



Metamorphic fun!

Name \_\_\_\_\_

## Across

4. common amphibole in the greenschist facies
5. one of the dominant metamorphic variables
7. type of amphibole that is indicative of high pressure
9. calculation of pressure from metamorphic minerals
16. low-pressure \_\_\_\_\_ series
18.  $(\text{Fe,Mg,Mn,Ca})_3\text{Al}_2\text{Si}_3\text{O}_{12}$
20. high-T polymorph of  $\text{Al}_2\text{SiO}_5$
22. basalt metamorphosed to  $550^\circ\text{C} < T < 750^\circ\text{C}$
24. type of metamorphism occurring around plutons
27. metamorphic \_\_\_\_\_ gradient: diachronous curve connecting  $T_{\text{max}}$  points
30. first field appearance of an index mineral
34. equation used to calculate temperature
37. metamorphism occurring in response to orogenesis
38. phase released by devolatilization reactions
39. metamorphic rock with prominent fabric defined by aligned phyllosilicate minerals
42. minerals that grow during deformation are \_\_\_\_\_
46. curve showing T increase with depth at constant time
47. \_\_\_\_\_ free energy
48. type of clinopyroxene found in eclogites
49. replacement feature that preserves original mineral shape

## Down

1. \_\_\_\_\_ reaction: releases  $\text{H}_2\text{O}$
2. reaction that proceeds in a down-temperature direction
3. mineral group found in high-T metabasites
6. large crystal that is surrounded by a finer-grained matrix
8. \_\_\_\_\_-temperature-time path
10. equilibrium \_\_\_\_\_: necessary term in thermometer equation
11. planar fabric in metamorphic rocks
12. metamorphism at constant temperature
13. mineral found instead of muscovite in high-T metapelites
14. mineral between kyanite and chloritoid on an AFM
15. high-P, moderate- to high-T facies
17. metamorphic facies developed in a subduction setting
19. starting material for metamorphism
21. mineral from which AFM is usually projected
23. high-P polymorph of  $\text{Al}_2\text{SiO}_5$
24. mineral that often replaces garnet and biotite
25. AFM mineral that is easily confused with feldspars or quartz
26. value of  $[\Delta H^\circ - T\Delta S^\circ + (P-1)\Delta V^\circ + RT\ln K]$  at equilibrium
28. reaction type that results in a tieline flip on a ternary phase diagram
29. epidote-group mineral with anomalous interference colors
31. highest temperature facies
32. low-P polymorph of  $\text{Al}_2\text{SiO}_5$
33. reaction type that represents upper stability limit for a mineral
35. line connecting coexisting minerals on a phase diagram
36. phase diagram used for mafic rocks
40.  $\text{K}(\text{Fe,Mg})_3\text{AlSi}_3\text{O}_{10}(\text{OH})_2$
41. phase diagram used for pelitic rocks
43. state at which  $\Delta G_{\text{rxn}} = 0$
44. metamorphism that occurs at constant pressure
45. type of schist derived from mudstone or shale