Worksheet: Concurrency vs. Parallelism

Honor Code Policy for Worksheets: You are free to discuss all aspects of in-class worksheets with your other classmates, the teaching assistants and the professor during the class. You can work in a group and write down the solution that you obtained as a group. If you work on the worksheet outside of class (e.g., due to an absence), then it must be entirely your individual effort, without discussion with any other students. If you use any material from external sources, you must provide proper attribution. You should submit the worksheet in Canvas.

Parallelism vs. Concurrency
Assume person can only throw with right hand. Next to each one of the following activity scenarios, write whether that scenario exhibits *Parallelism*, *Concurrency, Both* or *Neither.*

Scenario 1:
    Task: Throwing a ball in the air and catching it.   **Concurrency**
    Activity: A circus performer is juggling 5 balls at the same time.

Scenario 2:
    Task: Throwing a knife at a target.   **Neither**
    Activity: A circus performer is throwing knives at a target.

Scenario 3:
    Task: Riding a monocycle.   **Parallelism**
    Activity: Two circus performers are riding monocycles around the ring.

Scenario 4:
    Task: Throwing the ball in the air and catching it.   **Both**
    Activity: Two circus performers are juggling 5 balls between each other.

CPU Frequency and Power
Assume you have a CPU with 16 cores that consumes 160 Watts of power and each core runs at 2GHz. At what frequency would a single-core CPU with the same processing power have to run, and how much power would it have to consume?

32GHz, 40.96 KW (~4 average households per year)