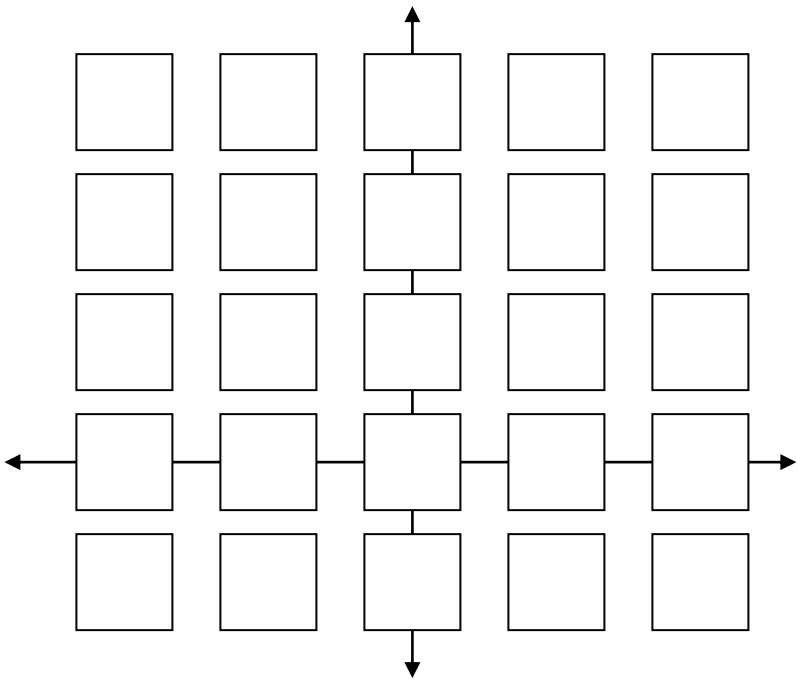
AP Calculus **Class, Take Your Seats** *by* David Pleacher, *Winter 1991 Virginia Mathematics Teacher*

Can you fill in the first initial of each student in this math teacher's seating chart using only the clues below?



CLUES:

1. All students are located at integral coordinates in the xy-plane. The x-coordinates belong to the set {-2, -1, 0, 1, 2}, and the y-coordinates belong to the set {-1, 0, 1, 2, 3}.
2. Wallis is seated on the line which is normal to the curve $f(x) = x^2 - 2x + 4$ at its minimum point.
3. Newton is seated at a point of inflection of $f(x) = 4x^2 + \frac{32}{x}$.
4. Euler sits at the point on the curve $2y = (x - 2)^2$ which is nearest to Boole.
5. MacLaurin is located at the relative maximum point of the function $f(x) = x^3 - 3x^2 - 9x - 4$.
6. Saccheri is seated at the absolute maximum point of the function $f(x) = -x^2 + 4x - 1$.
7. Riemann's seat is one of the critical points of the curve $f(x) = \frac{x^4}{4} - x^3 + x^2 - 1$.
8. The function $f(x) = x^2 + \frac{k}{x}$ has a point of inflection at $x = 1$. Zeno sits at this point.
9. Boole is seated at the absolute maximum point on the curve $(x - 2)^2 + y^2 = 1$.
10. Archimedes is located at one of the vertices of the rectangle with the largest area that can be drawn with its upper vertices on the line $y = 1$ and its lower vertices on the parabola $y = x^2 - 2$.
11. Thales sits at a point on the curve $f(x) = 2x^3 - 6x^2 + 43$ where the slope is 48.
12. Leibniz sits at a point on the curve $y = \cos(x)$ where the 99^{th} derivative of that curve is 0.
13. Kronecker sits on the line which is tangent to the curve $y = 4x^2 - 22x + 35$ at the point (3, 5).
14. Fermat is seated at the point of inflection of the curve $y = x^3 - 6x^2 + 33x - 51$.
15. Descartes is located at one of the critical points of the curve $y = -3x^4 + 6x^2$.
16. Cantor is located on the line tangent to the curve $y = -x^2 + 10x - 25$ at its maximum point.
17. Gauss sits at the absolute maximum point on the curve $4y = -2x^3 + 3x^2 + 7$ over the interval [-1, 2].
18. Viete's seat is collinear with those of Gauss and Kronecker.
19. Heron is located at the point of inflection of the curve $f(x) = x^3 - 3x^2 + 3x + 1$.
20. Pascal lies on the line tangent to the curve $12y = 16 - 6x^2 - x^3$ at its point of inflection.

CLUE Worksheet
For each problem, write down all possible answers from the given domain and range.

NAME	CLUE	Possible Ordered Pairs for the Seat				
	1	none				
Wallis	2					
Newton	3					
Euler	4					
MacLaurin	5					
Saccheri	6					
Riemann	7					
Zeno	8					
Boole	9					
Archimedes	10					
Thales	11					
Leibniz	12					
Kronecker	13					
Fermat	14					
Descartes	15					
Cantor	16					
Gauss	17					
Viete	18					
Heron	19					
Pascal	20					