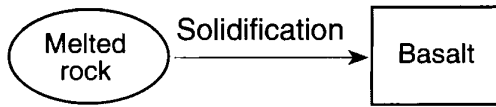


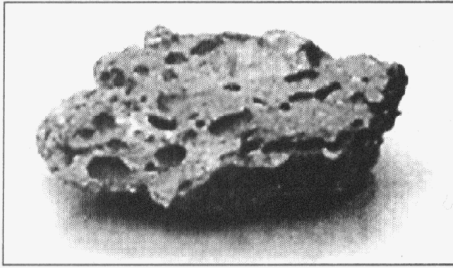
ESS Igneous Rocks

1. The flowchart below illustrates the change from melted rock to basalt.



The solidification of the melted rock occurred

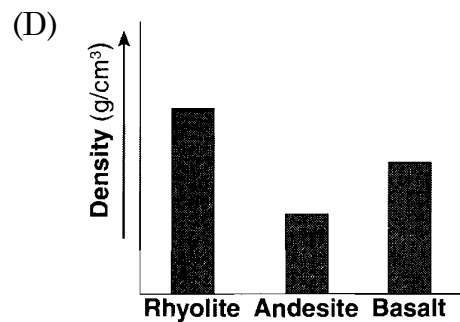
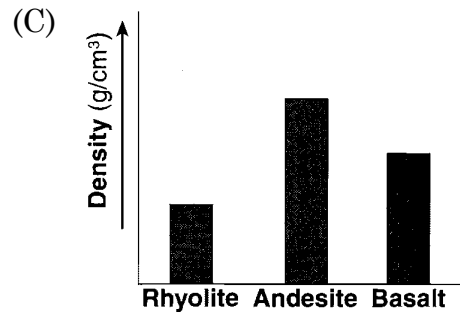
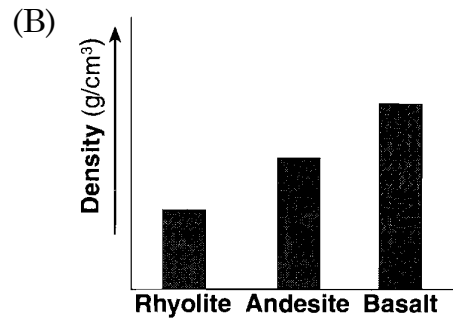
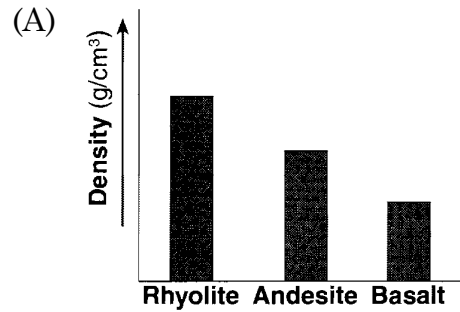
- (A) slowly, resulting in fine-grained minerals
 (B) rapidly, resulting in coarse-grained minerals
 (C) rapidly, resulting in fine-grained minerals
 (D) slowly, resulting in coarse-grained minerals
2. The photograph below shows an igneous rock.



What is the origin and rate of formation of this rock?

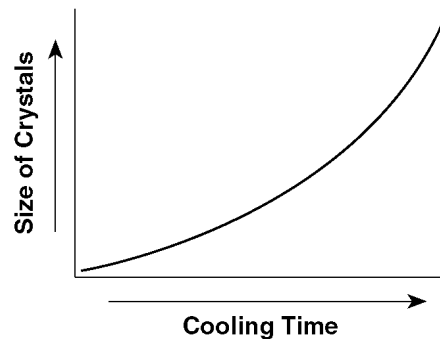
- (A) plutonic with slow cooling
 (B) plutonic with rapid cooling
 (C) volcanic with slow cooling
 (D) volcanic with rapid cooling
3. Which igneous rock has a vesicular texture and contains the minerals potassium feldspar and quartz?
- (A) scoria (B) pumice
 (C) pegmatite (D) andesite
4. Which igneous rock, when weathered, could produce sediment composed of the minerals potassium feldspar, quartz, and amphibole?
- (A) gabbro (B) basalt
 (C) granite (D) andesite

5. Which graph best represents the relative densities of three different types of igneous rock?

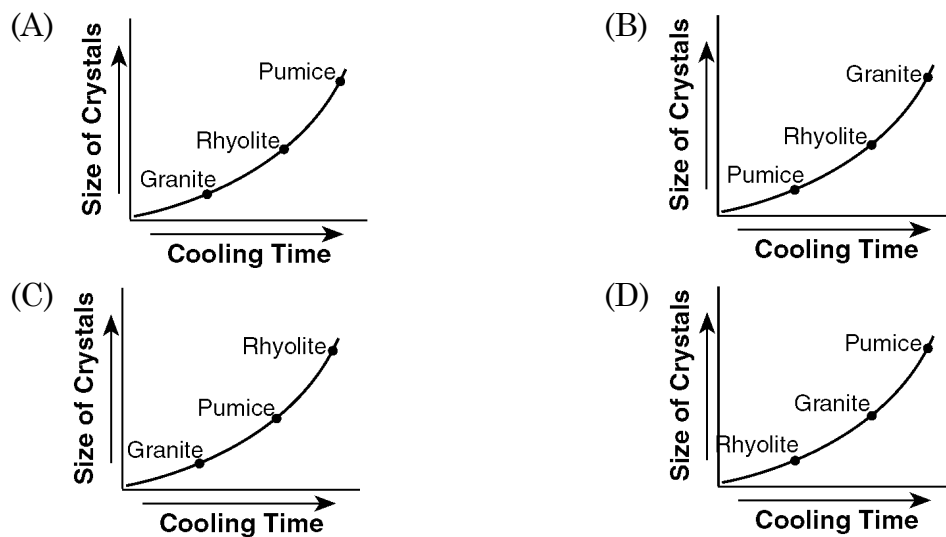


6. Compared to felsic igneous rocks, mafic igneous rocks contain greater amounts of
- (A) aluminum (B) iron
 (C) white quartz (D) pink feldspar

7. The graph below shows the relationship between the cooling time of magma and the size of the crystals produced.



Which graph correctly shows the relative positions of the igneous rocks granite, rhyolite, and pumice?



8. The diagrams below represent four rock samples. Which rock was formed by rapid cooling in a volcanic lava flow? [The diagrams are not to scale.]



Interlocking
0.5-cm-diameter
crystals of various colors



Easily split layers of
0.0001-cm-diameter
particles cemented together



Glassy black rock
that breaks with a
shell-shape fracture



Bands of alternating
light and dark
minerals

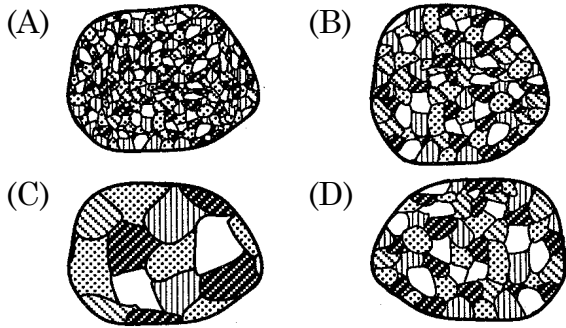
9. Which two igneous rocks could have the same mineral composition?

- (A) peridotite and andesite
- (B) rhyolite and diorite
- (C) gabbro and basalt
- (D) pumice and scoria

10. Which relative concentration of elements is found in a mafic rock?

- (A) a high concentration of aluminum and a low concentration of magnesium
- (B) a high concentration of silicon and a low concentration of iron
- (C) a high concentration of iron and a low concentration of aluminum
- (D) a high concentration of aluminum and a low concentration of iron

11. Which granite sample most likely formed from magma that cooled and solidified at the slowest rate?



12. The four igneous rocks below are classified into two groups.

Group A	Group B
Granite	Rhyolite
Gabbro	Basalt

What is the basis for this classification?

- (A) mineral content
- (B) density
- (C) crystal grain size
- (D) color

13. Which property is common to most dark-colored igneous rocks?

- (A) coarse-grained texture
- (B) abundant felsic minerals
- (C) high density
- (D) intrusive formation

14. Olivine and pyroxene are commonly found in igneous rocks that are

- (A) felsic, with low density
- (B) mafic, with low density
- (C) felsic, with high density
- (D) mafic, with high density

15. Which graph best represents the relationship between the length of time molten magma takes to cool and the size of the crystals in the rock formed by the magma?

