Draw a Foot from Ankle to Toe: A Construction Guide

Original tasks 1, 2, 3 / complete keys

Task 1

Construct a foot with total length 12 cm. Mark the heel, ball point, and toe line. State the heel-to-ball distance and the ball-to-toe-tip distance.

Answer: Heel-to-ball: 8 cm (two-thirds of 12 cm). Ball-to-toe-tip: about 2.4 cm (one-fifth of 12 cm). Toe line is a shallow arc from the ball point forward.

Reason: Use the ratios: two-thirds of 12 is 8; one-fifth of 12 is 2.4. The toe line starts at the ball point and curves forward and slightly inward.

Check: Measure heel-to-ball (8 cm) and ball-to-toe-tip (2.4 cm). Confirm the toe line is an arc and the big toe is at the inner end.

Task 2

A foot drawing has a heel-to-ball distance of 9 cm and a total length of 15 cm. Is the ball point correctly placed? Explain using the two-thirds ratio.

Answer: No. Two-thirds of 15 cm is 10 cm, so the ball point should be 10 cm from the heel. At 9 cm, it is too close to the heel.

Reason: The guide specifies heel-to-ball as two-thirds of total length. $15 \times 2/3 = 10$. A 9 cm distance is less than 10 cm, so the ball point is misplaced.

Check: Calculate $15 \times 2/3 = 10$. Compare with the given 9 cm. If different, adjust the ball point to 10 cm from the heel.

Task 3

Draw a foot with an arch peak 1.2 cm above the baseline. If the total foot length is 12 cm, is the arch peak height consistent with the one-tenth guideline? Show the arithmetic.

Answer: Yes. One-tenth of 12 cm is 1.2 cm, so the arch peak height matches the guideline.

Reason: The guideline says arch peak is about one-tenth of total length above baseline. $12 \times 1/10 = 1.2$. The given height is exactly 1.2 cm.

Check: Multiply total length by 0.1: $12 \times 0.1 = 1.2$. Compare with the drawn height.

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Original tasks 4 / complete keys

Task 4

Construct a foot with total length 10 cm. Place the big toe at the inner end of the toe arc and the little toe at the outer end. Describe how you ensure toes decrease in size and do not overlap.

Answer: Draw a shallow arc from the ball point forward. Place the big toe at the inner end, longest and widest. Add toes toward the outer edge, each slightly shorter and narrower. Leave small gaps. The little toe is shortest at the outer end.

Reason: The toe line is an arc, and toe size decreases from inner to outer edge. Gaps prevent overlap. The big toe tip is farthest forward.

Check: Check that the toe line is a shallow arc, the big toe is at the inner end, toes decrease in size toward the outer edge, and no toes overlap.

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Source rubric / reflection

- [ ] Ankle is marked as a small circle above the heel and slightly forward.
- [ ] Heel is a rounded wedge, not a point.
- [ ] Baseline is horizontal and connects heel to ball point.
- [ ] Ball point is about two-thirds of total length from the heel.
- [ ] Arch curve peaks about one-tenth of foot length above baseline.
- [ ] Toe line is a shallow arc with big toe at inner end and smaller toes toward outer edge.
- [ ] Final outline is smooth and construction lines are not distracting.
- [ ] Valid alternatives: toe shapes may vary; arch peak may be slightly higher or lower if visually consistent; foot length is freely chosen.

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