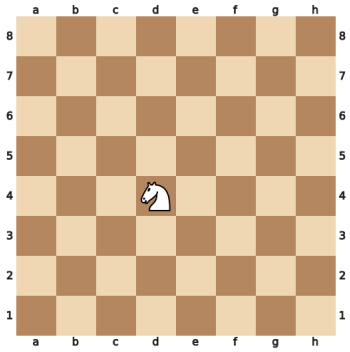
Sample lesson: Lab W1.1, The Board Is a Grid

The Eight Ranks Method™ · free download for teachers, parents and librarians · from the White Belt Student Book, chapter 1 · 30 minutes, in pairs

Chess idea: pieces are stronger in the center than on the edge. **STEM idea:** the board is a coordinate grid, and a claim can be tested by counting and graphing. **Materials:** a board and pieces, a pencil, two coloured pencils.



A knight on d4, in the center of the grid

1. Predict. Which square gives a knight the most moves: a1, b2, c3 or d4? Write a guess and one reason.

2. Measure. Put a knight on a1 and count every square it can move to. Repeat on b2, c3 and d4. Do the same with a bishop (count along each diagonal), then a queen (ranks, files and diagonals). Partners check each other's counts until they agree.

3. Record. Fill in the table. (For the adult: the verified counts are below; the learners count first.)

Square	Knight	Bishop	Queen
a1	2	7	21
b2	4	9	23
c3	8	11	25
d4	8	13	27

These counts are **completely solved**: every move from each square on an empty board was counted.

4. Show. Draw one bar for each square for the knight, and the bishop's bars in a second colour beside them; one box is one move.

5. Conclude. "The data shows that pieces have more moves when they are _____ because _____."

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6. Connect. a1 to h8 is a coordinate system: a letter for the column (the file) and a number for the row (the rank). The bar chart is a grade-2 graph; changing one thing (the square) and measuring one thing (the moves) is a controlled comparison.

7. Exit ticket (scored 0 to 3). A knight on h1 has fewer moves than a knight on e4. Using the table, explain to a younger student why the opening rule says “knights toward the center.” **The rubric line:** full marks need (a) the two numbers from the table, (b) the word “edge” or “corner”, and (c) a reason that mentions choices, threats or attacks.

Standards practiced: NY-2.MD.10 (draw a bar graph with single-unit scale for a data set with up to four categories); NYS P-12 Science Learning Standards, Science and Engineering Practice 3 (planning and carrying out investigations). Practicing a standard is not the same as mastering it.

The Eight Ranks Method is designed to produce evidence aligned to the six attributes of the New York State Portrait of a Graduate. The White Belt Student Book has five labs like this one, one per chapter; eightranksmethod.com.

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