Draw a Dinner Table Seating Layout with Place Settings

Original tasks 1 / complete keys

Task 1

Draw a rectangular table 8 grid squares long and 4 grid squares wide. Place 4 seats: 1 on each short edge and 1 on each long edge. Use the defined place-setting convention and label the gap between adjacent settings in grid squares.

Answer: Table outline 8 by 4 squares. Four seat circles outside the edges, centered on the table edge: one centered on each short edge and one centered on each long edge. Four placemat rectangles inside the table with their outer edges on the table edge, each with plate circle, fork line left, knife line right, glass circle above the knife. Each edge holds one centered seat, so each seat is adjacent to the two seats on the neighboring edges; there are four corner gaps, each between a long-edge seat and a short-edge seat. The long-edge seat is about 4 squares from each corner along the long edge (half of 8), and the short-edge seat is about 2 squares from each corner along the short edge (half of 4). Do not add these perpendicular distances; measure each corner gap directly on the drawing between the adjacent placemat edges, following the table edge around the corner, and label the measured value. The measured corner gap will be less than the 6-square sum of the perpendicular distances. Counts: 4 seats, 4 placemats, 4 forks, 4 knives, 4 glasses.

Reason: The table size fixes the outline. Seat circles centered on the table edge keep spacing even. The convention gives one placemat per seat. Measuring gaps in grid squares makes the layout checkable.

Check: Count seats, placemats, forks, knives, and glasses; all should equal 4. Measure the table outline and confirm 8 by 4 squares. Measure the four corner gaps directly between adjacent placemat edges, following the table edge around each corner, and confirm each matches its labeled value within one small grid unit.

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Original tasks 2 / complete keys

Task 2

Draw a round table with a diameter of 6 grid squares. Place 6 seats evenly around the edge. Use the defined place-setting convention and label the gap between adjacent settings in grid squares.

Answer: Circle outline with diameter 6 squares centered on the grid. Six seat circles outside the circle, centered on the circle edge and spaced evenly around it. Six placemat rectangles inside the circle with their outer edges on the circle edge, each with plate circle, fork line left, knife line right, glass circle above the knife. Arc spacing: circumference is about 3.14 times 6, or about 18.85 grid squares; dividing by 6 seats gives about 3.14 grid squares of arc per seat, a hypothetical approximate value. Label the gap as about 3.1 grid squares between adjacent settings along the curve. Counts: 6 seats, 6 placemats, 6 forks, 6 knives, 6 glasses.

Reason: A round table needs even angular spacing. Centering seat circles on the circle edge at equal angles keeps gaps measurable. The convention ensures each seat has one complete setting.

Check: Count all setting elements; each should equal 6. Measure the diameter and confirm 6 squares. Measure two adjacent arc gaps along the curve and confirm each is close to the labeled approximate value of about 3.1 grid squares, allowing rounding to the nearest small grid unit.

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Original tasks 3 / complete keys

Task 3

A rectangular table is 12 grid squares long and 6 grid squares wide. Place 8 seats: 3 on each long edge and 1 on each short edge. Use the defined place-setting convention and label the gap between adjacent settings in grid squares.

Answer: Table outline 12 by 6 squares. Eight seat circles outside the edges, centered on the table edge: three on each long edge, one on each short edge. Eight placemat rectangles inside the table with their outer edges on the table edge, each with plate circle, fork line left, knife line right, glass circle above the knife. Adjacent pairs occur between neighboring seats on the same long edge and between a corner long-edge seat and the short-edge seat. Place the three long-edge seats at explicit positions about 2, 6, and 10 squares from one corner, so neighboring long-edge settings are about 4 squares apart and the end seats are about 2 squares from the corners. The single short-edge seat sits at the midpoint, about 3 squares from each corner along the short edge. Do not add the long-edge corner distance to the short-edge midpoint distance; measure each corner gap directly on the drawing between the adjacent placemat edges, following the table edge around the corner, and label the measured value. The measured corner gap will be less than the 5-square sum of the perpendicular distances. Counts: 8 seats, 8 placemats, 8 forks, 8 knives, 8 glasses.

Reason: The longer table allows more seats on the long edges. Centering seats on the table edge at planned positions keeps gaps equal. The convention and counts make the layout verifiable.

Check: Count all setting elements; each should equal 8. Measure the table outline and confirm 12 by 6 squares. Measure two neighboring long-edge gaps and confirm each is close to about 4 grid squares. Measure two corner gaps directly between adjacent placemat edges, following the table edge around each corner, and confirm each matches its labeled value within one small grid unit.

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Original tasks 4 / complete keys

Task 4

Draw a rectangular table 10 grid squares long and 5 grid squares wide. Place 6 seats: 2 on each long edge and 1 on each short edge. Use the defined place-setting convention, label gaps in grid squares, and write a layout note with table size, seat count, gap size, and convention.

Answer: Table outline 10 by 5 squares. Six seat circles outside the edges, centered on the table edge: two on each long edge, one on each short edge. Six placemat rectangles inside the table with their outer edges on the table edge, each with plate circle, fork line left, knife line right, glass circle above the knife. Adjacent pairs occur between the two seats on each long edge and between a corner long-edge seat and the short-edge seat. Space the two long-edge seats so each is about 2.5 squares from the nearest corner, leaving about 5 squares between them; the single short-edge seat sits at the midpoint, about 2.5 squares from each corner along the short edge. Do not add the long-edge corner distance to the short-edge midpoint distance; measure each corner gap directly on the drawing between the adjacent placemat edges, following the table edge around the corner, and label the measured value. The measured corner gap will be less than the 5-square sum of the perpendicular distances. Layout note: table 10 by 5 squares, 6 seats, long-edge gap about 5 squares, corner gap measured directly and labeled, convention as defined. Counts: 6 seats, 6 placemats, 6 forks, 6 knives, 6 glasses.

Reason: The layout note records the measured values so the drawing can be checked without guessing. Equal gaps on both edge types simplify counting and measurement.

Check: Count all setting elements; each should equal 6. Measure the table outline and confirm 10 by 5 squares. Measure the long-edge gap and confirm it is close to the layout note value of about 5 grid squares. Measure two corner gaps directly between adjacent placemat edges, following the table edge around each corner, and confirm each matches its labeled value within one small grid unit. Confirm the layout note lists all four required items.

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Source rubric / reflection

- [ ] Table outline is drawn on a labeled grid and its size is written in grid squares.
- [ ] Seat circles are outside the table edge, evenly spaced, and labeled clockwise.
- [ ] Every seat has one placemat rectangle inside the table with its outer edge on the table edge, plus plate, fork, knife, and glass marks following the stated convention.
- [ ] Counts of seats, placemats, forks, knives, and glasses match.
- [ ] Gaps between adjacent place settings are measured and labeled in consistent units.
- [ ] A layout note states table size, seat count, gap size, and convention; valid alternative conventions are accepted if consistently applied.

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