Draw a Food Truck: Box Body, Service Window, and Awning

Original tasks 1 / complete keys

Task 1

Draw a food truck with a 12-unit body length, 6-unit height, wheel centers at 3 and 9 units with 1.5-unit radius arches, a service window 4 units wide and 2 units high centered between the arches with a 2-unit bottom margin, and a trapezoid awning 6 units wide at the bottom, 5 units at the top, and 1.5 units high, placed 0.5 units above the window. Check all sums.

Answer: Body 12 by 6. Arches at 3 and 9, radius 1.5, distance 6, no overlap. Window: left margin 4, width 4, right margin 4, sum 12. Vertical: bottom margin 2 + window 2 + gap 0.5 + awning 1.5 = 6, matching body height. Awning overhang 1 unit on each side.

Reason: The window is centered because 4+4+4=12. The vertical stack sums to the body height, so the awning fits exactly at the top.

Check: Add the horizontal margins and window width; add the vertical margins, window height, gap, and awning height; confirm both equal the body dimensions.

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Original tasks 2 / complete keys

Task 2

Draw a food truck with a 10-unit body length and 5-unit body height. Put the body bottom 1.5 units above the ground line. Place wheel bottoms on the ground line and centers 1.25 units above it, at x=2 and x=8; use arch cutouts of radius 1.25 centered on the body bottom at the same x-values. Add a service window 3 units wide and 1.5 units high, with its bottom 0.5 unit above the body bottom, and a scalloped awning 4 units wide and 1 unit high, 0.5 unit above the window. Center the window first, then try shifting it 1 unit toward the front. Check whether it overlaps the front arch and find the largest forward shift that clears the arch horizontally. Give the final margins and vertical stack.

Answer: Body: 10 by 5 units. Wheel centers are at x=2 and x=8, y=1.25 above ground; each wheel has radius 1.25 and touches the ground. The front arch spans x=0.75 to 3.25 and rises 1.25 units above the body bottom. A centered 3-unit window starts at x=3.5; its vertical range is 0.5 to 2 units above the body bottom, so it clears the arch horizontally. A 1-unit forward shift moves it to x=2.5–5.5, which overlaps the front arch both horizontally (2.5–3.25) and vertically (0.5–1.25). The largest forward shift that clears the arch puts the left edge at x=3.25, so margins are 3.25 and 3.75 units. Vertical stack: bottom margin 0.5 + window 1.5 + awning gap 0.5 + awning 1 = 3.5 units, leaving 1.5 units above the awning within the 5-unit body.

Reason: At the centered position, the window begins just to the right of the arch’s x-span. A 1-unit forward shift moves its left edge inside that span; because the window starts 0.5 unit above the body bottom and the arch rises to 1.25 units, their vertical ranges overlap too. Sliding it back until its left edge is 3.25 clears the arch; the left and right margins still sum with the 3-unit window to 10.

Check: Check the front arch x-range 0.75–3.25 and y-range 0–1.25 above the body bottom. Compare both ranges with the window at each position. For the final position, verify left margin 3.25 + width 3 + right margin 3.75 = 10 and vertical stack 0.5 + 1.5 + 0.5 + 1 + 1.5 = 5.

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Original tasks 3, 4 / complete keys

Task 3

Draw a food truck with a 14-unit body length, 7-unit height, wheel centers at 3.5 and 10.5 units with 1.75-unit radius arches, a service window 5 units wide and 2.5 units high centered between the arches with a 2-unit bottom margin, and a trapezoid awning 7 units wide at the bottom, 6 units at the top, and 2 units high, placed 0.5 units above the window. Check the vertical stack.

Answer: Body 14 by 7. Arches at 3.5 and 10.5, radius 1.75, distance 7, no overlap. Window: left margin 4.5, width 5, right margin 4.5, sum 14. Vertical: bottom margin 2 + window 2.5 + gap 0.5 + awning 2 = 7, matching body height. Awning overhang 1 unit on each side.

Reason: The horizontal margins are equal, so the window is centered. The vertical stack sums exactly to 7, so the awning reaches the top edge.

Check: Add 4.5+5+4.5 and 2+2.5+0.5+2; both should equal the body dimensions.

Task 4

Draw a food truck with an 8-unit body length, 4-unit height, wheel centers at 2 and 6 units with 1-unit radius arches, a service window 2 units wide and 1 unit high centered between the arches with a 1-unit bottom margin, and a scalloped awning 3 units wide and 0.75 units high placed 0.5 units above the window. Check whether the awning fits within the body height.

Answer: Body 8 by 4. Arches at 2 and 6, radius 1, distance 4, no overlap. Window: left margin 3, width 2, right margin 3, sum 8. Vertical: bottom margin 1 + window 1 + gap 0.5 + awning 0.75 = 3.25, leaving 0.75 unit above the awning to reach the 4-unit body height. The awning fits.

Reason: The vertical stack is less than the body height, so there is spare space above the awning, which is acceptable.

Check: Add the vertical components and compare with the body height; the sum should be less than or equal to the body height.

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Source rubric / reflection

- [ ] Body is a clear rectangle with a consistent length-to-height ratio.
- [ ] Two wheel arches are placed along the bottom edge without overlapping.
- [ ] Service window is a rectangle centered between the wheel arches with margins that sum to the body length.
- [ ] Awning is a trapezoid or scalloped shape above the window with a visible gap and overhang on each side.
- [ ] Arithmetic checks for body length, body height, and awning overhang are correct.
- [ ] Lines are clean and the main shapes are distinguishable.

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