* 1a
  + Charles:
    - 7.36
    - 3207.17
* 1b
  + Charles: 29.126
* 1c
  + Charles: 0.00995
* 1d
  + Charles: 1.0000000000000002e-10
* 2a
  + Charles: 2.98
* 2b
  + Charles:
    - 11
    - 3.7
* 2c
  + Charles:
    - 8.3
    - 4.17
* 2d
  + Charles: 15751.5
* 2e
  + Charles:85.96
* 2f
  + Charles: 87.83
* 3a
  + Charles:
    - server\_read\_rate\_mbs = 100
    - local\_read\_rate\_mbs = 100
    - transfer\_server\_to\_local\_mbs = 10
    - local\_program\_size\_mb = 10
    - local\_analysis\_mbs = 20
    - file\_size\_gb = 2
    - file\_size\_mb = file\_size\_gb \* (1024/1)
    - total\_read\_s = file\_size\_mb / (server\_read\_rate\_mbs + transfer\_server\_to\_local\_mbs + local\_read\_rate\_mbs + local\_analysis\_mbs)
    - print(total\_read\_s,"s to read and process 2gb of data from server on local machine")
    - 8.9
* 3b
  + Charles
    - server\_read\_rate\_mbs = 100
    - local\_read\_rate\_mbs = 100
    - transfer\_server\_to\_local\_mbs = 10
    - local\_program\_size\_mb = 10
    - local\_analysis\_mbs = 20
    - file\_size\_gb = 2
    - file\_size\_mb = file\_size\_gb \* (1024/1)
    - total\_transfer\_s = local\_program\_size\_mb / (local\_read\_rate\_mbs + transfer\_server\_to\_local\_mbs)
    - ### Would I not need local read rate?
    - total\_processing\_s = file\_size\_mb / (server\_read\_rate\_mbs + local\_analysis\_mbs)
    - total\_s = total\_transfer\_s + total\_processing\_s
    - print(total\_s,"s to read and process 2gb of data on server after transferring analysis program")
    - ### why is this higher? this should be a lower number
    - 17.16