Key

Complete the sentences below with the correct terms or phrases.

30. Rocks which crystallize from magmas are called igneous rocks.
31. The majority of magmas are formed in the upper mantle, at depths between about 50–250 kilometers.
32. If pressure is lessened on rocks at great temperatures, the rocks may begin to melt.
33. Dissolved water and various gases found in magmas are called volatiles.
34. The effect of increased volatiles in a magma is to lower the melting temperatures.
35. The melting temperature of a mixture of minerals is always lower than the melting temperatures of the individual minerals.
36. Phase diagrams plot temperature against composition.
37. Local sources of heat within the crust or mantle include concentrations of radioactive elements, and friction caused by plate motions.
38. According to Bowen's reaction series, the first mineral to crystallize from a silicate magma will be relatively low in silica.
39. The continuous reaction series applies to the plagioclase minerals.
40. The discontinuous reaction series applies to the ferromagnesian minerals.
41. A magma that is rich in magnesium and iron and relatively poor in silica is called a mafic magma.
42. In the process of fractional crystallization, early formed crystals may settle out of the magma, thus changing the composition of the remaining melt.
43. The process by which a magma incorporates the rock around it is called assimilation.
44. In magma mixing, two magmas combine to produce a hybrid melt intermediate in composition. (rare)
45. A vesicular basalt would contain bubbles or holes where gases were trapped as the magma cooled.
46. In a porphyritic rock, a finer groundmass surrounds the larger-sized phenocrysts.
47. A plutonic rock which consists almost completely of olivine and pyroxene would be described as ultra-mafic.
48. The most common volcanic rock, which makes up the seafloor, is basalt.
49. Geologists use thin sections to examine the minerals in rocks with a special polarized-light microscope. (pg45)
50. Magmas with high viscosity have great difficulty flowing through narrow cracks or other openings in country rock.
51. If the contacts of a pluton are parallel to the structure of the country rock, the pluton is concordant.
52. A discordant, tabular plutonic body is known as a dike.
53. Chilled margins can be recognized because they will be less coarsely crystalline (finer grained) than the interior of the intrusion.
54. In partial melting of rocks in the upper mantle, the first minerals to melt will be the constituents of granite, that is, they will be richer in silica (quartz + feldspar)
55. Assimilation of continental crust is an alternative source for the granitic magmas of batholiths. (a considerable amount of)

Fill-in-the-Chart

Fill in the chart below to arrange these igneous rock types by depth of crystallization and composition: rhyolite, gabbro, basalt, andesite, granite, and diorite.

	Composition		
	Felsic	Intermediate	Mafic
Plutonic	56. granite	57. diorite	58. gabbro
Volcanic	59. rhyolite	60. andesite	61. basalt

Double-Matching

Match the appropriate descriptive terms from the *two* columns on the right to the types of intrusive bodies listed on the left. Be sure to choose your first answer from column 1 and your second answer from column 2. The first one is done for you as an example of the procedure.

Types of intrusions				*Column 1*	*Column 2*
62.	a	63. b	sill	a. concordant	a. cylindrical
64.	a	65. c	lopolith	b. discordant	b. tabular
66.	a	67. c	laccolith		c. equidimensional
68.	b	69. b	dike		
70.	b	71. a	pipe		
72.	b	73. c	batholith		