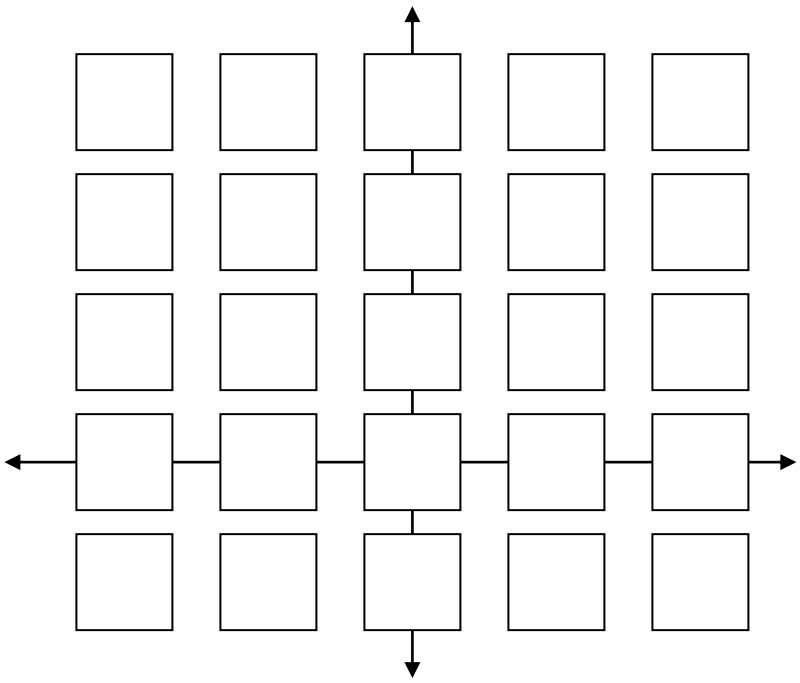
Algebra / Geometry **Class, Take Your Seats** *by David Pleacher and Alex Pintilie*

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. A line of slope m = 3 intersects the x-axis at point A and the y-axis at point B. The point O is the origin and the area of triangle AOB is 6 square units. Archimedes sits at point A.

3. A circle is tangent to the x-axis at (-2, 0) and tangent to the y-axis at (0, 2). Boole sits at the coordinates of the center of the circle.

4. A circle intersects the x-axis at (- 4, 0) and (4, 0) and intersects the y-axis at (0, -2) and (0, 8). Cauchy sits at the coordinates of the center of the circle.

5. A (4, 5) and B (0, 7) are two consecutive vertices of square ABCD. Dirichlet is seated at one of the other vertices of the square (C or D).

6. A (-1, -1) and S (1, 3) are opposite vertices of square RAMS. Euler sits at one of the other vertices (R or M).

7. A (-5, 2) and B (-3, 6) are two vertices of the isosceles triangle ABE with AE = BE. Fibonacci is seated at the coordinates of vertex E.

8. The points (-1, 0), (-1, 4), (3, 4), and (3, 0) form a square. A line whose x-intercept is (-3, 0) cuts the square into two regions of equal area. Galois sits at one of the points of intersection of the line and the square.

9. The isosceles triangle ABD has vertices A (-3, 0) and B (1, - 4), and AD = BD. Hilbert is seated at the coordinates of D that will create a triangle ABD of area 12 square units.

10. M (2, 6) is the midpoint of the segment AB with A on the line with equation y = 2x and B on the line with equation y = x + 3. Jacobi is located at the coordinates of either point A or point B.

11. A circle has its center P on the line y = x + 1, passes through the point (-1, 3), and is tangent to the x-axis. Kepler sits at the center of this circle.

12. Leibniz sits on the line that is perpendicular to $y = \frac{1}{2}x + 1$ and passes through the point (2, -3).

13. Maclaurin sits on the line that is parallel to x + y = 2011 and passes through the point (-3, 5).

14. Line QU has x-intercept at (7, 0). Line XY is perpendicular to QU and has y-intercept at (0, 1). The two lines intersect at a point on the line y = 3x. Napier sits at this point of intersection.

15. The square ABCD has vertex A with coordinates A (-3, -3). The diagonal BD is located on the line with equation x + 3y = -2. Pascal sits at the coordinates of one of the other vertices B, C, or D.

16. The points M (2, 4), N (0, 3), and P (3, 2) are the midpoints of the sides of the triangle ABC. Russell sits at the coordinates of one of the vertices of the triangle ABC.

17. Steno is seated on the graph of $x^2 + y^2 = 0$.

18. Thales is seated on the graph of $|y| = 2$.

19. Viete is seated on the graph of $|x| + |y| = 2$.

20. Wallis is seated on the graph of $|x + y| = 4$.

21. Zorn is seated on the graph of $y = |x - 1|$.

Many thanks to Alex Pintilie for giving me permission to use the problems from his outstanding book, *Is this going to be on the Math test?* published by The Centre for Education in Mathematics and Computing. This book should be in every math teacher's library!

CLUE Worksheet

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

CLUE	NAME	Possible Ordered Pairs
1		
2	Archimedes	
3	Boole	
4	Cauchy	
5	Dirichlet	
6	Euler	
7	Fibonacci	
8	Galois	
9	Hilbert	
10	Jacobi	
11	Kepler	
12	Leibniz	
13	Maclaurin	
14	Napier	
15	Pascal	
16	Russell	
17	Steno	
18	Thales	
19	Viete	
20	Wallis	
21	Zorn	