Straight-Line Block Capitals on a Square Grid

Complete worked example / separate answer key

Construct a capital E on a four-cell-high grid using the four-segment convention. Describe each segment and give the total count.

Answer: Segment 1: vertical left stem from the baseline to the top row, four cells. Segment 2: top horizontal arm, two cells to the right. Segment 3: middle horizontal arm at the midline, two cells to the right. Segment 4: bottom horizontal arm at the baseline, two cells to the right. Total: four segments. Check: all endpoints are on grid corners, no curves, and the height is four cells.

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Original tasks 1, 2, 3 / complete keys

Task 1

Build a capital H on a four-cell-high grid using three segments. Describe the segments and count them.

Answer: Left vertical stem: four cells. Right vertical stem: four cells, two cells to the right. Horizontal crossbar at the midline: two cells connecting the stems. Total: three segments.

Reason: H needs two full-height stems and one crossbar. Placing the crossbar at the midline keeps it on a grid line and makes the count exact.

Check: Confirm each stem is four cells, the crossbar spans two cells at the midline between the stems, all endpoints are on corners, and the total is three segments.

Task 2

Build a capital F on a four-cell-high grid using three segments. Describe the segments and count them.

Answer: Vertical left stem: four cells. Top horizontal arm: two cells to the right. Middle horizontal arm at the midline: two cells to the right. Total: three segments.

Reason: F is like E without the bottom arm. Keeping the middle arm at the midline uses a grid line and avoids mid-cell endpoints.

Check: Check that there is no bottom arm, the middle arm is at the midline, all endpoints are on corners, and the total is three segments.

Task 3

Build a capital O as a square using four segments on a four-cell-high grid. Describe the segments and count them.

Answer: Top horizontal segment: four cells. Right vertical segment: four cells. Bottom horizontal segment: four cells. Left vertical segment: four cells. Total: four segments.

Reason: A square O uses four straight sides. A rectangular O is also valid if declared, but this task specifies a square.

Check: Confirm four equal sides of four cells each, all corners on grid corners, no curves, and a total of four segments.

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Original tasks 4 / complete keys

Task 4

Build a capital A with feet using five segments on a four-cell-high grid. Describe the segments and count them.

Answer: Choose apex (0, 4), baseline corners (-2, 0) and (2, 0), and feet ending at (-3, 0) and (3, 0). Draw two diagonals from the apex to the baseline corners, the crossbar from (-1, 2) to (1, 2), and one outward horizontal foot at each baseline corner. Total: five segments.

Reason: Halfway down each diagonal, y = 2 and x = -1 or 1. These integer-coordinate points are grid corners. The crossbar is two cells long. Two diagonals, one crossbar and two feet give five segments.

Check: Check the seven named vertices against the integer grid, confirm the crossbar endpoints lie halfway along the diagonals, and count five segments.

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Worked example, Task 1, Task 2, Task 3, Task 4 / Separate Answer Sheet: Segment Descriptions and Counts

Four-cell height; midline two cells above baseline. Hypothetical example, not a standard.

E (four segments): Segment 1 vertical left stem baseline to top, four cells. Segment 2 top horizontal arm two cells right. Segment 3 middle horizontal arm at midline two cells right. Segment 4 bottom horizontal arm at baseline two cells right. Total four segments. Check: all endpoints on grid corners, no curves, height four cells.

H (three segments): Left vertical stem four cells. Right vertical stem four cells, two cells to the right. Horizontal crossbar at midline two cells connecting stems. Total three segments. Reasoning: two full-height stems and one crossbar; midline keeps it on a grid line. Check: each stem four cells, crossbar spans two cells at midline, endpoints on corners, total three.

F (three segments): Vertical left stem four cells. Top horizontal arm two cells right. Middle horizontal arm at midline two cells right. Total three segments. Reasoning: F is E without bottom arm; midline avoids mid-cell endpoints. Check: no bottom arm, middle arm at midline, endpoints on corners, total three.

O as square (four segments): Top horizontal four cells. Right vertical four cells. Bottom horizontal four cells. Left vertical four cells. Total four segments. Reasoning: square O uses four straight sides; rectangular O also valid if declared. Check: four equal sides of four cells, corners on grid corners, no curves, total four.

A with feet (five segments): Apex (0,4), baseline corners (-2,0) and (2,0), feet ending at (-3,0) and (3,0). Two diagonals apex to baseline corners, crossbar (-1,2) to (1,2), one outward horizontal foot at each baseline corner. Total five segments. Reasoning: halfway down each diagonal $y=2$ and $x=-1$ or 1, integer grid corners; crossbar two cells. Check: seven named vertices on integer grid, crossbar endpoints halfway along diagonals, count five.

FAQ notes: Segment counts depend on declared style; A may use three or five, O may be square or rectangle. Diagonals must run corner to corner. X-height is baseline to midline; capitals use full four-cell height. Check by counting cells and confirming endpoints on grid corners or cell edges, then count segments against declared style. Valid alternatives (square/rectangular O, A with/without feet) accepted when declared and used consistently.

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Source rubric / reflection

- [ ] All segments are straight and lie on cell edges or corner-to-corner diagonals.
- [ ] Every endpoint is on a grid corner or a cell edge.
- [ ] The declared letter style is stated and the segment count matches that style.
- [ ] Capital height is consistent within the row, using the chosen grid height.
- [ ] Valid alternatives such as square or rectangular O, or A with or without feet, are accepted when declared and used consistently.

Reflection: What did you check, what did you change, and what will you try next?