

Classifying Group Bellringer

Each group will determine the best way to classify and group their objects in the cup.

Be prepared to share your methods.

random Items
Like Marshmallow
Sugar Cube
Toothpick
Seed
Rubberband
etc.

Classifying Group Bellringer

What were your groupings?

What criteria did you use to separate items?

Igneous Rock Vocab!

Composition

Felsic

Intermediate

Mafic

Ultramafic

Texture

Pegmatitic

Phaneritic

Aphanitic

Porphyritic

Glassy

Vesicular

Pyroclastic

*Basic
Overview*

Composition

Igneous Rock Vocab!

*Boring Definition
Long Simplify*

Composition of igneous rocks is properly identified by determination of the rock's chemical composition. This, however, requires chemical equipment and apparatus that is unavailable in this lab. Fortunately determination of the exact chemical composition is not necessary. Color is often an indicator of the composition of a rock or mineral and can be effectively used to identify the composition of most igneous rocks.

Light colors, including white, light gray, tan and pink, indicate a felsic composition.



Felsic compositions are rich in silica (SiO₂). Dark colors, such as black and dark brown, indicate a mafic or ultramafic composition.



Mafic compositions are poor in silica, but rich in iron (Fe) and magnesium (Mg).

Intermediate compositions have an intermediate color, often gray or consisting of equal parts of dark and light mineral. Beware that even though an igneous rock may have a felsic composition (light color), the rock can contain dark colored minerals. Mafic rocks may contain light colored minerals as well. As mentioned above, the composition of most igneous rocks can be identified using this system, formally known as the Color Index. However, there are exceptions. The two most notable are obsidian and dunite. Obsidian is volcanic glass which erupts as a lava flow. Most obsidian is felsic in composition, yet typically it will have a very dark color (dark brown to black). Dunite has an ultramafic composition yet is apple green to yellowish green in color. Dunite is composed almost entirely of the mineral olivine which usually contains both iron and magnesium.



~50/50

look for key info and put into your own words.

Igneous Rock Vocab!

Simplify & put into your own words

Texture

Pegmatitic - a holocrystalline, intrusive igneous rock composed of interlocking phaneritic crystals usually larger than 2.5 cm in size; such rocks are referred to as pegmatitic. Most pegmatites are composed of quartz, feldspar and mica, having a similar basic composition as granite.



aphanitic - all crystals are too small to be visible to the naked eye or with a hand lens, giving the rock a dull appearance; resulting from rapid cooling in volcanic or hypabyssal (shallow subsurface) environments. Eg. basalt

phaneritic - all crystals sufficiently large to be clearly visible to the naked eye; resulting from slow cooling of magma deep underground in plutonic structures. Eg. granite, gabbro



porphyritic - larger phenocrysts embedded in a finer textured matrix; resulting from two-stage cooling of rising magma, first at depth and subsequently at the surface or shallow subsurface. Eg. porphyry



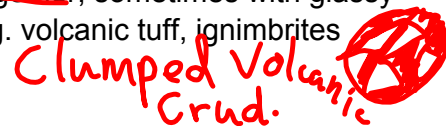
glassy - non-crystalline rocks; resulting from very rapid cooling of lava at or very near the Earth's surface. Eg. obsidian

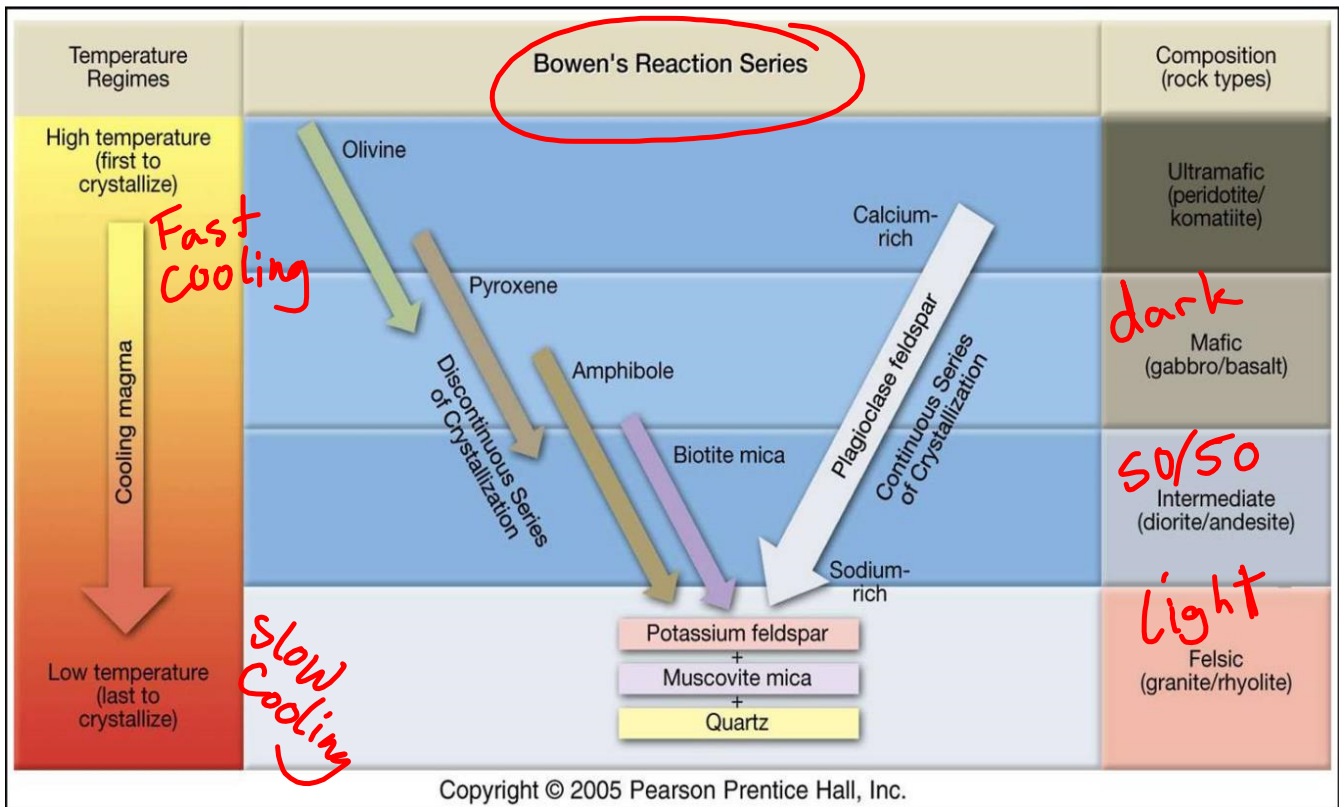


vesicular - porous rock with vesicles (holes, pores, or cavities); resulting from gas expansion within rapidly cooling ejected lava. Eg. vesicular basalt



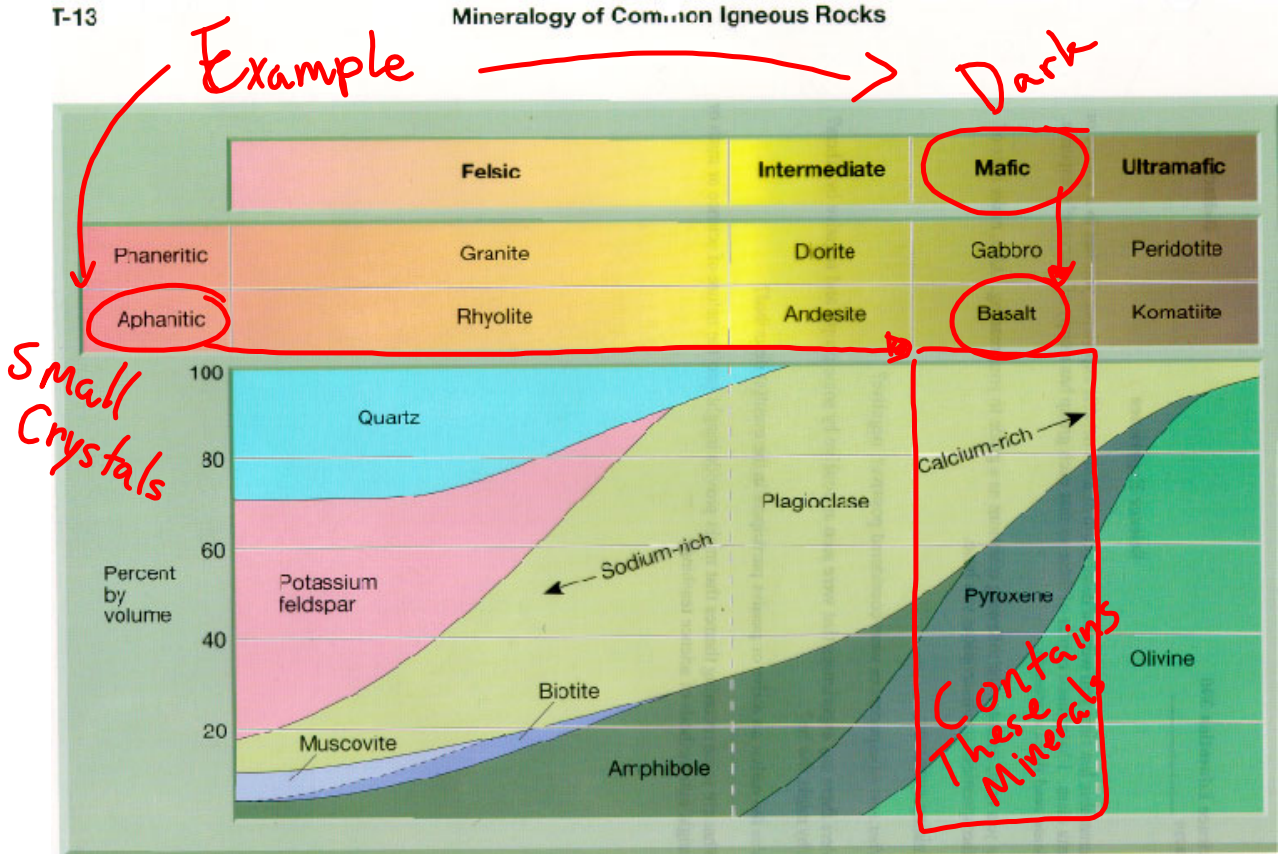
fragmental or pyroclastic - irregular grains welded together, sometimes with glassy shards; resulting from pyroclastic volcanic eruptions. Eg. volcanic tuff, ignimbrites





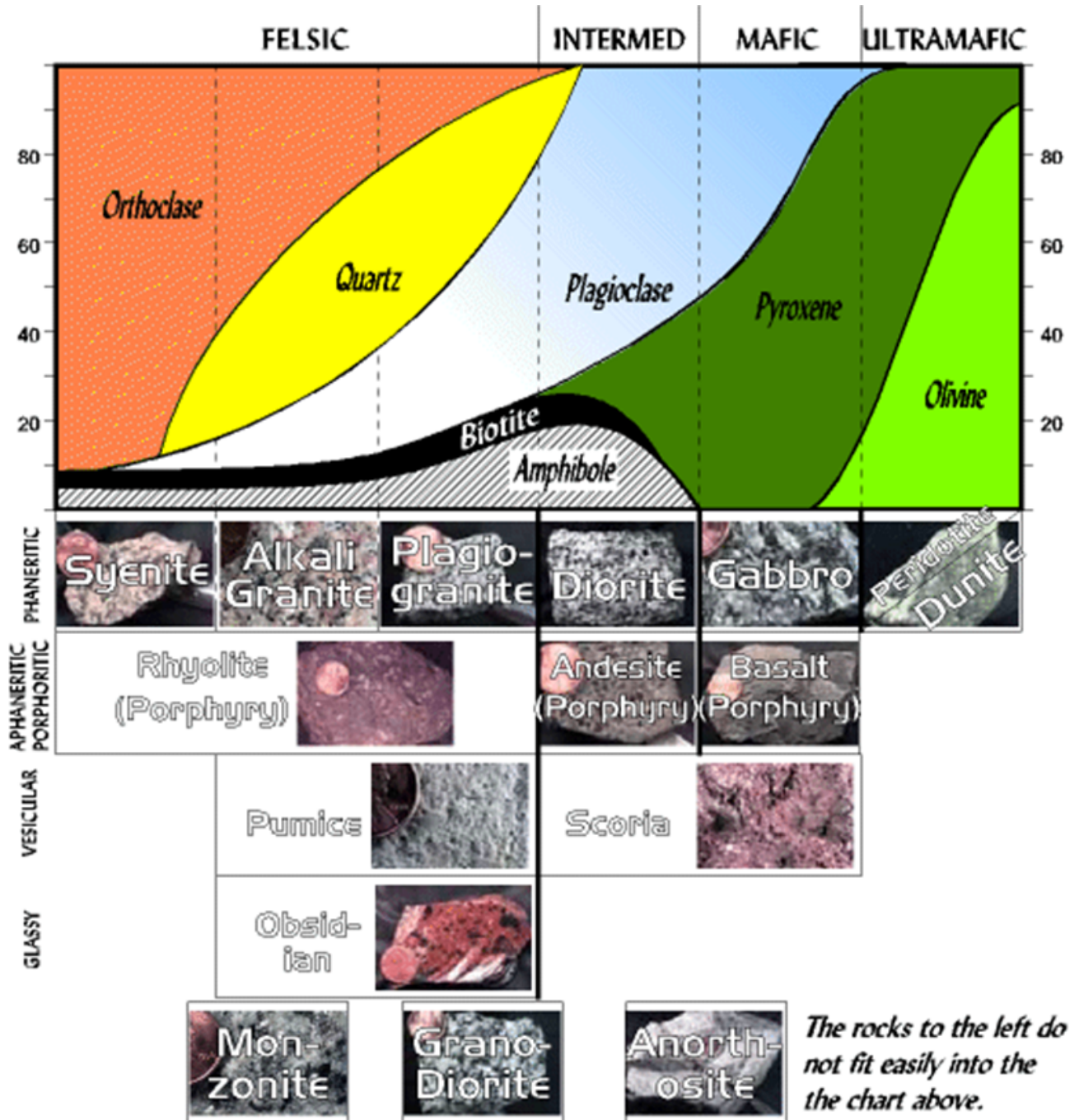
T-13

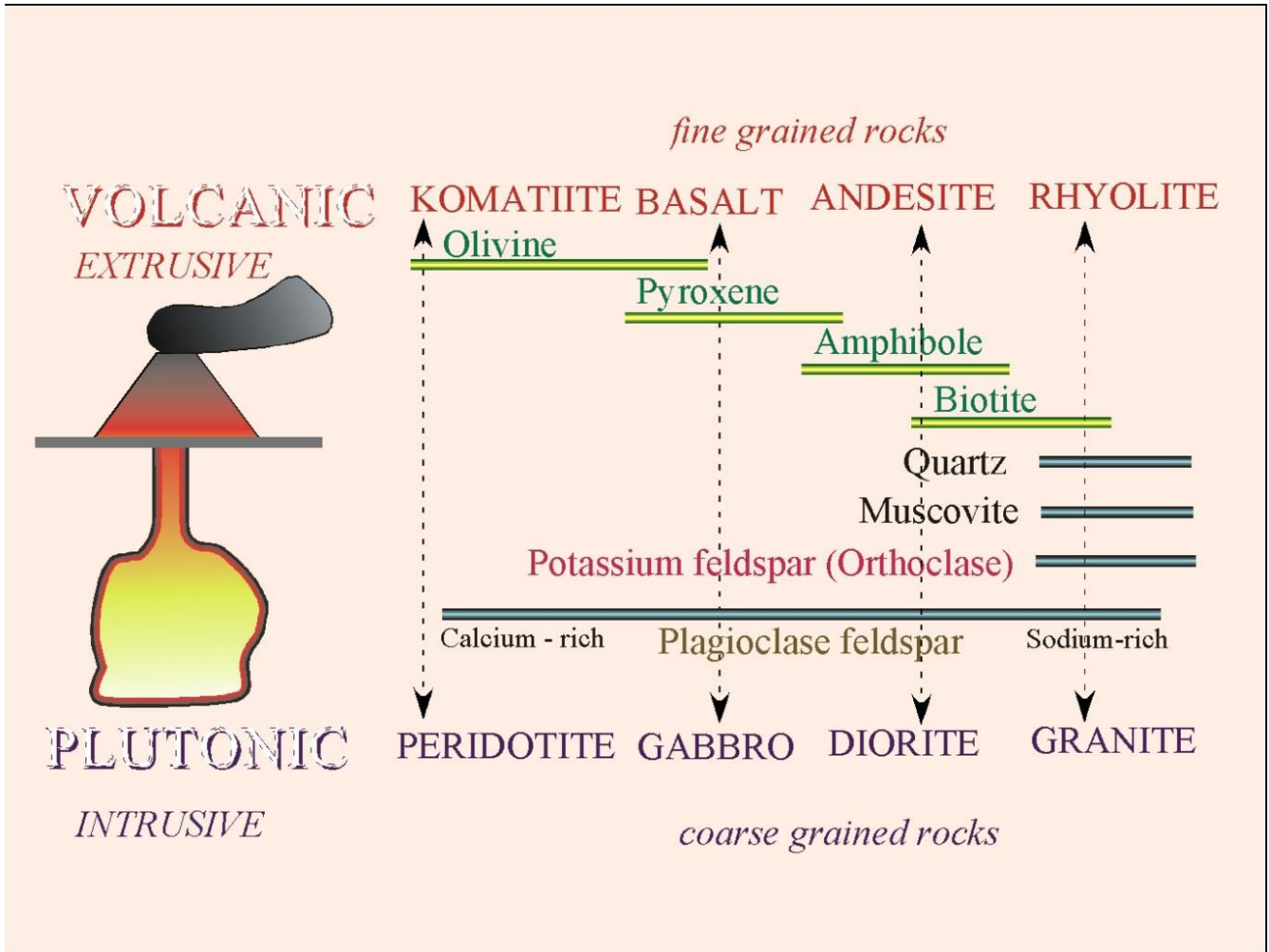
Mineralogy of Common Igneous Rocks

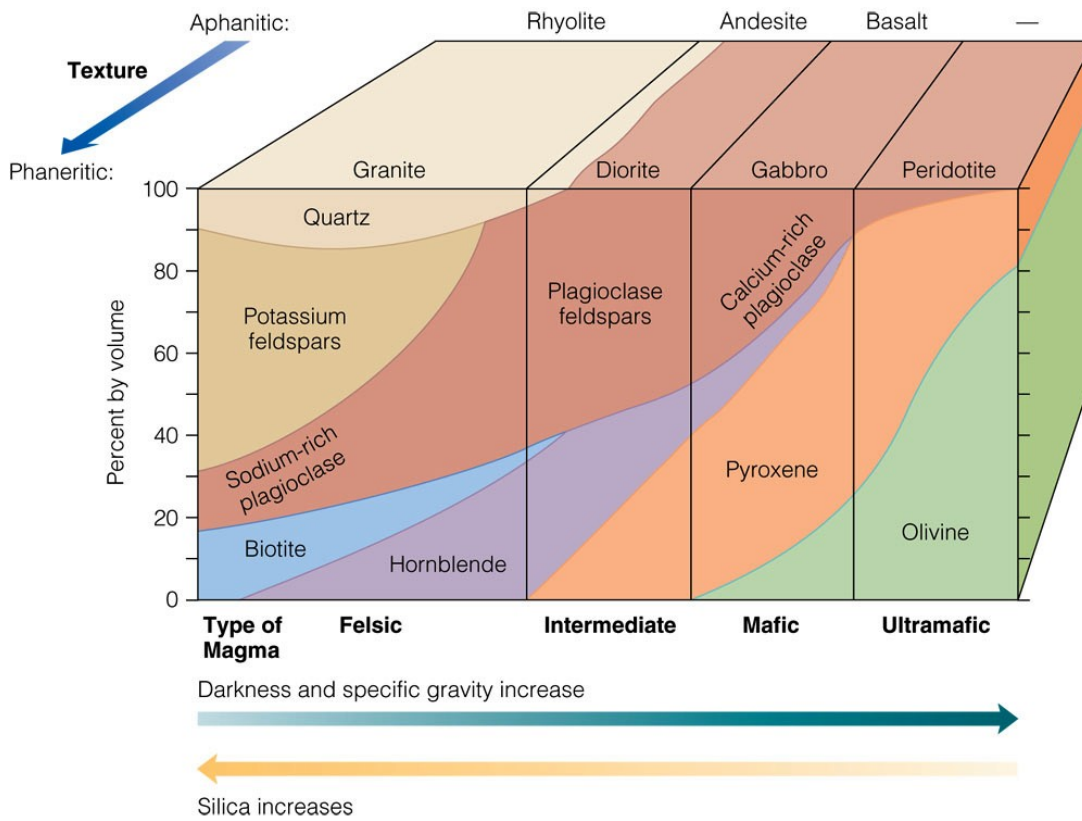


EARTH: AN INTRODUCTION TO PHYSICAL GEOLOGY 6E
by Tarbuck and Lutgens

© 1999 by Prentice-Hall,
A Simon & Schuster/Viceprint Company
Upper Saddle River, New Jersey 07








Scheme for Igneous Rock Identification

ENVIRONMENT OF FORMATION	GRAIN SIZE		TEXTURE	
	INTRUSIVE (Plutonic)	EXTRUSIVE (Volcanic)	Non-crystalline	Non-vesicular
IGNEOUS ROCKS	Obsidian (usually appears black)	Basaltic Glass	less than 1 mm	Glassy
	Pumice	Vesicular Basaltic Glass		Vesicular (gas pockets)
	Vesicular Rhyolite	Vesicular Andesite	1 mm to 10 mm	Fine
	Rhyolite	Andesite		Basalt
	Granite	Diorite	Gabbro	Coarse
Pegmatite		Peridotite Dunitite	Very Coarse	

Biotite & Quartz Ex


Full igneous ID chart

