Engineering Lecture-Note Sheet: Grid Zone with Ruled Margin Column

Original tasks 1, 2 / complete keys

Task 1

A sheet is 297 mm wide. The margin column is 50 mm. The grid cell is 10 mm. Calculate the grid zone width and the number of cells across. State whether the layout fits.

Answer: Grid zone width = 297 mm - 50 mm = 247 mm. Number of cells across = 247 mm / 10 mm = 24.7, so 24 full cells fit with 7 mm remaining. The layout fits because 50 mm + 247 mm = 297 mm.

Reason: Subtract the margin width from the paper width to get the grid zone width. Divide by the cell size to count full cells. The remainder shows that a partial cell remains at the edge.

Check: Add the margin width and grid zone width: 50 mm + 247 mm = 297 mm, matching the paper width. Multiply 24 cells by 10 mm and add the 7 mm remainder to confirm 247 mm.

Task 2

A diagram in the grid zone uses reference numbers 1, 2, and 3. The margin column contains notes numbered 1, 3, and 4. Identify the mismatch and state the correction.

Answer: Reference number 2 is missing from the margin column, and margin note 4 has no matching grid reference. Correct by adding a margin note numbered 2 and either adding a grid reference numbered 4 or removing margin note 4.

Reason: Each grid reference should have a matching margin note, and each margin note should point to a grid feature. Comparing the two lists reveals the missing and extra numbers.

Check: List the grid numbers and margin numbers side by side. Confirm that both lists contain the same set after correction.

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Original tasks 3, 4 / complete keys

Task 3

A handwritten label has letters with x-height measured from baseline to midline. One letter reaches 6 mm above baseline, another reaches 4 mm, and a third reaches 5 mm. The planned x-height is 5 mm. State whether the label meets the convention and explain.

Answer: The label does not meet the convention because the x-heights vary from 4 mm to 6 mm around a planned 5 mm. The letters should be adjusted so that each x-height is consistently 5 mm from baseline to midline.

Reason: The convention requires x-height to be measured from baseline to midline. Consistency is judged against the planned value, so variation above and below 5 mm fails the check.

Check: Measure each letter from baseline to midline with a ruler. Confirm that all measured values equal the planned x-height of 5 mm.

Task 4

A sheet is 210 mm wide and 297 mm high. The header is 30 mm high. The margin column is 40 mm wide. The grid cell is 5 mm. Calculate the grid zone width, the number of cells across, and the grid zone height. State whether the layout fits.

Answer: Grid zone width = 210 mm - 40 mm = 170 mm. Cells across = 170 mm / 5 mm = 34 cells. Grid zone height = 297 mm - 30 mm = 267 mm. The layout fits because 40 mm + 170 mm = 210 mm and 30 mm + 267 mm = 297 mm.

Reason: Subtract the margin width from the paper width for the grid zone width. Subtract the header height from the paper height for the grid zone height. Divide the grid zone width by the cell size to count cells across.

Check: Add the margin width and grid zone width to confirm the paper width. Add the header height and grid zone height to confirm the paper height. Multiply 34 cells by 5 mm to confirm 170 mm.

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Source rubric / reflection

- [ ] The sheet has a clear header with course, date, and topic fields.
- [ ] The grid zone contains square cells, verified by measuring both sides of a sample cell.
- [ ] The margin column is straight and narrow enough to keep diagrams dominant.
- [ ] Reference numbers in the grid match reference numbers in the margin column.
- [ ] Handwriting meets the x-height convention from baseline to midline, with even word spacing.
- [ ] Valid alternative letter styles are accepted if the x-height and spacing checks pass.
- [ ] All numerical values are labelled as hypothetical examples or replaced by measured values.

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