

Powers of 2						
Bit Line Number		Bit Weight	Highest Number Count (Memory Address)	Hex		
1	2 ⁰	1	1	0000h	First byte (8 lines can count to 255)	First word (16 bits)
2	2 ¹	2	3	0003h		
3	2 ²	4	7	0007h		
4	2 ³	8	15	000Fh		
5	2 ⁴	16	31	001Fh		
6	2 ⁵	32	63	002Fh		
7	2 ⁶	64	127	004Fh		
8	2 ⁷	128	255	008Fh		
9	2 ⁸	256	511	01FFFh	Second byte (16 lines can count to 65,535)	(if little endian)
10	2 ⁹	512	1,023	02FFFh		
11	2 ¹⁰	1,024	2,047	04FFFh		
12	2 ¹¹	2,048	4,095	08FFFh		
13	2 ¹²	4,096	8,191	1FFFh		
14	2 ¹³	8,192	16,383	2FFFh		
15	2 ¹⁴	16,384	32,767	4FFFh		
16	2 ¹⁵	32,768	65,535	8FFFh		
17	2 ¹⁶	65,536	1,048,560	1 FFFF	Third byte (24 lines can count to 16.7M)	Second word (16 bits)
18	2 ¹⁷	131,072		2 FFFF		
19	2 ¹⁸	262,144		4 FFFF		
20	2 ¹⁹	524,288		8 FFFF		
21	2 ²⁰	1,048,576		1F FFFF		
22	2 ²¹	2,097,152		2F FFFF		
23	2 ²²	4,194,304		4F FFFF		
24	2 ²³	8,388,608		16,777,215		
25	2 ²⁴	16,777,216	268,435,455	1FF FFFF	Fourth byte (32 lines can count to 4.2B) (4 Gigs)	(if little endian)
26	2 ²⁵	33,554,432		2FF FFFF		
27	2 ²⁶	67,108,864		4FF FFFF		
28	2 ²⁷	134,217,728		8FF FFFF		
29	2 ²⁸	268,435,456		1FFF FFFF		
30	2 ²⁹	536,870,912		2FFF FFFF		
31	2 ³⁰	1,073,741,824		4FFF FFFF		
32	2 ³¹	2,147,483,648		4,294,967,295		
33	2 ³²	4,294,967,296	-	-	Fifth byte (40 lines)	Third word (16 bits)
34	2 ³³	8,589,934,592				
35	2 ³⁴	17,179,869,184				
36	2 ³⁵	34,359,738,368				
37	2 ³⁶	68,719,476,736				
38	2 ³⁷	137,438,953,472				
39	2 ³⁸	274,877,906,944				
40	2 ³⁹	549,755,813,888				
41	2 ⁴⁰	1,099,511,627,776	-	-	Sixth byte (48 lines)	(if little endian)
42	2 ⁴¹	2,199,023,255,552				
43	2 ⁴²	4,398,046,511,104				
44	2 ⁴³	8,796,093,022,208				
45	2 ⁴⁴	17,592,186,044,416				
46	2 ⁴⁵	35,184,372,088,832				

47	2^{46}	70,368,744,177,664				
48	2^{47}	140,737,488,355,328				
49	2^{48}	281,474,976,710,656			Seventh byte (56 lines)	Fourth word (16 bits)
50	2^{49}	562,949,953,421,312				
51	2^{50}	1,125,899,906,842,620	approx.	-		
52	2^{51}	2,251,799,813,685,250	approx.			
53	2^{52}	4,503,599,627,370,500	approx.			
54	2^{53}	9,007,199,254,740,990	approx.			
55	2^{54}	18,014,398,509,482,000	approx.			
56	2^{55}	36,028,797,018,964,000	approx.			
57	2^{56}	72,057,594,037,927,900				
58	2^{57}	144,115,188,075,856,000	(63 lines can count		Eighth byte (64 lines)	(if little endian)
59	2^{58}	288,230,376,151,712,000	to 4.6 quintillion)			
60	2^{59}	576,460,752,303,423,000	4.6×10^{18}			
61	2^{60}	1,152,921,504,606,850,000	or			
62	2^{61}	2,305,843,009,213,690,000	4.600.000.000,000,000,000			
63	2^{62}	4,611,686,018,427,390,000	(which is the approx.			
64	2^{63}	9,223,372,036,854,780,000	weight of the Earth in tons)			

Source filename: c-6.powers_of_2.7