Scale Drawing a Bass Guitar Headstock with Tuner Layout

Original tasks 1, 2 / complete keys

Task 1

A hypothetical headstock has overall length 200 mm and maximum width 80 mm. Draw at 1:2 scale. State the drawn length and width, and compute the drawn length-to-width ratio.

Answer: Drawn length 100 mm, drawn width 40 mm, ratio 100:40 or 2.5:1.

Reason: Divide each real measurement by the scale factor 2. The ratio is computed from drawn values and should equal the real ratio 200:80, which is also 2.5:1.

Check: Recompute 200 divided by 2 equals 100 and 80 divided by 2 equals 40. Confirm 100 divided by 40 equals 2.5 and 200 divided by 80 equals 2.5.

Task 2

Four tuner holes have baseline distances 25, 50, 75, and 100 mm at 1:1 scale. What is the center-to-center spacing between adjacent holes, and what is the total baseline span from T1 to T4?

Answer: The vertical baseline differences are 25 mm between adjacent centers, and the vertical T1-to-T4 span is 75 mm. True Euclidean center-to-center spacing is not determined by baseline distances alone because horizontal offsets are missing. If all four horizontal offsets match, the adjacent center distance is also 25 mm and the T1-to-T4 distance is 75 mm; state that extra condition.

Reason: The y coordinates are 25, 50, 75 and 100 mm, so consecutive y differences are 25 and the total y difference is 75. A pair distance is sqrt((delta x)^2 + 25^2), which cannot be evaluated without delta x unless it is explicitly zero.

Check: Check the three vertical differences sum to 75 mm. Measure or record the horizontal offsets before asserting full center distances; only equal offsets make vertical separation equal to Euclidean distance.

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Original tasks 3, 4 / complete keys

Task 3

At 1:2 scale, a tuner hole has a real baseline distance of 70 mm and a real midline offset of 18 mm to the left. State the drawn baseline distance and drawn midline offset, and describe where the hole center is marked relative to the baseline and midline.

Answer: Drawn baseline distance 35 mm; drawn midline offset 9 mm to the left. Mark the center 35 mm above the baseline and 9 mm left of the midline.

Reason: Divide both real values by 2. The direction left is preserved because the offset is measured from the midline.

Check: Multiply drawn values by 2: 35 times 2 equals 70 mm and 9 times 2 equals 18 mm, matching the real values.

Task 4

A hypothetical headstock has maximum width 96 mm and baseline-to-midline distance 48 mm. Two tuner holes are at midline offsets 24 mm left and 24 mm right at the same baseline distance. At 1:1 scale, what is the horizontal distance between the two hole centers, and does it equal the maximum width? Explain.

Answer: Horizontal distance between centers is 48 mm. It does not equal the maximum width of 96 mm; it equals half the maximum width because each hole is 24 mm from the midline and 24 plus 24 equals 48 mm.

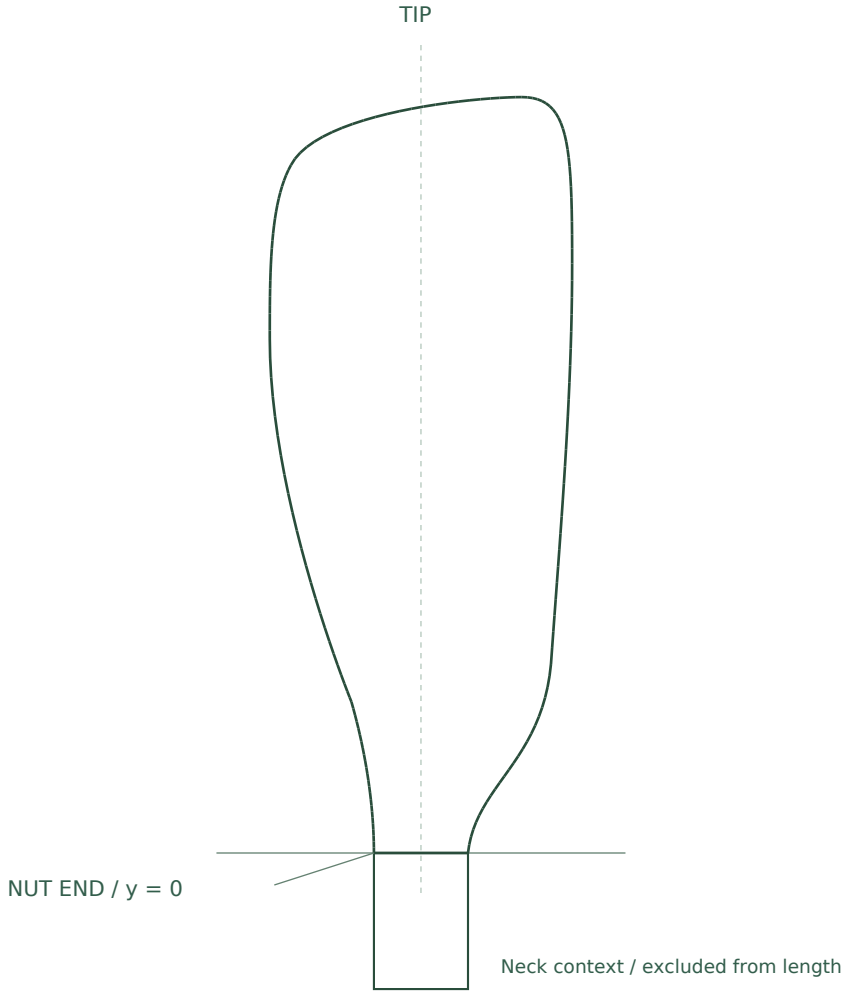
Reason: Add the absolute offsets: 24 plus 24 equals 48 mm. The maximum width is the full outline width, while the hole centers are inset from the edges.

Check: Subtract signed offsets: 24 - (-24) = 48 mm. Compare that horizontal distance with the stated maximum width 96 mm. Do not infer a 24 mm clearance to each outline edge unless the local outline width at that exact height is also 96 mm and the centerline bisects it. The legacy 48 mm baseline-to-midline label is not needed to compute the center separation.

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Task 1 / answers

Hypothetical bass coordinates / converted DRAWN mm print 1:1 / no hardware standard



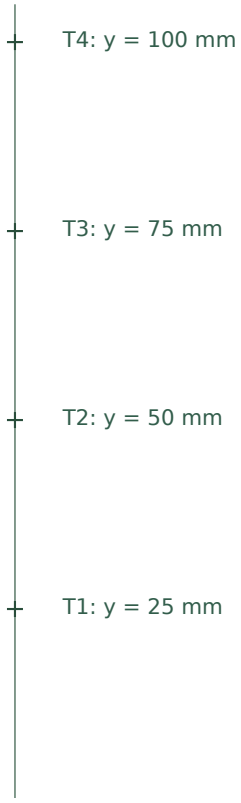
200 / 2 = 100 mm; 80 / 2 = 40 mm. Ratio 100 / 40 = 2.5:1. This is one explicitly chosen smooth asymmetric outline matching only the supplied overall dimensions, not a manufacturing template. Neck context is excluded from headstock length.

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Task 2 / answers

Hypothetical bass coordinates / converted DRAWN mm print 1:1 / no hardware standard

Y-PROJECTION ONLY / horizontal hole coordinates are unknown

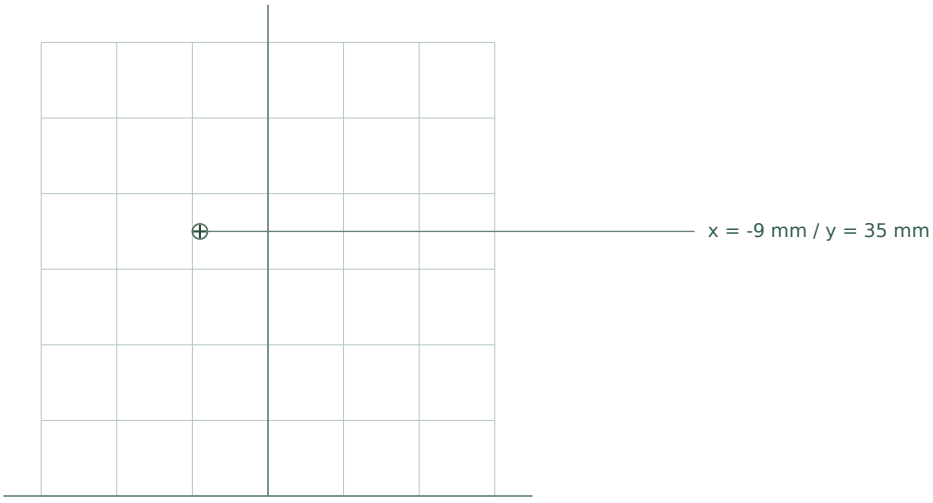


Only y differences are known: 25, 25, 25 mm; total 75 mm. Full adjacent distance is sqrt((delta x)^2 + 25^2). It equals 25 mm only if the horizontal offsets match. The aligned projection marks do NOT assert those missing x coordinates.

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Task 3 / answers

Hypothetical bass coordinates / converted DRAWN mm print 1:1 / no hardware standard

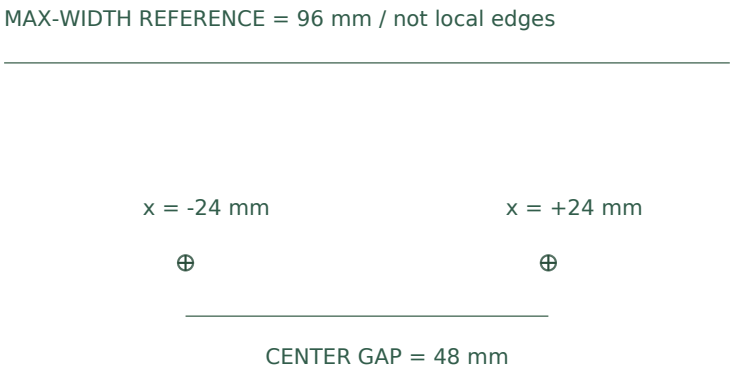


At 1:2, 70 / 2 = 35 mm above the baseline and 18 / 2 = 9 mm LEFT of the vertical midline. Grid spacing is 10 drawn mm. No unknown outline or hole diameter is invented; circle is a chosen center symbol.

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Task 4 / answers

Hypothetical bass coordinates / converted DRAWN mm print 1:1 / no hardware standard



24 - (-24) = 48 mm; 48 is half the stated maximum width 96. A maximum width does not determine the outline at these hole centers. Their common y value is not supplied or needed for this horizontal-distance check.

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Source rubric / reflection

- [ ] Scale ratio and unit are stated on the sheet and applied consistently.
- [ ] Horizontal baseline and vertical width-center midline are defined; any legacy side-datum interpretation is explicit and is not called letter x-height.
- [ ] Outline length and width match converted reference values within the stated rounding rule.
- [ ] Each tuner hole center is located by both baseline distance and midline offset and labeled T1 to T4.
- [ ] Conversion table and at least one arithmetic spacing check are shown.
- [ ] Drawing is readable, annotations do not obscure the outline, and valid alternative conventions are acceptable if clearly recorded.

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