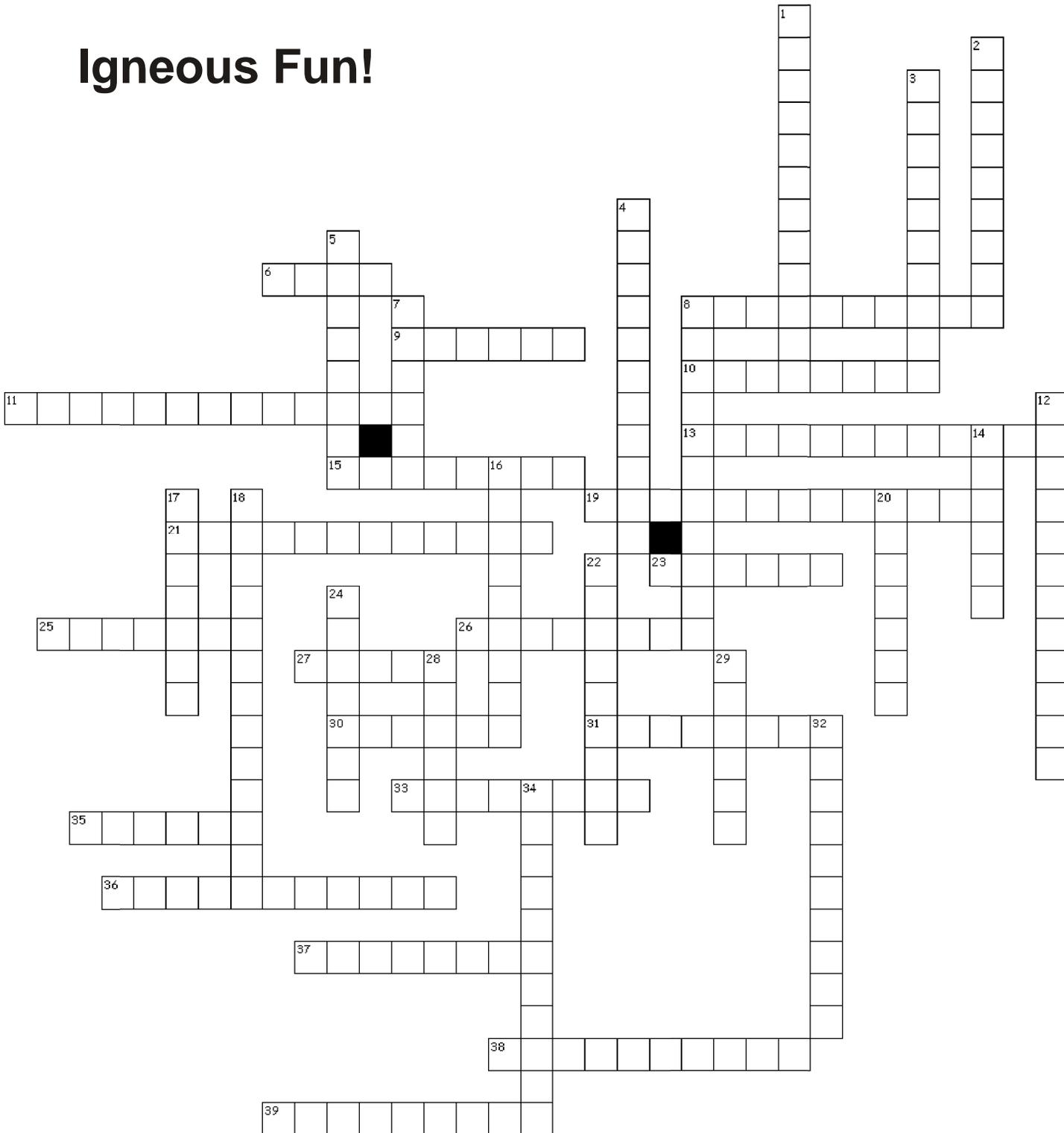


Igneous Fun!



Across

6. Seismic boundary between crust and mantle
8. What the upper mantle is made of
9. Basalt type common in rifts
10. Intermediate composition volcanic rock
11. Process that leads to melting below mid-ocean ridges
13. An element that prefers to be in the melt phase
15. Temperature at which first melt appears
19. Removal of early-formed crystals from melt
21. Addition of wallrock components to magma
23. Intrusive equivalent of basalt
25. $K(Fe,Mg)_3AlSi_3O_{10}(OH)_2$
26. $CaMgSi_2O_6$
27. Common groundmass phase in tholeiites
30. Thermal ____: boundary between colinear eutectic diagrams
31. Common rock type in calcalkaline batholiths
33. Foreign rock along for the ride
35. Rock composed mainly of olivine
36. Important variable in igneous crystallization
37. Surface above which all is melt
38. A reaction point
39. $CaAl_2Si_2O_8$

Down

1. Igneous rocks along Andean margins lie on this trend
2. Common phenocryst phase in andesite
3. Mg_2SiO_4
4. Type of zoning in some plagioclases
5. Extrusive equivalent of granite
7. $(Mg,Fe)_3Al_2Si_3O_{12}$
8. Common feldspar in basalts
12. Mineral group common in norms of undersaturated rocks
14. ____ loop
16. Basalt at mid-ocean ridge
17. Type of incomplete melting
18. Low-velocity zone
20. System with three components
22. Melts incongruently to Fo+L
24. Surface below which all is solid
28. $MgAl_2O_4$
29. Miscibility gap
32. Common feature in slowly cooled pyroxenes
34. Crust plus uppermost mantle