Realistic Full-Body Pencil Dragon: Scale Texture and Tonal Shading

Original tasks 1, 2, 3 / complete keys

Task 1

A dragon torso is 50 mm wide and a forelimb is 15 mm wide. Your convention uses 5 mm torso scales and 2.5 mm limb scales. How many scales fit across a 20 mm span on each part, and what is the width ratio?

Answer: Torso: 20 divided by 5 equals 4 scales. Forelimb: 20 divided by 2.5 equals 8 scales. The ratio is 5 to 2.5, or 2 to 1.

Reason: Divide the fixed span by the scale width for each part, then express the two widths as a simple ratio. The ratio confirms the extremity scales are half the torso width.

Check: Multiply each count by its scale width: 4 times 5 equals 20 mm and 8 times 2.5 equals 20 mm. Both return the original span.

Task 2

A tail tapers from 30 mm to 10 mm over 100 mm of length. If scale width shrinks linearly from 3 mm to 1 mm, what scale width applies at 50 mm along the tail, and how many scales fit across a 20 mm span there?

Answer: At 50 mm the width is 2 mm, and 20 divided by 2 equals 10 scales across the span.

Reason: Halfway along the taper, the width is halfway between 3 mm and 1 mm, which is 2 mm. Dividing the span by this width gives the count.

Check: Confirm the midpoint width lies between the end widths and that 10 times 2 mm equals 20 mm.

Task 3

A dragon is lit from the upper right. List the four tonal zones and state where each appears on the head, torso, and forelimb, assuming the light stays fixed.

Answer: Highlight on upper-right surfaces, midtone on forward-facing surfaces, shadow on lower-left surfaces, and core shadow under the jaw, along the lower torso, and behind the elbow.

Reason: A single fixed light produces the same relative zone pattern on every body part. Overlaps and recesses create core shadow regardless of body part.

Check: Squint at the drawing and confirm each part shows all four zones in the same relative positions.

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Original tasks 4 / complete keys

Task 4

You count 6 scales across 20 mm on the torso and 9 scales across 20 mm on the forelimb. Your written convention says the forelimb scale width is half the torso width. Does the count match the convention, and what is the corrected forelimb count?

Answer: No. Half the torso width means twice the count, so the forelimb should show 12 scales across 20 mm, not 9.

Reason: Torso width is 20 divided by 6, about 3.33 mm. Half that is about 1.67 mm, and 20 divided by 1.67 is about 12 scales.

Check: Multiply 12 by 1.67 mm to get about 20 mm, and confirm the ratio of counts is 2 to 1.

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Source rubric / reflection

- [ ] A written scale convention states shape, width, direction, and row offset.
- [ ] Scale width decreases from torso to extremities by a stated ratio within one scale.
- [ ] Every scale points along its local flow arrow.
- [ ] One light direction is marked and used on all body parts.
- [ ] Each body part shows highlight, midtone, shadow, and core shadow.
- [ ] Scale edges soften in shadow and stay crisp in highlight.
- [ ] Scale counts across a 20 mm span match the planned ratio within one scale.
- [ ] Valid alternative conventions are accepted if they are written, consistent, and checkable.

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