



PN PN PN PN
 $z=7 \quad z^2=49 = MPS$
 $196 = 28^2$
 $8PN = 224 + 1 = 225 = 15^2$
 $8PN - 4z = 4MPS$
 $224 - 4 \cdot 7 = 196 = 4 \cdot 49$

$z=15 \quad z^2=225 = MPS$
 $900 = 30^2$
 $15 \cdot 4 = 60$
 $900 / 15 = 60$
 $60 \cdot 2 = 120$
 $120 \cdot 8 = 960$
 $960 - 60 = 900$

$z=31 \quad z^2=961 = MPS$
 $3844 = 62^2$
 $31 \cdot 4 = 124$
 $3844 / 31 = 124$
 $3844 - 4 \cdot 31 = 3844 - 124 = 3720$
 $3720 / 4 = 930$
 $930 \cdot 8 = 7440$
 $7440 - 930 = 6510$
 $6510 / 2 = 3255$
 $3255 \cdot 4 = 13020$
 $13020 - 3255 = 9765$
 $9765 / 3 = 3255$
 $3255 \cdot 8 = 26040$
 $26040 - 3255 = 22785$
 $22785 / 5 = 4557$
 $4557 \cdot 4 = 18228$
 $18228 - 4557 = 13671$
 $13671 / 7 = 1953$
 $1953 \cdot 8 = 15624$
 $15624 - 1953 = 13671$

$z=63 \quad z^2=3969 = MPS$
 $15876 = 126^2$
 $63 \cdot 4 = 252$
 $15876 / 63 = 252$
 $15876 - 4 \cdot 63 = 15876 - 252 = 15624$
 $15624 / 8 = 1953$
 $1953 \cdot 8 = 15624$
 $15624 - 1953 = 13671$
 $13671 / 7 = 1953$
 $1953 \cdot 8 = 15624$
 $15624 - 1953 = 13671$

$z=127 \quad z^2=16129 = MPS$
 $16128 = 127^2 - 1$
 $127 \cdot 4 = 508$
 $16128 / 127 = 127$
 $16128 - 4 \cdot 127 = 16128 - 508 = 15620$
 $15620 / 4 = 3905$
 $3905 \cdot 8 = 31240$
 $31240 - 3905 = 27335$
 $27335 / 5 = 5467$
 $5467 \cdot 4 = 21868$
 $21868 - 5467 = 16401$
 $16401 / 7 = 2343$
 $2343 \cdot 8 = 18744$
 $18744 - 2343 = 16401$

$8PN = 8 \cdot 120 = 960 + 1 = 961 = 31^2$
 $8PN - 4z = 4MPS$
 $960 - 4 \cdot 15 = 900 = 4 \cdot 225$
 $4MPS - x^2 = CBR$
 $10 \cdot 18 = 180 - 4^2 = 172 = CBR$
 $900 - 8^2 = 836 = CBR$
 $22 \cdot 38 = 836$
 $3844 - 16^2 = 3588$
 $46 \cdot 78 = 3588$

Col (C) = y+z
 Row (R) = 2z+x
 C R
 $46 + 78 = 124$
 $124 \cdot 4 = 496$
 $496 \cdot 8 = 3968$
 @16 STEPS

$8PN = 8 \cdot 496 = 3968 + 1 = 3969 = 63^2$
 $8PN - 4z = 4MPS$
 $3968 - 4 \cdot 31 = 3844 = 4 \cdot 961$
 $4z^2 + 4z = 8PN = 8xz$

$8PN = 8 \cdot 496 = 3968 + 1 = 3969 = 63^2$
 $8PN - 4z = 4MPS$
 $3968 - 4 \cdot 31 = 3844 = 4 \cdot 961$

$63 \cdot 4 = 252$
 $15876 / 63 = 252$
 $252 \cdot 8 = 2016$
 $2016 \cdot 8 = 16128$
 $16128 - 252 = 15876$

CBR = 4MPS - x^2 = 4z^2 - x^2
 $180 = (4 \cdot 49) - 4^2$ @coordinates 10*18
 $836 = (4 \cdot 225) - 8^2$ @coordinates 22*38
 Col (C) = y+z Row (R) = 2z+x
 C * R = CBR Area
 C + R = nPN where n = x/4
 R - C = z + 1 = 2x

C Δ doubles starting with Δ6
 3-6-12-24-48-96
 R Δ doubles starting with Δ5
 5-10-20-40-80
 Δ of Δs is 1-2-4-8-16

Δ → 3. 6. 12. 24. 48. 96. 192- 384
 Col 1- 4- 10- 22- 46- 94- 190- 382
 R-C 2. 4. 8. 16. 32. 64. 128. 256
 Row 3- 8- 18- 38 - 78- 158- 318- 638
 Δ → 5 10. 20. 40. 80. 160. 320. 640

next-next
 C. R
 $382 + 638 = 1020$
 $1020 \cdot 32 = 32640$
 $8 \cdot 32640 = 261120$
 @128 STEPS from PD

next
 C. R
 $190 + 318 = 508$
 $508 \cdot 16 = 8128$
 $8 \cdot 8128 = 65024$
 @64 STEPS from PD

Col (C) = y+z
 Row (R) = 2z+x
 C. R
 $94 + 158 = 252$
 $252 \cdot 8 = 2016$
 $8 \cdot 2016 = 16128$ @32 STEPS from PD

The first four Mersenne PRIME - Perfect Number Squares on the BIM
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8 Perfect Numbers +1 = MPS_{next}

8 Perfect Numbers - 4z = 4MPS

8PN + 1 = z^2 = MPS_{next}
 $8PN = 8 \cdot 2016 = 16128 + 1 = 16129 = 127^2$

8PN - 4z = 8xz - 4z = 4MPS
 $16128 - 4 \cdot 63 = 15876 = 4 \cdot 3969$

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SEE Table 140