Field driven phases in the geometrically frustrated dipolar Heisenberg pyrochlore antiferromagnet $\text{Gd}_2\text{Ti}_2\text{O}_7$ MATTHEW ENJALRAN, Department of Physics, Southern CT State University, New Haven, CT, ADRIAN DEL MAESTRO, Department of Physics, Harvard University, Cambridge, MA, MICHEL J.P. GINGRAS, Department of Physics and Astronomy, University of Waterloo, Waterloo, ON, Canada; Canadian Institute for Advanced Research, Toronto, ON, Canada — The rare-earth pyrochlore gadolinium titanate, $\text{Gd}_2\text{Ti}_2\text{O}_7$, represents an excellent experimental realization of a Heisenberg antiferromagnet (AFM) in a frustrated geometry with weak long-range dipole-dipole interactions (approximately 20% of nearest neighbor AFM exchange). Experiments on $\text{Gd}_2\text{Ti}_2\text{O}_7$ in a magnetic field reveal a complex phase diagram associated with the breaking of spatial symmetries of the pyrochlore lattice as the field is applied along select symmetry directions. We study a model of classical Heisenberg spins (O(3) symmetry) on a pyrochlore lattice with exchange and dipolar interactions within mean-field theory. Using parameters relevant to the material system, we develop phase diagrams in finite magnetic fields. Our results are compared to experiments on $\text{Gd}_2\text{Ti}_2\text{O}_7$ (and $\text{Gd}_2\text{Sn}_2\text{O}_7$).