Brilliant Data Tab → AoPS Enrichment Crosswalk

This document maps Brilliant's Data courses to relevant enrichment opportunities in AoPS *Prealgebra* and *Introduction to Algebra*. These courses are not part of the core AoPS–Brilliant alignment but offer strong supplemental or stretch material for conceptual depth, visualization, or statistics. Each course includes AoPS alignment, recommended grade level, and use-case notes.

Clustering & Classification (27 Lessons)

Course Summary: Introduces similarity, distance measures, cluster structure, and classification thinking. Uses geometric intuition, pattern analysis, and visual grouping.

AoPS Connections:

- Prealgebra Ch. 13 (Data & Statistics) — visual grouping, distributions

- Prealgebra Ch. 12 (Coordinate Geometry) — distance and geometric structure

- Intro to Algebra Ch. 8 and 17 — concept of distance, comparing patterns

Grade Fit: 7–8 (select parts usable in Grade 6)

Use Cases:

- Visual reasoning tasks in statistics units

- Enrichment during coordinate geometry units

- Pattern recognition warm-ups

Enrichment Level: Stretch (conceptual, not computational)

Exploring Data Visually (29 Lessons)

Course Summary: Covers bar charts, pie charts, scatterplots, histograms, box plots, scale interpretation, and distribution shapes. High visual quality and suitable for middle school.

AoPS Connections:

- Prealgebra Ch. 13 (Data) — direct support

- Prealgebra Ch. 10 (Angles/measurement) — interpreting scale and structure

Grade Fit: 5–8 (strongest in 6–7)

Use Cases:

- Warm-up exploration of data shapes before AoPS exercises

- Scatterplot visualizations for early correlation intuition

- Supplement to AoPS histogram and dot-plot work

Enrichment Level: Core-adjacent (highly relevant)

Regression (23 Lessons)

Course Summary: Introduces correlation, regression lines, mean squared error, residuals, and predictive modeling. These are high-school concepts but accessible visually.

AoPS Connections:

- Prealgebra Ch. 13 (Scatterplots) — visual extension only

- Intro to Algebra — no direct chapter alignment (AoPS avoids regression)

Grade Fit: 8 (select visual lessons)
Use Cases:

- Visual introduction to correlation

- Project-based learning extensions in Grade 8

Enrichment Level: Deep stretch (not part of core AoPS pathway)

Probability in Data (19 Lessons)

Course Summary: Covers foundational probability but with a data-flavored approach: conditional probability, independence, Bayes intuition, and simulation.

AoPS Connections:

- Prealgebra Ch. 14 (Counting & Probability) — strong conceptual enrichment

- Intro to Algebra Ch. 9 (Inequalities) — probability regions as extension

Grade Fit: 6–8
Use Cases:

- Experiment-based probability exploration

- Supplements to AoPS counting arguments

- Visual introduction to conditional probability

Enrichment Level: Core-adjacent

Predicting with Probability (15 Lessons)

Course Summary: Covers PMFs, CDFs, joint probability, conditional distributions, and the law of total probability. These are high school probability concepts.

AoPS Connections:

- Prealgebra Ch. 14 — conceptual extension (not computationally aligned)

- No direct Intro to Algebra alignment

Grade Fit: 8 (advanced learners only)
Use Cases:

- For use in small-group enrichment

- Optional PBL extensions in statistics units

Enrichment Level: Deep stretch

Bayesian Probability (13 Lessons)

Course Summary: Presents Bayes' Rule, Bayesian networks, information theory, entropy, and inference. Conceptually rich; mathematically advanced for middle school.

AoPS Connections:

- Prealgebra Ch. 14 (Probability) — extremely conceptual extension

- No direct Intro to Algebra link

Grade Fit: 8 (high proficiency students only)
Use Cases:

- Enrichment for students who finish AoPS probability early

- PBL extension involving classification or decision-making

Enrichment Level: Deep stretch / optional

Overall Guidance

- **Exploring Data Visually** and **Probability in Data** are the two most relevant enrichment courses for Grades 5–8.

- The others (**Clustering & Classification**, **Regression**, **Predicting with Probability**, **Bayesian Probability**) should be used sparingly and intentionally.

- None of the Data Tab courses replace AoPS content; they enhance visual intuition or extend probabilistic thinking beyond core middle school standards.