

Intel i5-4460

	0.0	1.0	1e10	1e+200	1e-300	1e-42	256	257	1e-320
	Cycle count								
0.0	6.56	6.56	6.58	6.57	6.55	6.56	6.57	6.55	6.57
1.0	6.57	6.56	6.54	6.59	6.55	6.53	6.60	6.54	6.58
1e10	6.58	6.59	6.58	6.54	6.60	6.56	6.58	6.59	6.58
1e+200	6.57	6.59	6.59	6.57	6.57	6.56	6.56	6.57	6.55
1e-300	6.56	6.54	6.59	6.58	6.58	6.56	6.56	6.58	6.56
1e-42	6.59	6.55	6.56	6.56	6.59	6.58	6.57	6.56	6.58
256	6.57	6.59	6.58	6.52	6.57	6.59	6.58	6.56	6.58
257	6.58	6.56	6.58	6.56	6.57	6.58	6.58	6.58	6.59
1e-320	6.57	6.59	6.59	6.55	6.60	6.58	6.58	6.59	6.58

Figure 1: Addition timing for double precision floats on Intel i5-4460

	0.0	1.0	1e10	1e+200	1e-300	1e-42	256	257	1e-320
	Cycle count								
0.0	6.59	6.58	6.59	6.58	6.59	6.57	6.57	6.59	6.59
1.0	6.56	6.57	6.57	6.57	6.57	6.57	6.59	6.58	6.57
1e10	6.55	6.52	6.56	6.56	6.57	6.58	6.58	6.56	6.58
1e+200	6.54	6.56	6.55	6.59	6.57	6.58	6.58	6.59	6.58
1e-300	6.58	6.56	6.57	6.56	6.56	6.56	6.52	6.59	6.59
1e-42	6.56	6.59	6.57	6.58	6.56	6.55	6.58	6.55	6.58
256	6.57	6.57	6.56	6.58	6.59	6.58	6.58	6.54	6.55
257	6.60	6.57	6.57	6.57	6.57	6.56	6.58	6.53	6.59
1e-320	6.56	6.56	6.58	6.58	6.57	6.59	6.55	6.54	6.59

Figure 2: Subtraction timing for double precision floats on Intel i5-4460

	0.0	1.0	1e10	1e+30	1e-30	1e-41	1e-42	256	257
	Cycle count								
0.0	6.56	6.58	6.54	6.58	6.58	6.56	6.58	6.56	6.57
1.0	6.56	6.58	6.58	6.57	6.58	6.56	6.56	6.55	6.55
1e10	6.58	6.58	6.59	6.58	6.56	6.57	6.57	6.56	6.59
1e+30	6.58	6.58	6.59	6.59	6.59	6.59	6.58	6.60	6.57
1e-30	6.57	6.57	6.56	6.58	6.56	6.59	6.58	6.57	6.57
1e-41	6.60	6.53	6.59	6.58	6.57	6.58	6.60	6.57	6.58
1e-42	6.58	6.58	6.55	6.59	6.58	6.58	6.55	6.55	6.56
256	6.57	6.56	6.57	6.56	6.58	6.59	6.58	6.54	6.57
257	6.56	6.59	6.59	6.59	6.58	6.59	6.58	6.58	6.57

Figure 3: Subtraction timing for single precision floats on Intel i5-4460

	Divisor								
Dividend	0.0	1.0	1e10	1e+30	1e-30	1e-41	1e-42	256	257
	Cycle count								
0.0	6.55	6.50	6.58	6.57	6.54	6.57	6.56	6.58	6.59
1.0	6.58	6.58	6.58	6.57	6.57	152.59	152.57	6.59	6.60
1e10	6.58	6.58	6.58	6.59	6.58	152.57	152.56	6.56	6.58
1e+30	6.57	6.57	6.59	6.57	6.56	152.59	152.51	6.58	6.60
1e-30	6.57	6.57	155.37	6.57	6.58	152.54	152.59	6.57	6.54
1e-41	6.58	149.75	6.57	6.56	152.56	152.57	152.59	149.72	152.55
1e-42	6.59	149.72	6.56	6.56	152.60	152.56	152.49	149.74	152.54
256	6.58	6.60	6.56	6.60	6.55	152.53	152.70	6.58	6.58
257	6.58	6.58	6.57	6.57	6.54	152.59	152.51	6.57	6.55

Figure 4: Division timing for single precision floats on Intel i5-4460

	0.0	1.0	1e10	1e+30	1e-30	1e-41	1e-42	256	257
	Cycle count								
0.0	6.56	6.58	6.54	6.56	6.57	6.55	6.59	6.58	6.59
1.0	6.54	6.58	6.55	6.59	6.57	6.58	6.55	6.54	6.57
1e10	6.55	6.57	6.58	6.59	6.58	6.58	6.55	6.56	6.58
1e+30	6.58	6.57	6.57	6.58	6.57	6.56	6.56	6.57	6.58
1e-30	6.59	6.58	6.57	6.57	6.58	6.60	6.59	6.59	6.58
1e-41	6.57	6.58	6.58	6.58	6.55	6.57	6.56	6.56	6.58
1e-42	6.58	6.59	6.57	6.58	6.56	6.58	6.58	6.57	6.57
256	6.56	6.59	6.57	6.59	6.56	6.56	6.58	6.60	6.58
257	6.58	6.55	6.59	6.56	6.58	6.58	6.59	6.59	6.58

Figure 5: Addition timing for single precision floats on Intel i5-4460

	0.0	1.0	1e10	1e+200	1e-300	1e-42	256	257	1e-320
	Cycle count								
0.0	6.59	6.56	6.59	6.58	6.58	6.57	6.58	6.59	6.57
1.0	6.57	6.59	6.55	6.57	6.57	6.56	6.56	6.56	130.89
1e10	6.55	6.55	6.56	6.58	6.56	6.56	6.56	6.57	130.95
1e+200	6.55	6.57	6.56	6.58	6.59	6.53	6.55	6.58	130.92
1e-300	6.51	6.57	6.56	6.59	6.57	6.57	6.55	6.58	6.54
1e-42	6.55	6.57	6.55	6.57	6.55	6.58	6.58	6.58	6.55
256	6.58	6.53	6.56	6.54	6.56	6.56	6.58	6.57	130.94
257	6.59	6.57	6.60	6.56	6.58	6.56	6.57	6.59	130.90
1e-320	6.59	130.90	130.92	130.94	6.59	6.58	130.95	130.91	6.56

Figure 6: Multiplication timing for double precision floats on Intel i5-4460

	Divisor								
Dividend	0.0	1.0	1e10	1e+200	1e-300	1e-42	256	257	1e-320
	Cycle count								
0.0	6.56	6.59	6.58	6.55	6.57	6.58	6.57	6.57	6.59
1.0	6.58	6.58	12.19	12.17	12.22	12.24	6.57	12.24	165.76
1e10	6.58	6.55	12.25	12.20	12.23	12.25	6.57	12.22	165.81
1e+200	6.60	6.60	12.25	12.20	12.22	12.22	6.58	12.24	165.79
1e-300	6.59	6.57	175.22	12.24	12.17	12.22	6.52	12.23	165.83
1e-42	6.60	6.53	12.23	12.22	12.21	12.24	6.58	12.21	165.79
256	6.57	6.55	12.24	12.20	12.20	12.20	6.53	12.22	165.79
257	6.55	6.58	12.24	12.22	12.24	12.23	6.56	12.21	165.80
1e-320	6.56	150.73	165.79	6.59	165.78	165.76	150.66	165.80	165.78

Figure 7: Division timing for double precision floats on Intel i5-4460

Operand	Cycle count
0.0	8.84
1.0	8.84
1e10	17.88
1e+200	17.87
1e-300	17.89
1e-42	17.88
256	8.82
257	17.89
1e-320	161.07

Figure 8: Square root timing for double precision floats on Intel i5-4460

Operand	Cycle count
0.0	8.89
1.0	8.90
1e10	11.59
1e+30	11.60
1e-30	11.52
1e-41	147.89
1e-42	147.90
256	8.88
257	11.59

Figure 9: Square root timing for single precision floats on Intel i5-4460

	0.0	1.0	1e10	1e+30	1e-30	1e-41	1e-42	256	257
	Cycle count								
0.0	6.57	6.57	6.60	6.58	6.59	6.57	6.59	6.58	6.59
1.0	6.59	6.59	6.59	6.57	6.56	130.90	130.85	6.58	6.57
1e10	6.57	6.59	6.58	6.59	6.56	130.90	130.91	6.58	6.58
1e+30	6.59	6.56	6.58	6.59	6.57	130.90	130.91	6.59	6.58
1e-30	6.57	6.59	6.59	6.57	6.59	6.59	6.58	6.58	6.57
1e-41	6.56	130.90	130.89	130.87	6.56	6.57	6.57	130.96	130.90
1e-42	6.59	130.89	130.88	130.90	6.57	6.58	6.57	130.85	130.89
256	6.58	6.58	6.55	6.57	6.58	130.92	130.88	6.57	6.56
257	6.56	6.55	6.59	6.58	6.57	130.89	130.88	6.57	6.58

Figure 10: Multiplication timing for single precision floats on Intel i5-4460

Intel i5-4460+FTZ/DAZ

	0.0	1.0	1e10	1e+200	1e-300	1e-42	256	257	1e-320
	Cycle count								
0.0	6.73	6.70	6.74	6.72	6.76	6.76	6.69	6.73	6.73
1.0	6.73	6.71	6.73	6.70	6.73	6.73	6.72	6.70	6.74
1e10	6.76	6.68	6.74	6.73	6.70	6.71	6.75	6.69	6.72
1e+200	6.76	6.67	6.65	6.67	6.66	6.64	6.71	6.67	6.68
1e-300	6.72	6.63	6.60	6.75	6.67	6.71	6.65	6.67	6.65
1e-42	6.71	6.71	6.64	6.65	6.71	6.65	6.69	6.65	6.73
256	6.73	6.74	6.73	6.71	6.73	6.69	6.69	6.76	6.74
257	6.69	6.73	6.70	6.74	6.71	6.75	6.76	6.76	6.76
1e-320	6.74	6.68	6.67	6.79	6.65	6.76	6.67	6.74	6.70

Figure 11: Addition timing for double precision floats on Intel i5-4460+FTZ/DAZ

	0.0	1.0	1e10	1e+200	1e-300	1e-42	256	257	1e-320
	Cycle count								
0.0	6.85	6.86	6.82	6.76	6.81	6.83	6.84	6.84	6.88
1.0	6.74	6.84	6.74	6.86	6.82	6.77	6.86	6.84	6.79
1e10	6.83	6.85	6.89	6.81	6.84	6.83	6.81	6.80	6.85
1e+200	6.83	6.75	6.86	6.83	6.83	6.82	6.79	6.84	6.84
1e-300	6.77	6.87	6.79	6.78	6.80	6.85	6.83	6.81	6.81
1e-42	6.81	6.86	6.83	6.82	6.81	6.81	6.73	6.83	6.84
256	6.85	6.67	6.78	6.79	6.88	6.75	6.81	6.83	6.83
257	6.77	6.83	6.86	6.84	6.87	6.83	6.86	6.85	6.82
1e-320	6.79	6.84	6.82	6.77	6.84	6.85	6.87	6.85	6.87

Figure 12: Subtraction timing for double precision floats on Intel i5-4460+FTZ/DAZ

	0.0	1.0	1e10	1e+30	1e-30	1e-41	1e-42	256	257
	Cycle count								
0.0	5.64	5.64	5.63	5.63	5.62	5.63	5.63	5.62	5.64
1.0	5.65	5.62	5.61	5.58	5.61	5.64	5.64	5.64	5.63
1e10	5.65	5.64	5.63	5.65	5.62	5.63	5.65	5.63	5.65
1e+30	5.65	5.64	5.64	5.63	5.64	5.63	5.64	5.64	5.65
1e-30	5.64	5.62	5.64	5.65	5.64	5.63	5.66	5.65	5.63
1e-41	5.63	5.65	5.63	5.65	5.64	5.64	5.62	5.65	5.64
1e-42	5.63	5.63	5.64	5.65	5.64	5.64	5.65	5.60	5.63
256	5.61	5.65	5.63	5.65	5.65	5.62	5.62	5.64	5.64
257	5.65	5.63	5.63	5.65	5.63	5.63	5.62	5.64	5.65

Figure 13: Subtraction timing for single precision floats on Intel i5-4460+FTZ/DAZ

	Divisor								
Dividend	0.0	1.0	1e10	1e+30	1e-30	1e-41	1e-42	256	257
	Cycle count								
0.0	5.66	5.59	5.62	5.64	5.64	5.62	5.66	5.65	5.60
1.0	5.66	5.66	5.65	5.66	5.65	5.63	5.65	5.66	5.65
1e10	5.65	5.65	5.62	5.63	5.62	5.64	5.64	5.62	5.63
1e+30	5.65	5.62	5.62	5.59	5.65	5.65	5.64	5.65	5.65
1e-30	5.62	5.63	5.61	5.58	5.63	5.65	5.60	5.64	5.64
1e-41	5.64	5.66	5.64	5.63	5.65	5.65	5.65	5.65	5.66
1e-42	5.65	5.61	5.65	5.62	5.63	5.62	5.64	5.64	5.64
256	5.66	5.63	5.64	5.64	5.64	5.65	5.63	5.60	5.61
257	5.65	5.64	5.65	5.57	5.63	5.65	5.65	5.63	5.63

Figure 14: Division timing for single precision floats on Intel i5-4460+FTZ/DAZ

Operand	Cycle count
0.0	8.85
1.0	8.85
1e10	11.60
1e+30	11.68
1e-30	11.63
1e-41	8.84
1e-42	8.84
256	8.84
257	11.62

Figure 15: Square root timing for single precision floats on Intel i5-4460+FTZ/DAZ

	0.0	1.0	1e10	1e+200	1e-300	1e-42	256	257	1e-320
	Cycle count								
0.0	6.57	6.58	6.55	6.54	6.57	6.58	6.55	6.60	6.54
1.0	6.54	6.58	6.57	6.54	6.57	6.56	6.56	6.58	6.54
1e10	6.54	6.54	6.56	6.56	6.59	6.50	6.60	6.59	6.53
1e+200	6.55	6.58	6.53	6.55	6.52	6.57	6.56	6.57	6.57
1e-300	6.57	6.59	6.54	6.56	6.57	6.55	6.58	6.56	6.57
1e-42	6.58	6.58	6.55	6.57	6.58	6.56	6.56	6.57	6.59
256	6.59	6.57	6.57	6.58	6.59	6.59	6.57	6.59	6.57
257	6.58	6.56	6.54	6.59	6.56	6.59	6.58	6.59	6.55
1e-320	6.59	6.54	6.58	6.54	6.53	6.58	6.54	6.60	6.57

Figure 16: Multiplication timing for double precision floats on Intel i5-4460+FTZ/DAZ

	Divisor								
Dividend	0.0	1.0	1e10	1e+200	1e-300	1e-42	256	257	1e-320
	Cycle count								
0.0	6.58	6.59	6.58	6.55	6.59	6.54	6.54	6.56	6.56
1.0	6.55	6.55	12.23	12.19	12.22	12.22	6.56	12.25	6.56
1e10	6.58	6.59	12.22	12.22	12.21	12.21	6.59	12.23	6.59
1e+200	6.57	6.59	12.22	12.20	12.17	12.21	6.58	12.17	6.57
1e-300	6.59	6.57	12.18	12.23	12.24	12.22	6.59	12.24	6.57
1e-42	6.58	6.56	12.21	12.25	12.23	12.18	6.56	12.21	6.58
256	6.57	6.60	12.20	12.22	12.24	12.24	6.57	12.23	6.54
257	6.57	6.58	12.22	12.23	12.25	12.20	6.57	12.23	6.58
1e-320	6.57	6.58	6.60	6.51	6.59	6.57	6.58	6.55	6.58

Figure 17: Division timing for double precision floats on Intel i5-4460+FTZ/DAZ

Operand	Cycle count
0.0	8.94
1.0	8.94
1e10	17.90
1e+200	17.88
1e-300	17.90
1e-42	17.89
256	8.95
257	17.88
1e-320	8.94

Figure 18: Square root timing for double precision floats on Intel i5-4460+FTZ/DAZ

	0.0	1.0	1e10	1e+30	1e-30	1e-41	1e-42	256	257
	Cycle count								
0.0	5.64	5.66	5.59	5.66	5.66	5.63	5.66	5.66	5.66
1.0	5.64	5.57	5.64	5.63	5.62	5.58	5.59	5.62	5.61
1e10	5.63	5.63	5.64	5.65	5.64	5.65	5.62	5.65	5.64
1e+30	5.63	5.63	5.66	5.65	5.66	5.63	5.66	5.65	5.63
1e-30	5.65	5.65	5.63	5.61	5.66	5.63	5.65	5.64	5.64
1e-41	5.65	5.65	5.66	5.64	5.66	5.64	5.65	5.64	5.66
1e-42	5.64	5.61	5.63	5.63	5.64	5.67	5.66	5.65	5.63
256	5.62	5.60	5.66	5.64	5.65	5.65	5.64	5.66	5.66
257	5.63	5.61	5.62	5.63	5.66	5.65	5.65	5.66	5.62

Figure 19: Addition timing for single precision floats on Intel i5-4460+FTZ/DAZ

	0.0	1.0	1e10	1e+30	1e-30	1e-41	1e-42	256	257
	Cycle count								
0.0	5.92	5.94	5.93	5.90	5.93	5.92	5.93	5.94	5.94
1.0	5.93	5.93	5.94	5.92	5.92	5.93	5.92	5.94	5.94
1e10	5.92	5.91	5.94	5.93	5.94	5.94	5.92	5.94	5.93
1e+30	5.92	5.90	5.93	5.93	5.94	5.89	5.90	5.93	5.94
1e-30	5.93	5.94	5.94	5.90	5.89	5.92	5.93	5.94	5.93
1e-41	5.93	5.92	5.94	5.94	5.91	5.92	5.94	5.93	5.93
1e-42	5.93	5.94	5.90	5.93	5.93	5.93	5.93	5.93	5.94
256	5.91	5.92	5.92	5.93	5.94	5.92	5.94	5.94	5.92
257	5.92	5.93	5.96	5.91	5.94	5.90	5.91	5.93	5.93

Figure 20: Multiplication timing for single precision floats on Intel i5-4460+FTZ/DAZ