

COMP 322: Fundamentals of Parallel Programming (Spring 2017)
Instructors: Vivek Sarkar, Mack Joyner
Worksheet 4: due at end of class today

Name: _____ **Netid:** _____

Honor Code Policy: 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 use any material from external sources, you must provide proper attribution.

Array Sum Speedup

- Assume $T(S,P) = \text{WORK}(G,S)/P + \text{CPL}(G,S) = (S-1)/P + \log_2(S)$ for the parallel array sum computation shown in slide 4 (using the upper bound)
- Assume $S = 1024 \implies \log_2(S) = 10$
- Compute for 10, 100, 1000 processors (round to 1 decimal place)
 - $T(P) = 1023/P + 10$
 - Speedup(10) = $T(1)/T(10) =$
 - Speedup(100) = $T(1)/T(100) =$
 - Speedup(1000) = $T(1)/T(1000) =$
- Why does the speedup not increase linearly in proportion to the number of processors?