Flail Drawing: Chain Links and Hinged Head Construction

Original tasks 1, 2 / complete keys

Task 1

Draw a flail with a 12 cm handle, a chain of five links each 1.2 cm long, and a 3 cm head. Include a hinge and a motion arc. Label all four parts.

Answer: A drawing with handle from 0 to 12 cm, chain from 12 to 18 cm with five alternating links, a 0.5 cm hinge gap from 18 to 18.5 cm, hinge circle at 18 cm, head from 18.5 to 21.5 cm, dashed arc from head curving away, and labels handle, chain, hinge, head. Total length = 12 + 6 + 0.5 + 3 = 21.5 cm.

Reason: Five links at 1.2 cm give a 6 cm chain, matching the layout. Alternating orientation shows interlocking. The hinge gap separates head from chain. The arc starts at the head to show swing.

Check: Measure handle length (12 cm) and chain length (5 x 1.2 = 6 cm). Count five links and confirm alternating orientation. Verify the 0.5 cm hinge gap, hinge circle at 18 cm, head span 18.5 to 21.5 cm, and arc start point. Confirm total length 12 + 6 + 0.5 + 3 = 21.5 cm.

Task 2

Draw a flail with a 9 cm handle and a 4-link chain. Each link is 1.5 cm long. The head is a short cylinder 2.5 cm wide. Show the hinge with a U-shaped bracket and pin. Add a motion arc.

Answer: A drawing with 9 cm handle, chain from 9 to 15 cm with four alternating links, a 0.5 cm hinge gap from 15 to 15.5 cm, U-bracket hinge at 15 cm, cylinder head from 15.5 to 18 cm, dashed arc from head, and labels. Total length = 9 + 6 + 0.5 + 2.5 = 18 cm.

Reason: Four links at 1.5 cm give 6 cm chain. The U-bracket hinge is a valid alternative to a circle. The cylinder head is separate from the handle. The arc shows swing direction.

Check: Check chain length (4 x 1.5 = 6 cm) and handle length (9 cm). Confirm four links alternate. Verify the 0.5 cm hinge gap, U-bracket and pin are visible, head is separate, and total length is 9 + 6 + 0.5 + 2.5 = 18 cm.

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Original tasks 3, 4 / complete keys

Task 3

Draw a flail with a 14 cm handle and a chain of six links. Use a hypothetical link length of 1 cm. Add a spiked head 3 cm wide with three spikes. Draw the motion arc and label the hinge.

Answer: A drawing with 14 cm handle, chain from 14 to 20 cm with six alternating links, a 0.5 cm hinge gap from 20 to 20.5 cm, hinge circle at 20 cm, spiked head body from 20.5 to 23.5 cm with three spikes, dashed arc from head, and hinge label. The 3 cm width is the head body excluding spikes. Total length = 14 + 6 + 0.5 + 3 = 23.5 cm.

Reason: Six links at 1 cm give 6 cm chain. Three spikes add detail without changing head width. The hinge label identifies the attachment point. The arc starts at the head.

Check: Measure chain length (6 x 1 = 6 cm). Count six links and confirm alternation. Check three spikes and hinge label. Verify the 0.5 cm hinge gap, head body span 20.5 to 23.5 cm excluding spikes, arc starts at head and curves away, and total length is 14 + 6 + 0.5 + 3 = 23.5 cm.

Task 4

Draw a flail with a 10 cm handle and a chain of four links. Each link is 1.5 cm long. The head is a rounded cube 3 cm wide. Show the hinge as a circle with a pin line. Add a motion arc with an arrowhead. Label handle, chain, hinge, and head.

Answer: A drawing with 10 cm handle, chain from 10 to 16 cm with four alternating links, a 0.5 cm hinge gap from 16 to 16.5 cm, hinge circle at 16 cm, rounded cube head from 16.5 to 19.5 cm, dashed arc with arrowhead, and four labels. Total length = 10 + 6 + 0.5 + 3 = 19.5 cm.

Reason: Four links at 1.5 cm give 6 cm chain. The circle hinge with pin line is a clear convention. The rounded cube head is separate. The arrowhead shows direction. Labels use x-height convention.

Check: Check handle (10 cm) and chain (4 x 1.5 = 6 cm). Confirm four alternating links, hinge circle with pin, and 0.5 cm head gap. Verify arrowhead on arc and four labels between baseline and midline. Confirm total length 10 + 6 + 0.5 + 3 = 19.5 cm.

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Source rubric / reflection

- [ ] Handle, chain, and head are drawn as three distinct parts.
- [ ] Chain shows at least four links with alternating orientation and visible interlocking gaps.
- [ ] Hinge is drawn at the chain end with a pin line and a small gap to the head.
- [ ] Head is separate from the handle and includes spikes or surface detail.
- [ ] Motion arc starts at the head, curves away from the handle, and has an arrowhead.
- [ ] Labels use the x-height convention (baseline to midline) and are legible; letter style may vary.
- [ ] Line weight distinguishes handle and head from chain.
- [ ] Construction lines are erased and final outlines are clean.

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