Draw a Universe Scene: Compare Planet, Star, and Galaxy Shapes

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

Task 1

A planet circle is 5 cm across. A star has rays 3 cm long. Are the rays shorter than the planet diameter?

Answer: Yes, 3 cm is shorter than 5 cm.

Reason: Compare ray length to planet diameter directly: 3 < 5.

Check: Measure the planet diameter and one ray with the same ruler; confirm ray length is less.

Task 2

A galaxy ellipse is 7 cm wide and 3 cm tall. Is it wider than tall, and by how much?

Answer: Yes, it is wider by 4 cm.

Reason: Subtract height from width: 7 - 3 = 4 cm.

Check: Measure width and height; confirm width is greater and the difference is 4 cm.

Task 3

A scene box is 12 cm wide. The planet is 4 cm wide, the galaxy is 6 cm wide, and the star is 2 cm wide. If placed side by side with no gaps, do they fit?

Answer: Yes, they total 12 cm and fit exactly.

Reason: Add widths: 4 + 6 + 2 = 12 cm, equal to the box width.

Check: Add the three widths and compare to the box width; confirm the sum is 12 cm.

Task 4

A student draws a star with eight rays, each 4 cm long, next to a planet 4 cm across. Does the star dominate the scene?

Answer: Yes, the rays equal the planet diameter, so the star is too large.

Reason: Rays should be shorter than the planet diameter; 4 cm is not shorter than 4 cm.

Check: Measure one ray and the planet diameter; confirm the ray is not shorter.

Draw a Universe Scene: Compare Planet, Star, and Galaxy Shapes

Source rubric / reflection

- [ ] Planet is compact and roughly circular with curved surface detail.
- [ ] Star has a small core and tapered rays shorter than the planet diameter.
- [ ] Galaxy is a shallow ellipse with curved arms inside the disk.
- [ ] Objects are spaced apart and each keeps its own shape logic.
- [ ] Construction lines are erased and outlines are clear.
- [ ] Labels, if used, are measured against the student's own x-height convention.

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