Cellular Game App

An interactive Android educational tool built with **Jetpack Compose** to visualize hexagonal cell clustering and co-channel interference in wireless networks.

Overview

The app challenges users to calculate the **Cluster Size (N)** based on two frequency reuse parameters:

- I : Step count in any direction.
- J : Step count after a 60° turn.

The Formula

The game validates the user's input against the geometric cluster formula:

$$N = i^2 + ij + j^2$$

Key Features

- **Dynamic UI:** Built entirely with Jetpack Compose.
- **Math-to-Visuals:** Real-time rendering of a hexagonal grid using a Canvas coordinate system.
- **Interactive Learning:** * 🟥 **Red Hexagon:** Reference transmitter cell.
    - 🟦 **Blue Hexagons:** Co-channel cells (frequency reuse locations).
- **Gamified Experience:** Score tracking and randomized i, j values for replayability.

🛠️ **Technical Stack**

- **Language:** Kotlin
- **UI:** Jetpack Compose (Declarative UI)
- **Graphics:** DrawScope and Path API for custom shape rendering.
- **Math:** Axial coordinate logic for hexagonal grid mapping.

📖 **How to Run**

1. **Clone:** git clone https://github.com/[your-username]/CellularGameApp.git
2. **Open:** Import into **Android Studio**.

3. **Run:** Deploy to any device with **API 21+**.