Fish Eye Drawing: Iris, Pupil, and Highlight Geometry

Ordinary topic reference / separately checked pixels



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Original worked example / unchanged complete key

Prompt: A student draws an iris circle with diameter 50 mm and a round pupil with diameter 20 mm. The highlight is a 6 mm circle placed 10 mm left and 12 mm above the eye center. The stated light direction is upper left. Check the pupil-to-iris ratio, the highlight quadrant, and whether the highlight overlaps the pupil edge.

Answer: Pupil-to-iris ratio is 20 divided by 50, or 0.4. The highlight center is left and above the center, so it is in the upper-left quadrant, matching the stated light direction. The pupil radius is 10 mm. The highlight center is at horizontal offset -10 mm and vertical offset +12 mm, so its distance from the eye center is the square root of (10 squared plus 12 squared), which is the square root of 244, about 15.6 mm. The highlight radius is 3 mm, so its nearest edge is about 15.6 minus 3, or 12.6 mm from the eye center. Since the pupil radius is 10 mm, the highlight edge is outside the pupil and does not overlap it. All checks pass for the stated convention.