Car Symmetry Drawing: Complete the Mirror Half

Original tasks 1, 2 / complete keys

Task 1

On square paper, a vertical mirror line is drawn. A half-car on the left has its roof peak on the mirror line at 5 squares above the baseline. The left wheel center is 2 squares left of the line and 1 square above the baseline. State the position of the right wheel center.

Answer: 2 squares right of the mirror line and 1 square above the baseline.

Reason: Mirroring keeps the same height and equal distance from the line but on the opposite side. The left wheel is 2 left and 1 above, so the right wheel is 2 right and 1 above.

Check: Count from the mirror line: 2 squares right; count from the baseline: 1 square up. Confirm both wheels are at the same height.

Task 2

A half-car has a window top at 3 squares above the baseline and 1 square left of the mirror line. The roof peak is on the mirror line at 6 squares above the baseline. Describe where the right window top goes and whether the roof peak moves.

Answer: The right window top goes 1 square right of the mirror line and 3 squares above the baseline. The roof peak stays on the mirror line at 6 squares above the baseline.

Reason: Points on the mirror line map to themselves, so the roof peak does not move. The window top mirrors to the opposite side at the same height and equal distance.

Check: Verify the window top is 1 square from the line on the right and 3 squares above the baseline; confirm the roof peak is still on the line at 6 squares.

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Original tasks 3, 4 / complete keys

Task 3

A student draws the left wheel center 3 squares left of the mirror line and 1 square above the baseline, but draws the right wheel center 3 squares right of the line and 2 squares above the baseline. Is the drawing symmetric by the convention? Explain and give the correct position.

Answer: No. The right wheel is at the wrong height. The correct position is 3 squares right of the mirror line and 1 square above the baseline.

Reason: Mirroring requires equal height. The right wheel is 2 squares above the baseline instead of 1, so it does not match the left wheel.

Check: Compare heights from the baseline: both wheel centers must be 1 square above. Compare distances: both must be 3 squares from the line.

Task 4

On a blank panel with a vertical mirror line and baseline, you must draw a simple front-view car with a roof peak on the line at 7 squares above the baseline, two wheel centers at 1 square above the baseline and 4 squares from the line, and a windshield top at 4 squares above the baseline and 2 squares from the line. Describe the sequence of marks for both halves and one check you would perform.

Answer: Mark the roof peak on the line at 7 squares up. Mark the left wheel center 4 squares left and 1 square up; mark the right wheel center 4 squares right and 1 square up. Mark the left windshield top 2 squares left and 4 squares up; mark the right windshield top 2 squares right and 4 squares up. Connect the marks to form the body, roof, wheels, and windshield. Check that both wheel centers are 1 square above the baseline and 4 squares from the line.

Reason: Each feature is placed by its distance from the mirror line and its height above the baseline. Features on the line stay on the line. Connecting matching marks produces a symmetric front-view car.

Check: Measure each wheel center from the baseline and from the mirror line; both must read 1 square up and 4 squares out. Confirm the roof peak is a single point on the line.

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Source rubric / reflection

- [ ] Mirror line is vertical and clearly marked.
- [ ] Baseline is horizontal and wheels sit on it.
- [ ] Each major feature on one side has a matching feature on the other at the same height.
- [ ] Matching features are at equal distances from the mirror line.
- [ ] Roof peak lies on the mirror line at a single point.
- [ ] Internal features such as the windshield and headlights are mirrored, not just the outline.
- [ ] Construction lines are erased or faint in the final drawing.
- [ ] Valid alternative styles are accepted if position checks pass.

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