

1, 5, 12, 22

$$an^2 + bn + c = \frac{a}{2}n^2 + (-\frac{b}{2} + \frac{c}{2})n + \frac{c}{2}$$

1, 5, 12, 22

$$a = 1, b = 3, c = 1$$

$$an^2 + bn + c = n^2 + 3n + 1$$

$$n=1 \rightarrow 1+3+1=5$$

$$n=2 \rightarrow 4+6+1=11$$

$$n=3 \rightarrow 9+9+1=19$$

$$n=4 \rightarrow 16+12+1=29$$

$$n=5 \rightarrow 25+15+1=41$$

$$n=6 \rightarrow 36+18+1=55$$

$$n=7 \rightarrow 49+21+1=71$$

$$n=8 \rightarrow 64+24+1=89$$

$$n=9 \rightarrow 81+27+1=109$$

$$n=10 \rightarrow 100+30+1=131$$

$$n=11 \rightarrow 121+33+1=155$$

$$n=12 \rightarrow 144+36+1=181$$

$$n=13 \rightarrow 169+39+1=209$$

$$n=14 \rightarrow 196+42+1=239$$

$$n=15 \rightarrow 225+45+1=271$$

$$n=16 \rightarrow 256+48+1=305$$

$$n=17 \rightarrow 289+51+1=341$$

$$n=18 \rightarrow 324+54+1=379$$

$$n=19 \rightarrow 361+57+1=419$$

$$n=20 \rightarrow 400+60+1=461$$

$$n=21 \rightarrow 441+63+1=505$$

$$n=22 \rightarrow 484+66+1=551$$

$$n=23 \rightarrow 529+69+1=599$$

$$n=24 \rightarrow 576+72+1=649$$

$$n=25 \rightarrow 625+75+1=701$$

$$n=26 \rightarrow 676+78+1=755$$

$$n=27 \rightarrow 729+81+1=811$$

$$n=28 \rightarrow 784+84+1=869$$

$$n=29 \rightarrow 841+87+1=929$$

$$n=30 \rightarrow 900+90+1=991$$

$$n=31 \rightarrow 961+93+1=1055$$

$$n=32 \rightarrow 1024+96+1=1121$$

$$n=33 \rightarrow 1089+99+1=1189$$

$$n=34 \rightarrow 1156+102+1=1259$$

$$n=35 \rightarrow 1225+105+1=1331$$

$$n=36 \rightarrow 1296+108+1=1405$$

$$n=37 \rightarrow 1369+111+1=1481$$

$$n=38 \rightarrow 1444+114+1=1559$$

$$n=39 \rightarrow 1521+117+1=1639$$

$$n=40 \rightarrow 1600+120+1=1721$$

$$n=41 \rightarrow 1681+123+1=1805$$

$$n=42 \rightarrow 1764+126+1=1891$$

$$n=43 \rightarrow 1849+129+1=1979$$

$$n=44 \rightarrow 1936+132+1=2069$$

$$n=45 \rightarrow 2025+135+1=2161$$

$$n=46 \rightarrow 2116+138+1=2255$$

$$n=47 \rightarrow 2209+141+1=2351$$

$$n=48 \rightarrow 2304+144+1=2449$$

$$n=49 \rightarrow 2401+147+1=2550$$

$$n=50 \rightarrow 2500+150+1=2651$$

$$n=51 \rightarrow 2601+153+1=2755$$

$$n=52 \rightarrow 2704+156+1=2861$$

$$n=53 \rightarrow 2809+159+1=2969$$

$$n=54 \rightarrow 2916+162+1=3079$$

$$n=55 \rightarrow 3025+165+1=3191$$

$$n=56 \rightarrow 3136+168+1=3305$$

$$n=57 \rightarrow 3249+171+1=3421$$

$$n=58 \rightarrow 3364+174+1=3539$$

$$n=59 \rightarrow 3481+177+1=3659$$

$$n=60 \rightarrow 3600+180+1=3781$$

$$n=61 \rightarrow 3721+183+1=3905$$

$$n=62 \rightarrow 3844+186+1=4031$$

$$n=63 \rightarrow 3969+189+1=4159$$

$$n=64 \rightarrow 4096+192+1=4289$$

$$n=65 \rightarrow 4225+195+1=4421$$

$$n=66 \rightarrow 4356+198+1=4555$$

$$n=67 \rightarrow 4489+201+1=4691$$

$$n=68 \rightarrow 4624+204+1=4829$$

$$n=69 \rightarrow 4761+207+1=4969$$

$$n=70 \rightarrow 4900+210+1=5111$$

$$n=71 \rightarrow 5041+213+1=5255$$

$$n=72 \rightarrow 5184+216+1=5401$$

$$n=73 \rightarrow 5329+219+1=5549$$

$$n=74 \rightarrow 5476+222+1=5699$$

$$n=75 \rightarrow 5625+225+1=5851$$

$$n=76 \rightarrow 5776+228+1=6005$$

$$n=77 \rightarrow 5929+231+1=6161$$

$$n=78 \rightarrow 6084+234+1=6319$$

$$n=79 \rightarrow 6241+237+1=6479$$

$$n=80 \rightarrow 6400+240+1=6641$$

$$n=81 \rightarrow 6561+243+1=6805$$

$$n=82 \rightarrow 6724+246+1=6971$$

$$n=83 \rightarrow 6889+249+1=7139$$

$$n=84 \rightarrow 7056+252+1=7309$$

$$n=85 \rightarrow 7225+255+1=7481$$

$$n=86 \rightarrow 7396+258+1=7655$$

$$n=87 \rightarrow 7569+261+1=7831$$

$$n=88 \rightarrow 7744+264+1=8009$$

$$n=89 \rightarrow 7921+267+1=8189$$

$$n=90 \rightarrow 8100+270+1=8371$$

$$n=91 \rightarrow 8281+273+1=8555$$

$$n=92 \rightarrow 8464+276+1=8741$$

$$n=93 \rightarrow 8649+279+1=8929$$

$$n=94 \rightarrow 8836+282+1=9119$$

$$n=95 \rightarrow 9025+285+1=9311$$

$$n=96 \rightarrow 9216+288+1=9505$$

$$n=97 \rightarrow 9409+291+1=9701$$

$$n=98 \rightarrow 9604+294+1=9900$$

$$n=99 \rightarrow 9801+297+1=10100$$

$$n=100 \rightarrow 10000+300+1=10301$$

1, 3, 6, 10, 15, 21, 28, 36, 45, 55, 66, 78, 91, 105, 120, 136, 153, 171, 190, 210, 231, 253, 276, 300, 325, 351, 378, 406, 435, 465, 496, 528, 561, 595, 630, 666, 703, 741, 780, 820, 861, 903, 946, 990, 1035, 1081, 1128, 1176, 1225, 1275, 1326, 1378, 1431, 1485, 1540, 1596, 1653, 1711, 1770, 1830, 1891, 1953, 2016, 2080, 2145, 2211, 2278, 2346, 2415, 2485, 2556, 2628, 2701, 2775, 2850, 2926, 3003, 3081, 3160, 3240, 3321, 3403, 3486, 3570, 3655, 3741, 3828, 3916, 4005, 4095, 4186, 4278, 4371, 4465, 4560, 4656, 4753, 4851, 4950, 5050, 5151, 5253, 5356, 5460, 5565, 5671, 5778, 5886, 5995, 6105, 6216, 6328, 6441, 6555, 6670, 6786, 6903, 7021, 7140, 7260, 7381, 7503, 7626, 7750, 7875, 8001, 8128, 8256, 8385, 8515, 8646, 8778, 8911, 9045, 9180, 9316, 9453, 9591, 9730, 9870, 10011, 10153, 10296, 10440, 10585, 10731, 10878, 11026, 11175, 11325, 11476, 11628, 11781, 11935, 12090, 12246, 12403, 12561, 12720, 12880, 13041, 13203, 13366, 13530, 13695, 13861, 14028, 14196, 14365, 14535, 14706, 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734609, 735833, 737058, 738284, 739511, 740739, 741968, 7431

$\begin{matrix} 10 \\ \times 2 \\ \hline 20 \end{matrix}$

$\frac{2}{2} \rightarrow \frac{4}{4} \rightarrow \frac{10}{9} \rightarrow \frac{18}{11} \rightarrow \frac{14}{10} \rightarrow \frac{24}{14}$

$\frac{24}{14}$

$20 < 2 \times 10 \rightarrow 10 \times 10 = 20 \times 10 \rightarrow 14 \times 10 = 20 \times 10 < 24 \times 10$

$t_n = 4, 9, 9, 4, 0$
 $+3 \quad 0 \quad -3 \quad -4$
 $-3 \quad -3 \quad -3 \rightarrow A = -3$

(9)

$t_n = \frac{-3}{1} n^2 + Bn, t_n = \frac{-3}{1} n^2 + v/n$
 $t_1 = \frac{-3}{1} \times 1 + B \times 1 = 4 \rightarrow B = 7$
 $t_n = -\frac{3}{1} n^2 + 7n$
 $= -\frac{3}{1} n^2 + 7n$

$\frac{1-3}{1} = d$

$\frac{44}{10}$

$a_n = 24, 21, 14, \dots, a_n = 2n + 1$

$t_n = -9, -5, 0, 4$
 $+0 \quad +3 \quad +4 \quad +7$
 $+3 \quad +4 \rightarrow a = 1$

$t_1 = 1 + b - 9 = -4 \rightarrow b = -1$

$2n + 1 = n^2 - n - 4$

$14 = n^2 - 4n \rightarrow n^2 - 4n - 14 = 0 = (n-9)(n+3) \rightarrow n = 9$

$a_9 = t_9 = 2 \times 9 + 1 = 19$