Draw a Realistic Ocean Wave: Crest, Foam and Curl Construction

Original tasks 1, 2, 3 / complete keys

Task 1

A wave is drawn on a 20 cm wide area. The crest rises 8 cm. The lip base is 10 mm thick and the tip is 3 mm. What is the taper ratio from base to tip?

Answer: 10:3

Reason: Compare the two thickness values directly: 10 mm at the base and 3 mm at the tip gives a ratio of 10 to 3.

Check: Divide both values by 1 mm and confirm the ratio simplifies to 10:3.

Task 2

You place a foam band 12 mm wide at the lip base and a crest line 3 mm wide. The wave face is 60 mm tall. What percentage of the face height is covered by the two foam zones combined?

Answer: 25%

Reason: Add the two foam widths: 12 mm + 3 mm = 15 mm. Divide by the face height: 15 ÷ 60 = 0.25, which is 25%.

Check: Multiply 60 mm by 0.25 to get 15 mm, matching the combined foam width.

Task 3

A curl axis is 5 cm long. The outside lip edge is 1 cm shorter at the tip and 2 cm longer at the base. What is the total length of the outside lip edge if it follows the axis?

Answer: 6 cm

Reason: Start with the 5 cm axis. Add 2 cm at the base and subtract 1 cm at the tip: 5 + 2 − 1 = 6 cm.

Check: Reverse the calculation: 6 cm minus 2 cm plus 1 cm returns to 5 cm.

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Original tasks 4 / complete keys

Task 4

You draw three foam patches inside the hollow. Each patch is 4 mm long and 2 mm wide. The hollow area is 40 mm by 20 mm. What percentage of the hollow area do the three patches cover?

Answer: 3%

Reason: One patch area is 4 × 2 = 8 mm². Three patches are 24 mm². The hollow area is 40 × 20 = 800 mm². Divide 24 by 800 to get 0.03, or 3%.

Check: Multiply 800 mm² by 0.03 to get 24 mm², matching the three patches.

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Source rubric / reflection

- [ ] Crest line rises consistently and connects to the curl axis without a break.
- [ ] Lip has two distinct edges and tapers from base to tip.
- [ ] Foam lines follow local motion and do not cross the lip edge at sharp angles.
- [ ] Hollow is darker than the lip's outside edge.
- [ ] Edges are soft on curved transitions and sharp only where foam meets air.
- [ ] Valid stylistic alternatives are accepted if the crest, lip and foam relationships remain consistent.

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