What happens to the speed up and efficiencies as p increases and n is fixed?

**Speed Up**

At fixed n , there starts to grow a linear relation between p and speed up as n increases , where at low n “small problem sizes” increasing the number of processors doesn’t create any better speed up at a certain threshold while at large problem sizes the effect of increasing p gets more noticeable in speed up

**Efficiency**

At fixed n , by increasing the number of processes on smaller problems the efficiency decreases , as S flattens out on the speed up graph while p continues to increase causing efficiency to decrease as the law E = S/P dictates , but by increasing sizes of n the increase I p leads to less loss of efficiency as large number of processors needs large problem sizes to work on them efficiently

What happens to the speed up and efficiencies as n increases and p is fixed ?

**Speed Up**

By increasing the n while p is fixed the speed up tends to increase rapidly until it levels out when reaching a speed up value near the number of processors

**Efficiency**

Efficiency tends to be on an uprising scale as by increasing the number of processor the require higher number of problem sizes “n” , thus by increasing n at fixed p the efficiency increases