Isometric Building Drawing: Walls, Roof Planes, and Window Openings

Original tasks 1, 2 / complete keys

Task 1

Draw an isometric building with a base 3 units along L and 2 units along R, wall height 2 units, and no roof. Place one window on the front-left wall starting 0.5 units from O along L, 0.5 units above the base, width 1 unit along L, height 1 unit vertically.

Answer: Base corners O, A (3L), B (3L, 2R), C (2R). Front-left wall rises 2 units from O-A. The window is a 1-by-1 parallelogram on that wall, offset 0.5 units along L and 0.5 units vertically from the base.

Reason: The base uses the given L and R lengths. The wall height is vertical. The window edges follow the wall's L and vertical directions, and the offsets place it inside the wall.

Check: Confirm all base edges are parallel to L or R, the wall edges are vertical, and the window edges are parallel to the wall edges. Count the offsets in the same grid unit.

Task 2

Draw an isometric building with a base 5 units along L and 4 units along R, wall height 3 units, and a flat roof plane covering the whole footprint at height 3 units. Place a window on the front-right wall 1 unit from O along R, 1 unit above the base, width 1 unit along R, height 1 unit vertically.

Answer: Base corners O, A (5L), B (5L, 4R), C (4R). Walls rise 3 units. The flat roof is a parallelogram at height 3 matching the base footprint. The front-right window is a 1-by-1 parallelogram on the O-C wall with the stated offsets.

Reason: A flat roof is a single plane at wall-top height. The window is placed on the front-right wall using R and vertical directions.

Check: Check that the roof parallelogram has the same L and R lengths as the base and sits at height 3. Check the window offsets and parallelism.

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Original tasks 3, 4 / complete keys

Task 3

Draw an isometric building with a base 4 units along L and 4 units along R, wall height 2 units, and a ridge at 2 units along R and 3 units high parallel to L. Place two windows on the front-left wall: one at 0.5 units from O along L and 0.5 units above the base, and one at 2 units from O along L and 0.5 units above the base. Each window is 1 unit wide and 1 unit high.

Answer: Base corners O, A (4L), B (4L, 4R), C (4R). Walls rise 2 units. The ridge is at 2R and height 3, parallel to L, forming two roof planes. The two front-left windows are 1-by-1 parallelograms at the stated offsets along L and vertically.

Reason: The ridge position and height define the roof planes. Each window is placed on the same wall plane with offsets measured along L and vertically.

Check: Confirm the ridge is parallel to L and connects to wall tops. Confirm each window's edges are parallel to the wall edges and that the two windows do not overlap.

Task 4

Draw an isometric building with a base 6 units along L and 3 units along R, wall height 4 units, and a ridge at 1.5 units along R and 5 units high parallel to L. Place one window on the front-left wall at 1 unit from O along L and 2 units above the base, width 2 units along L, height 1 unit vertically. Place one window on the front-right wall at 1 unit from O along R and 2 units above the base, width 1 unit along R, height 1 unit vertically.

Answer: Base corners O, A (6L), B (6L, 3R), C (3R). Walls rise 4 units. The ridge is at 1.5R and height 5, parallel to L. The front-left window is a 2-by-1 parallelogram at the stated offsets; the front-right window is a 1-by-1 parallelogram at the stated offsets.

Reason: The larger base and wall height change the counts but not the axis rules. Each window uses its wall's base axis and the vertical axis.

Check: Check all lengths against the recorded grid unit, confirm the ridge height and position, and verify that each window's edges are parallel to its wall edges.

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Source rubric / reflection

- [ ] Axes: vertical, L, and R axes are present and clearly labeled.
- [ ] Parallelism: all non-vertical edges are parallel to L or R; all vertical edges are parallel to the vertical axis.
- [ ] Walls: front-left and front-right wall planes are closed parallelograms of the stated height.
- [ ] Roof: two roof planes connect the ridge to wall tops and form closed parallelograms.
- [ ] Windows: each visible window is a parallelogram on its wall plane with edges parallel to the wall edges.
- [ ] Visibility: visible edges are darkened and hidden edges are light or omitted.
- [ ] Convention note: valid alternative roof or window styles are accepted if they follow the same axis and parallelism rules.

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