The First 4 Mersenne Prime Squares (MPS) on the BIM

Every Mersenne Prime Square
has 6 unique embedded AREAS:

1. MPS: Mersenne Prime Square
2. PN: Perfect Number
3. OC: ODD Complement
4. PNS: Perfect Number Square
5. OCS: ODD Complement Square
6. CR: Complement Rectangle (repeated)

Each AREA is shown on the BIM as STEPS from the DIAGONAL.

STEPS = x/4, while x/2•∑ gives values.

∑=sum of the coordinates. x,y,z shown.

This is the MPS 31^2 Pattern for p=5 Mp=31

z^2= MPS: Mersenne Prime Square -------- ----is always ODD
xz = PN: Perfect Number---------- is always EVEN, ÷4
yz = OC: ODD Complement---------- is always ODD, ÷3
x^2= PNS: Perfect Number Square---------- is always EVEN, ÷4
y^2= OCS: ODD Complement Square---------- is always ODD, ÷3
xy = CR: Complement Rectangle (repeated)-is always EVEN, ÷4

x= y+1= z-y = PN/Mp=2^p-1 in the Euclid-Euler Theorem
y= x-1 = z-x = Mp/OC
z= x+y =Mp = Mersenne Prime = 2^p -1 in the Euclid-Euler Theorem.
p= prime

All the other MPS will follow this same pattern with variation in the # of STEPS.
See below for the MPS 127^2 Pattern for p=7 Mp=127

Every Mersenne Prime Square
has 6 unique embedded AREAS:

1. MPS: (x+y/2)•∑
2. PN: x/2•∑
3. OC: y•∑
4. PNS: x/2•∑ or x/4•∑
5. OCS: y/2•∑
6. CR: x/2•∑ or x/4•∑

∑=sum of the Col, Row coordinates.

The EVENS – PN, PNS & CR – are defined by "x" the EVEN side.

The ODDs – OC and OCS – are defined by the "y" ODD side.

ALL MPS follow this Pattern

x/8= 8
x/4=16
x/2=32
x=64

y/3=21=3•7
y=63

z=31
z=127
x=16
x=64
y=15
y=63

PN=27,35=∑=62 62/2=31=z
PNS=30,34=∑=64 64/4=16=x
CR=28,32=∑=60 60/4=15=y
OC=8,23=∑=31=z
CR=11,19=∑=30 30/2=15=y
PNS=12,20=∑=32 32/2=16=x
MPS=31,31=∑=62 62/2=31=z
CR=47,79=∑=126 126/2=63=y
PNS=48,80=∑=128 128/2=64=x
OC=32,95=∑=127=z
CR=118,134=∑=252 252/4=63=y
PN=111,143=∑=254 254/2=127=z
PNS=120,136=∑=256 256/4=64=x

The first four Mersenne PRIME - Perfect Number Squares on the BIM