Orthographic Car Drawing: Front, Side, and Top Views

Original tasks 1, 2, 3 / complete keys

Task 1

A side view shows the front wheel center at 1.0 unit and the rear wheel center at 3.4 units from the front bumper. The stated wheelbase is 2.4 units. Is the drawing consistent? Explain.

Answer: Yes, it is consistent because 3.4 - 1.0 = 2.4 units, which matches the stated wheelbase.

Reason: The wheelbase is the distance between wheel centers. Subtract the front wheel center position from the rear wheel center position to check.

Check: Recompute 3.4 - 1.0 and compare to 2.4; also verify that both positions are measured from the same reference, the front bumper.

Task 2

In a front view, the body width is drawn as 2.0 units. In the top view, the maximum body width is drawn as 1.8 units. What is the most likely error, and how would you fix it?

Answer: The widths disagree by 0.2 units. The most likely error is that one view was drawn without transferring the maximum width from the other. Fix by measuring the top view maximum width and redrawing the front view body outline to match exactly.

Reason: Orthographic views must agree on dimensions visible in both. Width appears in both front and top views, so the maximum width must be identical.

Check: Use a ruler or paper strip to measure the maximum width in the top view, then compare it directly to the front view width.

Task 3

A car has height 1.1 units and wheel diameter 0.6 units. In the side view, the roofline peak is at 1.1 units from the ground. In the front view, the roofline peak is drawn at 1.3 units from the ground. What check fails, and what should the front view roofline height be?

Answer: The roofline height check fails because 1.3 does not equal 1.1. The front view roofline peak should be at 1.1 units from the ground to match the side view.

Reason: Height is visible in both front and side views, so the roofline peak height must be the same in both.

Check: Draw a horizontal guide line at 1.1 units across both frames and confirm both rooflines touch it at their peaks.

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Original tasks 4 / complete keys

Task 4

In a top view, the body outline is 4.2 units long. The front wheel center is at 0.8 units and the rear wheel center is at 3.2 units from the front edge. The stated wheelbase is 2.6 units. Is the top view consistent with the stated wheelbase? If not, what is the actual wheelbase shown?

Answer: No, the top view is not consistent with the stated wheelbase. The actual wheelbase shown is 3.2 - 0.8 = 2.4 units, not 2.6 units.

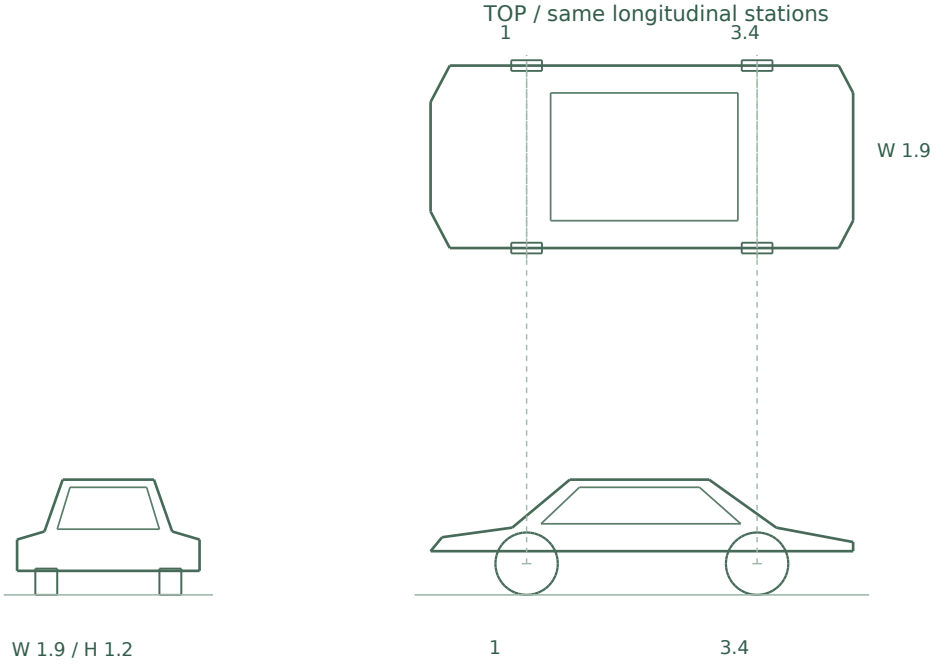
Reason: The wheelbase is the difference between rear and front wheel center positions. Compute 3.2 - 0.8 = 2.4 and compare to the stated 2.6.

Check: Recompute the subtraction and compare to the stated value; also check that both wheel centers are measured from the same front edge reference.

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Task 1 / answers

Generic car orthographic checks / 1 coordinate unit = 12.7 mm on this diagram

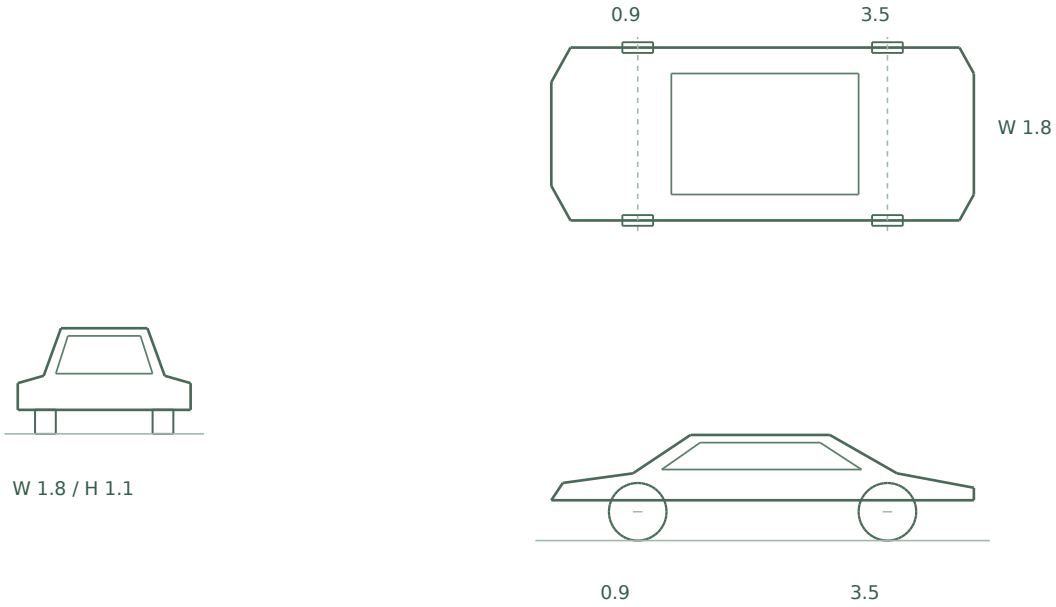


Wheelbase = 3.4 - 1 = 2.4 units. Rear wheel station transfers unchanged into the top view.

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Task 2 / answers

Generic car orthographic checks / 1 coordinate unit = 12.7 mm on this diagram

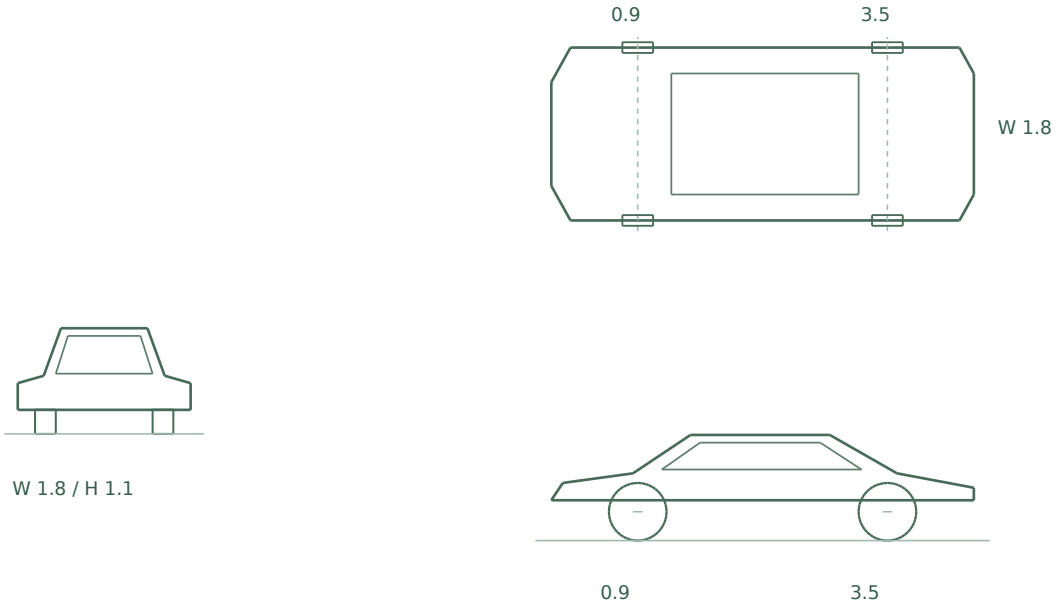


The corrected maximum front width is 1.8 units, matching the top width.

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Task 3 / answers

Generic car orthographic checks / 1 coordinate unit = 12.7 mm on this diagram

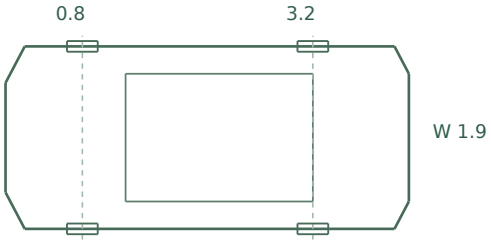


The corrected front roof height is 1.1 units above ground, matching the side. Wheel diameter remains 0.6 unit.

Orthographic Car Drawing: Front, Side, and Top Views

Task 4 / answers

Generic car orthographic checks / 1 coordinate unit = 12.7 mm on this diagram



Actual wheelbase = 3.2 - 0.8 = 2.4 units. It is not the stated 2.6 units. The diagnostic key retains the given stations rather than quietly moving a wheel.

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Source rubric / reflection

- [ ] Three labeled frames are present and clearly identified as front, side, and top views.
- [ ] A scale or unit statement is written on the sheet and used consistently.
- [ ] Wheel diameter is the same in front and side views within measurement error.
- [ ] Wheel centers align vertically between side and top views.
- [ ] Roofline height matches between front and side views.
- [ ] Maximum body width matches between front and top views.
- [ ] Body outline reads as a generic low sports car without brand-specific detail.
- [ ] Construction lines are light or erased; final outlines are clear.
- [ ] Valid alternative shapes are accepted if alignment and stated dimensions are consistent.

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