Lock and Key Drawing: Paired Construction Plate

Original tasks 1, 2, 3 / complete keys

Task 1

A lock has a shackle opening 16 mm tall. A key has a bit height of 14 mm. Does the key fit? Show the comparison.

Answer: Yes, 14 mm is smaller than 16 mm, so the bit fits the opening.

Reason: The pairing rule requires the bit height to be less than the shackle opening height. Compare the two numbers in the same unit.

Check: Subtract bit height from opening height: 16 minus 14 equals 2 mm. A positive result means the bit fits.

Task 2

A lock body is 50 mm wide. A key shaft is 55 mm long. Using the hypothetical 10 mm pairing allowance, is the shaft length acceptable?

Answer: Yes, the difference is 5 mm, which is within the 10 mm allowance.

Reason: The allowance is a hypothetical example, not a standard. Compare the absolute difference to the chosen allowance.

Check: Absolute difference: 55 minus 50 equals 5 mm. Since 5 is less than or equal to 10, the length is acceptable.

Task 3

You draw a key bow as a square with 18 mm sides and a lock body with a 6 mm corner radius. Describe one way the pair can still read as matching.

Answer: The square bow can echo the flat top edge of the lock body, and the 6 mm corner radius can be repeated as a small rounded detail on the key bow corner.

Reason: Pairing logic accepts shape echoes, not only identical curves. A flat edge or a repeated radius creates a visual link.

Check: Point to one shared feature (flat edge or repeated radius) and confirm it appears on both objects.

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Original tasks 4 / complete keys

Task 4

A student draws construction lines at the same darkness as final lines. State the fix and one measurable check.

Answer: Redraw construction lines lighter and keep final lines darker. Check by comparing line darkness on scrap paper before starting the plate.

Reason: The convention requires two distinguishable line types so the construction logic remains visible and correctable.

Check: Hold the paper at arm's length: construction lines should be visibly lighter. If not, adjust pencil pressure and redraw.

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Source rubric / reflection

- [ ] Lock body and shackle are drawn with distinguishable construction and final lines.
- [ ] Key bit height is measurably smaller than the shackle opening height in the same units.
- [ ] Lock and key share a baseline or clear alignment axis.
- [ ] Key bow echoes at least one curve or edge from the lock body.
- [ ] Lettering, if present, respects the baseline-to-midline x-height convention and is legible.
- [ ] Valid alternative shapes are accepted when the pairing logic and measurements hold.

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