Cartoon Spaceship Drawing: Hull, Fins, and Cockpit

Original tasks 1, 2 / complete keys

Task 1

On a 12 cm by 8 cm area, draw a hull 10 cm long and 5 cm wide at the tail. Add two side fins and one tail fin. Place a cockpit ellipse 1.5 cm wide. State where each fin attaches and check cockpit margin.

Answer: Hull spans 1 cm to 11 cm on the long axis. Tail width 5 cm. Top and bottom fins attach 1.5 cm from the tail, extending 1.5 cm outward and 0.8 cm backward. Tail fin attaches at the tail center, extending 1.5 cm backward. Cockpit ellipse centered 3 cm from the nose (at x = 4 cm), fully inside hull. For this example, assume the hull is 3.5 cm wide at the cockpit center; a 1.5 cm cockpit then leaves (3.5 - 1.5) / 2 = 1.0 cm margin on each side, well above 0.4 cm.

Reason: The hull is long enough to separate cockpit and fins. Fin attachment points are on the hull outline. Cockpit width is about one-third of hull width at that point, keeping it readable.

Check: Measure cockpit margin from ellipse edge to hull edge at four points; confirm at least 0.4 cm. Check fin attachment points lie on the hull outline and no fin line crosses the cockpit.

Task 2

Draw a cartoon spaceship with a blunt nose and rounded tail. Use a hull 9 cm long and 6 cm wide at the tail. Place the cockpit ellipse 2 cm wide on the upper front half. Add three fins. Describe how you keep the cockpit clear of fins.

Answer: Hull spans 1 cm to 10 cm. Blunt nose with a shallow curve; rounded tail. Cockpit centered 3 cm from the nose (at x = 4 cm), 2 cm wide, fully inside hull. For this example, assume the hull is 4.5 cm wide at the cockpit center; the margin on each side is (4.5 - 2) / 2 = 1.25 cm. Top and bottom fins attach 2 cm from tail; tail fin at back center. Fins extend outward and backward, staying behind the cockpit area.

Reason: A wider tail supports three fins without crowding. Placing the cockpit forward and fins rearward keeps clear separation. The blunt nose and rounded tail give a friendly cartoon look.

Check: Measure distance from cockpit edge to nearest fin attachment point; confirm at least 1 cm. Check cockpit ellipse is inside hull with margin. Confirm hull symmetry by measuring from axis at three points.

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Original tasks 3, 4 / complete keys

Task 3

Create a spaceship drawing where the cockpit is a circle 1.8 cm in diameter. Hull is 11 cm long and 5.5 cm wide at the tail. Use two fins only. Explain why two fins still read clearly.

Answer: Hull spans 1 cm to 12 cm. Cockpit circle centered 3.5 cm from the nose (at x = 4.5 cm), fully inside hull. For this example, assume the hull is 4 cm wide at the cockpit center; the margin on each side is (4 - 1.8) / 2 = 1.1 cm. Two fins attach at top tail and bottom tail, extending 1.5 cm outward and 1 cm backward. No tail fin. The two fins balance the ship and leave the cockpit unobstructed.

Reason: Two fins can read clearly if they are placed symmetrically and sized similarly. The circle cockpit is a valid cartoon variation. Keeping fins rearward avoids crowding.

Check: Check circle margin to hull edge at four points; confirm at least 0.4 cm. Verify fins are symmetric about the long axis. Confirm no fin line enters the cockpit area.

Task 4

Draw a spaceship with a hull 13 cm long and 7 cm wide at the tail. Place a cockpit ellipse 2.5 cm wide. Add three fins, but make the top fin slightly larger than the bottom fin. Describe a proportion check and a line-weight check.

Answer: Hull spans 1 cm to 14 cm. Cockpit centered 4 cm from the nose (at x = 5 cm), 2.5 cm wide, inside hull with margin. For this example, assume the hull is 5 cm wide at the cockpit center. Proportion check: one-third of 5 cm is about 1.7 cm, so a 2.5 cm cockpit is about one-half of the local hull width and is a deliberate deviation from the roughly one-third guideline; either reduce the cockpit to about 1.7 cm or accept the larger bubble as a chosen cartoon style. Top fin attaches 2 cm from tail, extends 2.5 cm outward; bottom fin extends 2 cm outward; tail fin extends 2 cm backward. Line-weight check: hull and fins use medium line; cockpit rim slightly thicker.

Reason: A larger top fin can add character while the bottom fin keeps balance. The cockpit remains forward and clear. The proportion check keeps the cockpit readable against the hull.

Check: Measure cockpit width and hull width at the cockpit center; compare the ratio to the roughly one-third guideline, allowing a tolerance of about 0.5 cm in cockpit width. Check fin attachment points on hull outline. Compare line weights visually and confirm cockpit rim is slightly thicker.

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Source rubric / reflection

- [ ] Hull is a clear tapered body with a closed outline and reasonable symmetry.
- [ ] Three fins are attached at marked points and do not cross the cockpit.
- [ ] Cockpit ellipse sits fully inside the hull with a visible margin.
- [ ] Line weight is consistent, with a slightly thicker cockpit rim.
- [ ] Construction lines are cleaned up and the ship reads clearly as a cartoon spaceship.

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