Deriving Parabola Equations

Today's Standard

HSG.GPE.A2 - Derive the equation of a parabola given a focus and directrix.

Cues	Notes
What is a parabola?	A parabola is a U-shaped curve that can open up, down, left, or right.
What are the focus and directrix?	The focus is a point inside the parabola, and the directrix is a line outside it. The parabola is the set of all points equidistant from the focus and directrix.
How do you derive the equation of a parabola?	To derive the equation, use the definition of a parabola and set the distance from a point on the parabola to the focus equal to the distance from the point to the directrix.
What are common misconceptions?	Misconceptions include thinking the focus and directrix are interchangeable and that the vertex is always at the origin.
What are real-world applications of parabolas?	Parabolas are used in satellite dishes, car headlights, architecture, and physics.

Summary

Understanding parabolas involves knowing their geometric properties, how to derive their equations, and recognizing their real-world applications. Common misconceptions can be addressed through visual aids and varied practice problems.