
foliated	fine	dark	shiny; crinkly foliation	Phyllite
foliated	coarse	mixed dark and light	crushed and stretched fabric; deformed large crystals	Mylonite
foliated	coarse	mixed dark and light	wrinkled foliation; often has large crystals	Schist
foliated	coarse	mixed	banded	Gneiss
foliated	coarse	mixed	distorted "melted" layers	Migmatite
foliated	coarse	dark	mostly hornblende	Amphibolite
nonfoliated	fine	greenish	soft; shiny, mottled surface	Serpentinite
nonfoliated	fine or coarse	dark	dull and opaque colors, found near intrusions	Hornfels
nonfoliated	coarse	red and green	dense; garnet and pyroxene	Eclogite
nonfoliated	coarse	light	soft; calcite or dolomite by the acid test	Marble
nonfoliated	coarse	light	quartz (no fizzing with acid)	Quartzite