Big Idea – Density reveals Access and cost

Volume measures **how much space a 3D shape can hold.** In housing, volume helps us understand the **living space families share** and how many people occupy a single building. When housing density is high—meaning **many people live in smaller spaces**—it can impact privacy, health, and quality of life. Math allows us to analyze these differences and think critically about **how fair housing design can improve community living and equity.**

Math + Equity Example

Apartment Building A:

- 10 units, each 20 ft × 30 ft × 10 ft
- Volume per unit = 20 × 30 × 10 = **6,000 cubic ft**
- Total volume = 10 × 6,000 = **60,000 cubic ft**

House B:

- 1 unit, 40 ft × 30 ft × 10 ft
- Volume = 40 × 30 × 10 = **12,000 cubic ft**

Building A holds more families but offers **less space per household**, while House B provides more space for one family. These differences in **housing density** reveal how resources, zoning, and income influence where and how people live. Math helps us see that **fair housing isn't just about having a home—it's about access to comfort, safety, and dignity.**

Data Reflection

Circle or underline the word that stands out to you:
equity | housing | access | community | design

Share Your Thinking

The word I picked is: _____

I picked this word because:

Reflection:
How does this word connect to what we are learning about housing density and community living?

Student Equity Reflections

1. What does this math example show about how housing density affects family space?

2. How much volume does one apartment unit in Building A provide?

3. Why might families in higher-density buildings have different experiences than families in single homes?

4. What could communities do to make living spaces fair and supportive for all residents?