Rodney Wotton
I pledge my honor that I have abided by the Stevens Honor System - Rodney Wotton

1.

a. There are .04167 FLOPS/byte. We get this by seeing that the code has two loads and store them in one number. One operand means that we only have one FLOP. 1/((2+1)*8) = .04167
b. There are .04167 FLOPS/byte. We get this by seeing that the code has two loads and store them in one number. One operand means that we only have one FLOP. 1/((2+1)*8) = .04167
c. We get .0625 FLOPS/byte. We get this by seeing that the code has one load and store them in one number. One operand means that we only have one FLOP. 1/((1+1)*8) = .0625
d. We get .0625 FLOPS/byte. We get this by seeing that the code has three loads and store them in one number. We have two operands in his equation which means that we have 2 FLOPs. 2/((3+1)*8) = .0625
e. We get .0833 FLOPS/byte. We get this by seeing that the code has two loads and store them in one number. We have two operands in his equation which means that we have 2 FLOPs. 2/((2+1)*8) = .0833

2.

a. The Peak is 2.5 8 8 * 32 which = 640 GFLOPS. We get this by multiplying the clockrate * #SIMD * FP
b. New peak is 2.5 * 8 * 32 * 2 = 1280. The throughput is calculated by comparing (2 load + 1 store) * 4 bytes = 12 bytes/2 flops or 6 bytes/flop
   6 bytes/1 FLOP * 1280 GFLOP/sec = 7680 GB/s > 112 GB/s.
   NOT SUSTAINABLE

3. To get this answer me must first use the equation 1/((1-F) + F/processor) = speedup. In this instance, F is parallelizable parts and 1-F is sequential. So we get 1/((1-F)+F/2000) = 100
F = .99.
Therefore we get the Sequential Parts = .95%
Parallelizable Parts= 99.05%

4.

a. 1. P * B = 16
   2. 2 * (P - sqrt(P)) = 24
   3. (P * (P - 1) / 2) * B = 120

b. 1.2*B=2
   2. sqrt(P) * B = 4
   3.$(P/2)^2$ *B=64

c. 1 link

2. 9 links
3. 105 links