Roundabout Drawing: Island, Lanes, and Arrows

Original tasks 1, 2, 3 / complete keys

Task 1

A drawing has island radius 5 cm and lane width 2 cm. What is the outer radius, and where should a single dashed lane boundary sit if the ring has two lanes?

Answer: Outer radius = 7 cm. The dashed boundary sits 1 cm from the island edge.

Reason: Add island radius and lane width: 5 + 2 = 7 cm. For two lanes, divide lane width by two: 2 ÷ 2 = 1 cm.

Check: Measure the outer circle from the center and confirm it is 7 cm. Measure the dashed arc from the island edge and confirm it is 1 cm.

Task 2

An outer circle has radius 6 cm. Estimate the circumference using 3.14 for pi, then divide by four to find the spacing for four equal entry gaps.

Answer: Circumference is about 37.68 cm; each gap is about 9.42 cm apart along the circle.

Reason: Circumference = 2 × 3.14 × 6 = 37.68 cm. Four equal spacings: 37.68 ÷ 4 = 9.42 cm.

Check: Use a string or flexible ruler along the outer circle, mark four equal lengths, and confirm each is about 9.42 cm.

Task 3

A student draws arrows clockwise on the top half and counterclockwise on the bottom half. Describe the fix and the check.

Answer: Choose one direction, redraw every arrow to match it, then trace one full loop with a finger to confirm all arrows agree.

Reason: A roundabout drawing needs one consistent traffic direction. Mixed arrows make the layout unreadable.

Check: Trace the ring once and confirm each arrow points the same way as the next.

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Original tasks 4 / complete keys

Task 4

A drawing uses island radius 4 cm and lane width 3 cm, but the outer circle is drawn at 6 cm. Find the error and state the correct outer radius.

Answer: The outer radius should be 7 cm, not 6 cm.

Reason: Outer radius = island radius + lane width = 4 + 3 = 7 cm. The drawn value 6 cm is 1 cm too small.

Check: Measure the island radius and lane width, add them, and compare with the measured outer radius.

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Source rubric / reflection

- [ ] Island is a clear circle with a labeled center and radius.
- [ ] Outer circle radius equals island radius plus lane width, checked by arithmetic.
- [ ] Lane boundaries are dashed and evenly spaced within the ring.
- [ ] All arrows show one consistent direction around the island.
- [ ] Four entries and four exits are labeled uniquely and placed clearly.
- [ ] Final drawing is neat, with construction lines erased and a written key.

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