

Table 32a

Mersenne PRIMES 1-12																				
#	Algebraic Calc Mersenne Primes			1 is subtracted from the Mersenne Prime Number and that ÷ 6, followed by Δs and further divisions of those Δs									1 is subtracted from the Mersenne Prime Number, followed by Δs and further divisions of those Δs							
	p	M <sub>p</sub> =2 <sup>p</sup> - 1	Δ	*M <sub>p</sub> -1	*M <sub>p</sub> -1/6	Δ	Δ/24	Δ/16	Δ/8	Δ/4	(Δ/4)/24	(Δ/4)/16	**M <sub>p</sub> -1	Δ	Δ/24	Δ/16	Δ/8	Δ/4	(Δ/4)/24	(Δ/4)/16
1	2	3																		
2	3	7	4	6	1								6							
3	5	31	24	30	5	4	~	~	~	1	~	~	30	24	1	~	3	6		
4	7	127	96	126	21	16	~	1	2	4	~	~	126	96	4	6	12	24	1	~
5	13	8191	8,064	8190	1,365	1,344	56	84	168	336	14	21	8190	8,064	336	504	1008	2,016	84	126
6	17	131071	122,880	131070	21,845	20,480	~	1,280	2,560	5,120	~	320	131070	122,880	5,120	7,680	15,360	30,720	1280	1,920
7	19	524287	393,216	524286	87,381	65,536	~	4,096	8,192	16,384	~	1,024	524286	393,216	16,384	24,576	49,152	98,304	4,096	6,144
8	31	2147483647	2,146,959,360	2147483646	357,913,941	357,826,560	14,909,440	22,364,160	44,728,320	89,456,640	3,727,360	5,591,040	2147483646	2,146,959,360	89,456,640	134,184,960	268,369,920	536,739,840	22,364,160	33,546,240
9	61	2305843009213693951	2,305,843,007,066,210,304	2305843009213693950	384,307,168,202,282,325	384,307,167,844,368,384	16,012,798,660,182,016	24,019,197,990,273,024	48,038,395,980,546,048	96,076,791,961,092,096	4,003,199,665,045,504	6,004,799,497,568,256	2305843009213693950	2,305,843,007,066,210,304	96,076,791,961,092,096	144,115,187,941,638,144	288,230,375,883,276,288	576,460,751,766,552,576	24,019,197,990,273,024	36,028,796,985,409,536
10	89	618970019642690137449562111	618970017336847128235868160	618970019642690137449562110	103161669940448356241593685	1031616699561411880393611360	~	6447604347258824252456960	12895208694517648504913920	25790417389035297009827840	~	~	618970019642690137449562110	618970017336847128235868160	25790417389035297009827840	~	~	~	~	6447604347258824252456960
11	107	162259276829213363391578010288127	162258657859193720701440560726016	162259276829213363391578010288126	27043212804868893898596335048021	27043109643198953450240093454336	1126796235133289727093337227264	1690194352699934590640005840896	3380388705399869181280011681792	6760777410799738362560023363584	~	~	162259276829213363391578010288126	162258657859193720701440560726016	6760777410799738362560023363584	~	~	~	~	1690194352699934590640005840896
12	127	170141183460469231731687303715884105727	170141021201192402518323912137873817600	170141183460469231731687303715884105726	28356863910078205288614550619314017621	28356836866865400419720652022978969600	~	1772302304179087526232540751436185600	3544604608358175052465081502872371200	7089209216716350104930163005744742400	~	~	170141183460469231731687303715884105726	170141021201192402518323912137873817600	7089209216716350104930163005744742400	~	~	~	~	1772302304179087526232540751436185600

reference: [https://en.wikipedia.org/wiki/Mersenne\\_prime#About\\_Mersenne\\_primes](https://en.wikipedia.org/wiki/Mersenne_prime#About_Mersenne_primes) and <https://oeis.org/A000668/list>

p=prime exponent, M<sub>p</sub>= Mersenne Prime (2<sup>p</sup>-1), \*M<sub>p</sub>-1= Mersenne Prime - 1 = BIM Sub-Matrix 2 Column 1 value, \*\*M<sub>p</sub>-1= Mersenne Prime - 1 = BIM Sub-Matrix 1 EVEN # Axis value within an ARS (every 6th Axis Row #, starting with 6, is an EVEN # ÷ 6 as part of the BIM÷24). The Mersenne Primes takes an exponential of 2 to the p power, and that gives an EVEN #, from which 1 is subtracted to give the Mersenne Prime. Subtracting 1 again from this All Mersenne Primes end in "1" or "7" as the result of subtracting 1 from 2<sup>p</sup>. E.i., 2<sup>3</sup>-1 = 7 and 2<sup>5</sup>-1 = 31.

On the BIM Sub-Matrix 2, the Column 1 cell values are always simply the Axis # -1.

When either "1" or "7" is reduced by 1 here, the resulting number value is NEVER ÷4, as:

ALL Mersenne Primes ending in "1" ALSO have an ODD # in their tens column, and together they are NOT ÷4.

Similarly,

ALL Mersenne Primes ending in "7" ALSO have an EVEN # in their tens column, and together they are NOT ÷4.

On the BIM Sub-Matrix 1, the Column 1 cell values are always simply the Inner Grid cell #/24.

The Sub-Matrix 1 Column 1 values for the Mersenne Primes are ALWAYS ÷4, i.e., first ÷24 to make the Sub-Matrix 1 values, followed by ÷4, for Mersenne Primes 31 and above. (This is the same as dividing the original BIM Column 1 cell value by 96.)

Looking at the BIM, one can see that ALL Mersenne Primes fall on the HIGHER # in the given ARS. This can be proven by:

1. Subtract 2 from the Mersenne Prime, square it, subtract 1 (this places it in the Column 1), and now ÷24. TRUE
2. Add 2 to the Mersenne Prime, square it, subtract 1 (this, again, places it in the Column 1), and now ÷24. FALSE
3. Of course, the Mersenne Prime squared, subtract 1 (this, again, places it in the Column 1), and now ÷24. TRUE

This has been tested with the first 10 Mersenne Primes (31 and above) and is ALWAYS TRUE.

Remember, an ARS ODD member will ALWAYS have its squared value - 1 equal to n24.

A non-ARS ODD member will never have its squared value - 1 give a n24 result for this process.

So when you look at the BIM, you can readily see the M<sup>p</sup>-1 — a Mersenne Prime — is ALWAYS on the HIGHER # of the given ARS.

Table 32a