Metal Ellipse Drawing: Reflection, Highlight, and Shading

Original tasks 1, 2 / complete keys

Task 1

A metal ellipse is drawn in a bounding box 8 cm wide and 5 cm high as a hypothetical example. Light comes from the left. Describe where the highlight, the darkest reflection band, and the cast shadow should be placed.

Answer: Highlight on the left side facing the light; darkest reflection band on the right side opposite the light; cast shadow to the right of the ellipse.

Reason: The highlight faces the light source, reflection bands darken away from the light, and the cast shadow falls opposite the light direction.

Check: Verify that the highlight is on the left, the darkest band on the right, and the cast shadow on the right. Check that the ellipse touches the midpoints of the 8 cm by 5 cm box.

Task 2

An ellipse has a highlight in the upper-left quadrant. A student draws the darkest reflection band in the upper-left quadrant as well. Explain the error and give a corrected placement.

Answer: The darkest band should not be next to the highlight. Place it in the lower-right quadrant, opposite the light direction.

Reason: Reflection bands darken as they move away from the light. The band nearest the highlight is lightest, and the band opposite is darkest.

Check: Confirm the darkest band is opposite the highlight quadrant and that the value order from highlight to darkest band is consistent.

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Original tasks 3, 4 / complete keys

Task 3

A metal ellipse rests on a table with light from above. The cast shadow is drawn directly underneath the ellipse and is very short. Describe how to improve the cast shadow using a hypothetical light angle of 45 degrees from the upper left.

Answer: Extend the cast shadow to the lower right, make it longer than the ellipse height, and darken it near the contact point.

Reason: A 45-degree light from the upper left casts a shadow to the lower right. The shadow should be elongated and darkest where the ellipse touches the table.

Check: Check that the shadow direction is lower right, that it is longer than the ellipse height, and that the darkest value is at the contact point.

Task 4

You are drawing a metal ellipse with three reflection bands. The band nearest the highlight is mid-value, the center band is lightest, and the far band is darkest. Identify the value-order mistake and state the correct order.

Answer: The lightest band should be nearest the highlight. Correct order: lightest near the highlight, mid-value in the center, darkest farthest from the highlight.

Reason: Metal reflection bands are brightest near the specular highlight and darken with distance from the light source.

Check: Compare the three bands: the one closest to the highlight must be the lightest, and the one farthest must be the darkest.

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Source rubric / reflection

- [ ] Ellipse is symmetric about both midlines and touches the bounding box at the four side midpoints.
- [ ] Highlight is placed in the quadrant facing the stated light direction and is the lightest value.
- [ ] At least three reflection bands curve with the ellipse contour and follow a consistent value order.
- [ ] Cast shadow falls opposite the light direction and is darkest near the contact point.
- [ ] Overall contrast reads as metal: sharp highlight, darker surrounding band, and clear value separation.

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