# Draw Orion: Plot, Label, and Connect the Constellation

Original tasks 1, 2, 3, 4 / complete keys

Task 1

Plot Betelgeuse (2.0, 6.0) and Bellatrix (6.0, 6.0). Label both with magnitudes 0.5 and 1.6. Draw the shoulder line and measure its horizontal length.

Answer: Points at (2.0, 6.0) and (6.0, 6.0). Shoulder line horizontal. Length is 4.0 units.

Reason: Subtract x-coordinates: 6.0 - 2.0 = 4.0. Same y means horizontal line.

Check: Measure grid units between points; confirm 4.0 units and labels present.

Task 2

Plot Saiph (3.0, 2.0) and Rigel (6.5, 2.0). Label with magnitudes 2.1 and 0.1. Connect them to the belt ends Alnitak (3.5, 4.5) and Mintaka (5.5, 4.5). Describe the two connecting lines.

Answer: Saiph to Alnitak and Rigel to Mintaka. Lines are slanted; Saiph is left of Alnitak, Rigel is right of Mintaka.

Reason: Compare x-values: 3.0 < 3.5 and 6.5 > 5.5. Slopes differ because horizontal and vertical differences differ.

Check: Verify each line starts at a belt end and ends at a lower star; check labels.

Task 3

Using the example star list, plot all seven stars on a grid. Connect them with a documented key. Check belt spacing and shoulder width.

Answer: All seven plotted. Belt spacing 1.0 unit each; shoulder width 4.0 units. Key lists connection order.

Reason: Coordinates match the reference; arithmetic checks confirm spacing.

Check: Compare points to list; measure belt and shoulder; confirm key exists.

Task 4

Redraw the constellation on a grid scaled by 0.5. State new coordinates for Betelgeuse and Rigel and check the new shoulder width.

Answer: Betelgeuse (1.0, 3.0), Rigel (3.25, 1.0). Shoulder width becomes 2.0 units.

Reason: Multiply each coordinate by 0.5. Width 4.0 × 0.5 = 2.0.

Check: Verify each new coordinate is half the original; measure width 2.0 units.

# Draw Orion: Plot, Label, and Connect the Constellation

Source rubric / reflection

- [ ] All required stars plotted at documented coordinates.
- [ ] Each star labeled with name and magnitude.
- [ ] Connections follow a documented key and preserve main positions.
- [ ] Grid spacing equal on both axes; units consistent.
- [ ] Labels readable and not crossed by lines.
- [ ] Valid alternatives accepted if clearly documented.

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