

# Worksheet: Speedup

## 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)  
 $T(S,P) = (S-1)/P + \log_2(S) = 1023/P + 10$   
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?

