This “Pairs & Squares” colored rendering of the Periodic Table seems most intuitive in view of quadratic number of orbitals at each atomic energy level.

3 Li 6.94 Lithium 4 Be 9.012 Beryllium	1 H 1.008 Hydrogen 2 He 4.003 Helium
staple here	

5 B 10.81 Boron 6 C 12.011 Carbon	7 N 14.007 Nitrogen 8 O 15.999 Oxygen	13 Al 26.982 Aluminium 14 Si 28.085 Silicon	15 P 30.974 Phosphorus 16 S 32.06 Sulfur
11 Na 22.990 Sodium 12 Mg 24.31 Magnesium	9 F 18.998 Fluorine 10 Ne 20.180 Neon	19 K 39.098 Potassium 20 Ca 40.078 Calcium	17 Cl 35.45 Chlorine 18 Ar 39.948 Argon
staple here		staple here	

21 Sc 44.956 Scandium 22 Ti 47.867 Titanium	23 V 50.942 Vanadium 24 Cr 51.996 Chromium	25 Mn 54.94 Manganese 26 Fe 55.845 Iron
31 Ga 69.723 Gallium 32 Ge 72.630 Germanium	33 As 74.922 Arsenic 34 Se 78.971 Selenium	27 Co 58.933 Cobalt 28 Ni 58.693 Nickel
37 Rb.468 Rubidium 38 Sr 87.62 Strontium	35 Br 79.904 Bromine 36 Kr 83.798 Krypton	29 Cu 63.546 Copper 30 Zn 65.38 Zinc
staple here		

39 Y 88.906 Yttrium 40 Zr 91.224 Zirconium	41 Nb 92.906 Niobium 42 Mo 95.95 Molybdenum	43 Tc 96.91 Technetium 44 Ru 101.07 Ruthenium
49 In 114.82 Indium 50 Sn 118.71 Tin	51 Sb 121.76 Antimony 52 Te 127.60 Tellurium	45 Rh 102.91 Rhodium 46 Pd 106.42 Palladium
55 Cs 132.91 Caesium 56 Ba 137.33 Barium	53 I 126.90 Iodine 54 Xe 131.29 Xenon	47 Ag 107.87 Silver 48 Cd 112.41 Cadmium
staple here		

57 La 138.91 Lanthanum 58 Ce 140.12 Cerium	59 Pr 140.91 Praseodymium 60 Nd 144.24 Neodymium	61 Pm 144.9 Promethium 62 Sm 150.4 Samarium	63 Eu 151.96 Europium 64 Gd 157.2 Gadolinium
71 Lu 174.97 Lutetium 72 Hf 178.49 Hafnium	73 Ta 180.95 Tantalum 74 W 183.84 Tungsten	75 Re 186.21 Rhenium 76 Os 190.23 Osmium	65 Tb 158.93 Terbium 66 Dy 162.50 Dysprosium
81 Tl 204.38 Thallium 82 Pb 207.2 Lead	83 Bi 208.98 Bismuth 84 Po 208.98 Polonium	77 Ir 192.22 Iridium 78 Pt 195.08 Platinum	67 Ho 164.9 Holmium 68 Er 167.26 Erbium
87 Fr 223.02 Francium 88 Ra 226.03 Radium	85 At 209.99 Astatine 86 Rn 222.02 Radon	79 Au 196.97 Gold 80 Hg 200.59 Mercury	69 Tm 168.9 Thulium 70 Yb 173.05 Ytterbium
staple here			

89 Ac 227 Actinium 90 Th 232 Thorium	91 Pa 231 Protactinium 92 U 238 Uranium	93 Np 237 Neptunium 94 Pu 244 Plutonium	95 Am 243 Americium 96 Cm 247 Curium
103 Lr 262 Lawrencium 104 Rf 267 Rutherfordium	105 Db 270 Dubnium 106 Sg 269 Seaborgium	107 Bh 270 Bohrium 108 Hs 269 Hassium	97 Bk 247 Berkelium 98 Cf 251 Californium
113 Nh 286 Nihonium 114 Fl 289 Flerovium	115 Mc 289 Moscovium 116 Lv 293 Livermorium	109 Mt 278 Meitnerium 110 Ds 281 Darmstadtium	99 Es 252 Einsteinium 100 Fm 257 Fermium
119 Uue ? Ununennium 120 Ubn ? Unbinilium	117 Ts 293 Tennessine 118 Og 294 Oganesson	111 Rg 281 Roentgenium 112 Cn 285 Copernicium	101 Md 258 Mendelevium 102 No 259 Nobelium
staple here			

Periodic Table.

“Pairs and Squares” Periodic Table

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Abstract

I present a new “Pairs and Squares” rendering of the Periodic Table.
It takes advantage of the number of orbitals at each atomic energy level being a whole square.
This makes the table very regular and intuitive in contrast with its currently used presentations.

In a century and a half since [1], a huge number of forms of the Periodic Table have been designed (see, e.g., [2]). However, they all share a problem: Their irregularity overwhelms their periodicity. This is especially bothersome at one’s early exposures to this icon of science.

Yet, there is one great numeric pattern that none of these renditions of the table seem to exploit for a full effect. The number of orbitals in each electron shell is a whole square. And so is the number of orbitals at each energy level (that by Madelung rule is roughly the sum of the first two quantum numbers). And those squares are each the sum of the first several odd integers, representing the numbers of orbitals on the respective sub-shells. (These sub-shells at each energy level reflect the traditional grouping of elements indicated by colors in most representations of the Periodic Table.)

This pattern allows a completely regular rendering of the table with a very intuitive look.
Each period fills a square, with each cell of the square holding a pair of consecutive elements.
Squares are composed of colored ⅂-shaped stripes representing elements of each type.
If squares are stapled together, similar elements fall at the same place in the respective layers.
If all periods are placed on one page, the pattern of similar elements is quite apparent, too.

Of course one may question the need to add one more form of the Periodic Table to the huge number of those already designed. But I think one look at this Table (see the next page, in color) may convince that the extra comfort given by its perfect[1] regularity comes as some justification.

References

[1] D. I. Mendeleev. 1871. The natural system of elements and its application to the indication of the properties of undiscovered elements. *J. Russian Chemical Soc.* **3**:25–56. (in Russian.)

[2] Mark R. Leach. 1999-. *The Internet Database of Periodic Tables.* `https://www.meta-synthesis.com/webbook/35_pt/pt_database.php`

[3] N. N. Semenov. 1969. *100 лет периодического закона химических элементов. 1869-1969. = 100 years of the periodic law of chemical elements. 1869-1969.* Nauka, Moscow. (In Russian.)

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[1]Admittedly, a really perfect pattern would start with two pink 1-cell periods.
However the H/He period is special, suggesting a yellow color.
So, the small imperfection of merging the two into one 2-cell yellow/pink period seems more revealing.