Auditorium Drawing: Stage, Tiered Seating, and Sightlines

Original tasks 1, 2, 3 / complete keys

Task 1

A plan has 6 rows spaced 2 units apart. What is the seating depth from row 1 front edge to row 6 front edge?

Answer: 10 units.

Reason: Five gaps between six rows: 5 × 2 = 10 units.

Check: Count the gaps on the plan and multiply by the row spacing.

Task 2

With riser 0.4 units, what is the platform height of row 5 if row 1 is at 0 units?

Answer: 1.6 units.

Reason: Four risers above row 1: 4 × 0.4 = 1.6 units.

Check: Add 0.4 four times from row 1 to row 5.

Task 3

Row 4 platform is 1.2 units, eye height is 1.1 units, and row 3 top of head is 1.5 units. The stage lip is at 0.8 units. Row 4 is 2 row spacings from the stage lip and row 3 is 1 spacing from row 4, so row 3 lies halfway between row 4 and the stage lip. Does the row 4 sightline clear row 3's head?

Answer: No. The interpolated sightline height at row 3 is 1.55 units, which is above 1.5 units by only 0.05 units; this is a marginal clearance, so treat it as not reliably clear and raise the rear row or stage lip.

Reason: Eye height is 1.2 + 1.1 = 2.3 units. The sightline drops from 2.3 to 0.8, a drop of 1.5 units over 2 spacings, or 0.75 units per spacing. At row 3, halfway, the height is 2.3 − 0.75 = 1.55 units. Compare 1.55 with the top-of-head height 1.5: the line is only 0.05 units above the head, which is too close to count as clear.

Check: Draw the line from 2.3 to 0.8, mark the midpoint at row 3, and measure its height against 1.5; confirm the 0.05-unit margin by arithmetic.

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Original tasks 4 / complete keys

Task 4

A drawing uses 8 rows with 0.5-unit risers. What is the total height difference from row 1 to row 8?

Answer: 3.5 units.

Reason: Seven risers: 7 × 0.5 = 3.5 units.

Check: Subtract row 1 height from row 8 height on the elevation scale.

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Source rubric / reflection

- [ ] Stage is clearly placed and labeled.
- [ ] At least six seating rows are shown with visible tiering.
- [ ] Riser heights are consistent and recorded.
- [ ] Sightlines are drawn from eye points, not head tops.
- [ ] Labels follow the x-height convention and remain legible.
- [ ] Valid alternative layouts are accepted if sightline checks pass.

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