1. Assign groups of 3 (Face to Face)
5 minutes

Currently the students are having problems with runtime functions with summations therefore I will give them problems in the following order.

For (int I = 0; I <n; ++i)
    sum++;

for (int I = 0; I < n; I = I + j)
    sum++;

for (int I = 0; I < n; I = I ++)
    for(int j = 0; j < I; ++j)
        sum++;;

for (int I = 0; I < n; I = I +2)
    for(int j = 0; j < I; j = j + 2)
        sum++;

for (int I = 0; I < n;  I = I + 2)
    for(int j = 0; j < I; j = j + 2)
        sum++;

for(int I = 0; I < n^2; I = I * 4)
    sum++;;

for(int z = 0; z < n^2; z = z * 9)
    for(int j = 0; j < z; ++j)

I am going to give them these problems one by one until they get to progressively harder algorithms.

I will tell the groups to come up with an algorithm to solve the runtime functions.

**5 minutes per problem 5 minute discussion = 1 hour 20 minutes**

I may allow more time for this based on discussions. If there is more time left I will go over the problems from last time.

Next I will give the following problems and ask them to classify them. Then I will ask why they decided to do this.

$4n^2 + 7*n$ is $O(n^2)$
n \times \log(n) \text{ is } O(n)
4 \log^2(n) + \log(n) \text{ is big omega } \log^2(n)
4 \log^2(n) \text{ is big omega } (n \times \log(n))
why?

20 minutes