Draw a Simple Wave: Curl, Crest, and Foam Line

Original tasks 1, 2 / complete keys

Task 1

Draw a wave on a blank page. Mark the forward direction to the left. Build the curl, add the crest, and finish with the foam line. Then describe how your curl opens relative to the arrow.

Answer: The curl should open toward the left arrow, with about one and a quarter turns and a small center opening. The crest rises above the curl's center and joins smoothly. The foam line is broken and sits inside the crest.

Reason: The convention ties the curl's opening to the marked forward direction, so reversing the arrow reverses the curl's opening. The crest and foam line follow the same construction rules.

Check: Confirm the curl opens toward the left arrow, the crest is the highest point, and the foam line is broken and inside the crest.

Task 2

A student draws a wave with a closed circular curl, a crest lower than the curl's center, and a solid foam outline on the crest. Identify the three mistakes and state one fix for each.

Answer: Mistake 1: closed circular curl; fix: leave a small center opening. Mistake 2: crest lower than the curl's center; fix: raise the highest point above the curl's center. Mistake 3: solid foam outline on the crest; fix: break the line into short segments with even gaps and place it slightly inside the crest.

Reason: Each mistake violates one part of the convention: the curl must have an opening, the crest must be the highest point, and the foam line must be broken and inside the crest.

Check: Match each identified mistake to the corresponding convention rule and confirm the fix restores that rule.

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Original tasks 3, 4 / complete keys

Task 3

On a page, mark a forward direction to the right. Draw two waves side by side. In the first, use a hypothetical crest height of 30 mm above the baseline; in the second, use 20 mm. Keep the curl and foam line rules the same. Describe how the two crests differ and whether both are valid.

Answer: The first crest is higher than the second. Both are valid because the convention requires the crest to be the highest point, not a specific height. The curl and foam line rules are unchanged.

Reason: Crest height is a valid alternative as long as the crest remains the highest point and joins the curl smoothly. The hypothetical values are examples, not requirements.

Check: Confirm both crests are the highest points of their waves, both joins are smooth, and both foam lines are broken and inside the crest.

Task 4

Draw a wave with the forward direction to the right. Then draw a second version where only the foam line changes: use longer segments with wider gaps. Describe what stays the same and what changes, and state whether the second version is valid.

Answer: The curl and crest stay the same. The foam line changes to longer segments with wider gaps. The second version is valid if the foam line still follows the crest, curls over the lip, sits slightly inside the crest, and the gaps remain even.

Reason: Segment length and gap width are valid alternatives under the convention, provided the foam line remains broken, even, and inside the crest.

Check: Compare the two drawings: confirm the curl and crest are unchanged, and confirm the second foam line is broken, even, inside the crest, and follows the crest over the lip.

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Source rubric / reflection

- [ ] Curl opens toward the marked forward direction and has a small center opening.
- [ ] Crest is the highest point of the wave body and joins the curl smoothly.
- [ ] Foam line is broken into short segments with even gaps and sits slightly inside the crest.
- [ ] All three parts are clearly identifiable and the drawing follows the stated convention.
- [ ] Valid alternatives in curl opening, crest height, and segment length are accepted if the convention is followed.

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