Serie 3 - Solution

Exercise 1 (Theoretical roofline)**.** We will condsider fidis nodes (`--constraint E5v4`) – E5 2690 v4 microarchitecture Broadwell

1. $19,2\text{G}Bytes/\text{s}$
2. $41.6\text{G}flops/\text{s}DP$
   (a) 2.6GHz
   (b) 2 Floating point ports
   (c) 2 Operation per cycle (FMA)
   (d) 256 bit vector size (4 double precision fp)

Ridge point: $2.23flops/Bytes$

Exercise 2 (Measured roofline)**.**

1. Stream: $16.3\text{G}Bytes/\text{s}$
2. Dgemm: $35.8\text{G}flops/\text{s}$
3. Ridge point: $2.2flops/Bytes$

Exercise 3 (For 28 cores)**.**

1. Theoretical: $76.8\text{G}Bytes/\text{s}$, measured: $121.8\text{G}Bytes/\text{s}$
2. Theoretical: $1164.8\text{G}flops/\text{s}$, measured: $646.2\text{G}flops/\text{s}$
3. Theoretical: $15.1flops/Bytes$, measured: $5.3flops/Bytes$

Exercise 4 (Jacobi Stencil)**.**

1. $4flops/5 * 8Bytes = 0.1flops/Bytes$
2. $16.3 * 0.1 = 1.63\text{G}flops/\text{s}$