Graphing Number Patterns from Rule Tables

Original tasks 1, 2 / complete keys

Task 1

A rule table uses the rule add two. The inputs are zero, one, two, and three. Complete the table, plot the four pairs on a coordinate plane, and state the growth in the output when the input increases by one.

Answer: The outputs are two, three, four, and five, giving the pairs zero comma two; one comma three; two comma four; three comma five. The points rise steadily, and the output grows by two for each increase of one in the input.

Reason: Apply add two to each input: zero plus two is two, one plus two is three, two plus two is four, and three plus two is five. Plot each pair from the origin, moving right by the input and up by the output. Comparing neighbouring points shows a vertical change of two.

Check: Recalculate one row by subtracting two from its output to recover the input, then read one plotted point back from the graph and compare it with its table row.

Task 2

A rule table uses the rule add five. The inputs are one, two, three, and four. Complete the table, plot the pairs, and explain why the points rise by the same amount each time.

Answer: The outputs are six, seven, eight, and nine, giving the pairs one comma six; two comma seven; three comma eight; four comma nine. The points rise by five each time because the rule adds five to every input.

Reason: Each output equals its input plus five. Since the same amount is added to every input, each step to the right increases the output by exactly five, so the vertical change between neighbouring points is constant.

Check: Verify two neighbouring pairs by subtracting five from each output to recover the inputs, and confirm that the vertical gap between those plotted points equals five grid units.

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Original tasks 3, 4 / complete keys

Task 3

A rule table uses the rule subtract one. The inputs are three, four, five, and six. Complete the table, plot the pairs, and describe how the output changes as the input increases by one.

Answer: The outputs are two, three, four, and five, giving the pairs three comma two; four comma three; five comma four; six comma five. As the input increases by one, the output increases by one, because each output is exactly one less than its input; when the input goes up by one, the output also goes up by one.

Reason: Apply subtract one to each input: three minus one is two, four minus one is three, five minus one is four, and six minus one is five. The outputs rise by one between neighbouring rows because each output is one less than its input, and the inputs increase by one each row.

Check: Add one to each output to recover the input, then compare two neighbouring plotted points to confirm the vertical change is one unit.

Task 4

A rule table uses the rule add three. The inputs are two, four, six, and eight. Complete the table, plot the pairs, and state the growth in the output when the input increases by two.

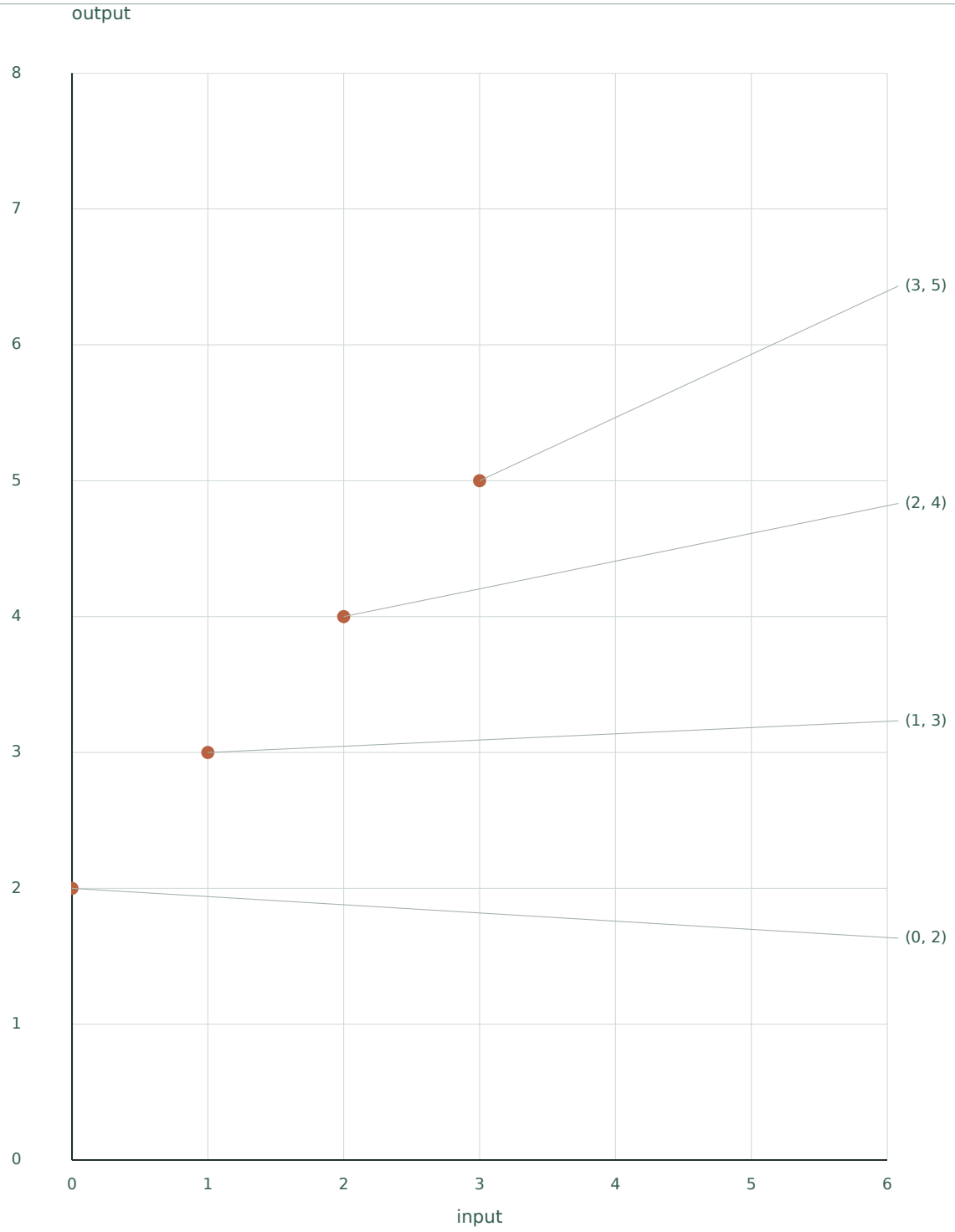
Answer: The outputs are five, seven, nine, and eleven, giving the pairs two comma five; four comma seven; six comma nine; eight comma eleven. When the input increases by two, the output increases by six.

Reason: Apply add three to each input: two plus three is five, four plus three is seven, six plus three is nine, and eight plus three is eleven. Neighbouring inputs differ by two, and each output is three more than its input, so the output rises by six between neighbouring rows.

Check: Subtract three from each output to recover the inputs, then compare two neighbouring plotted points to confirm the vertical change is six units while the horizontal change is two units.

Graphing Number Patterns from Rule Tables

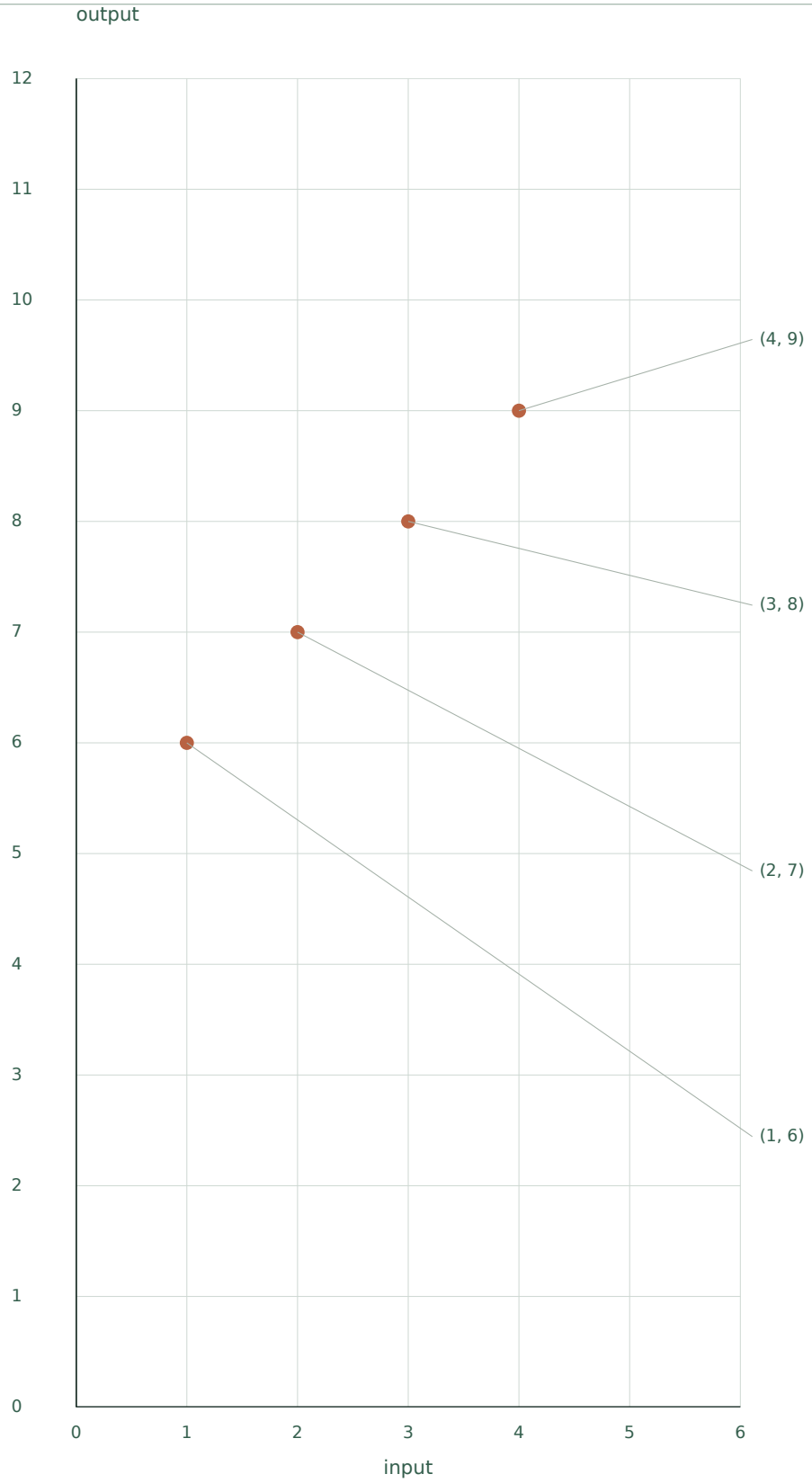
Answer plot: add two pairs



Answer key plot of the four add two ordered pairs. Coordinate labels sit outside the plot; thin grey leaders are annotations, not function curves.

Graphing Number Patterns from Rule Tables

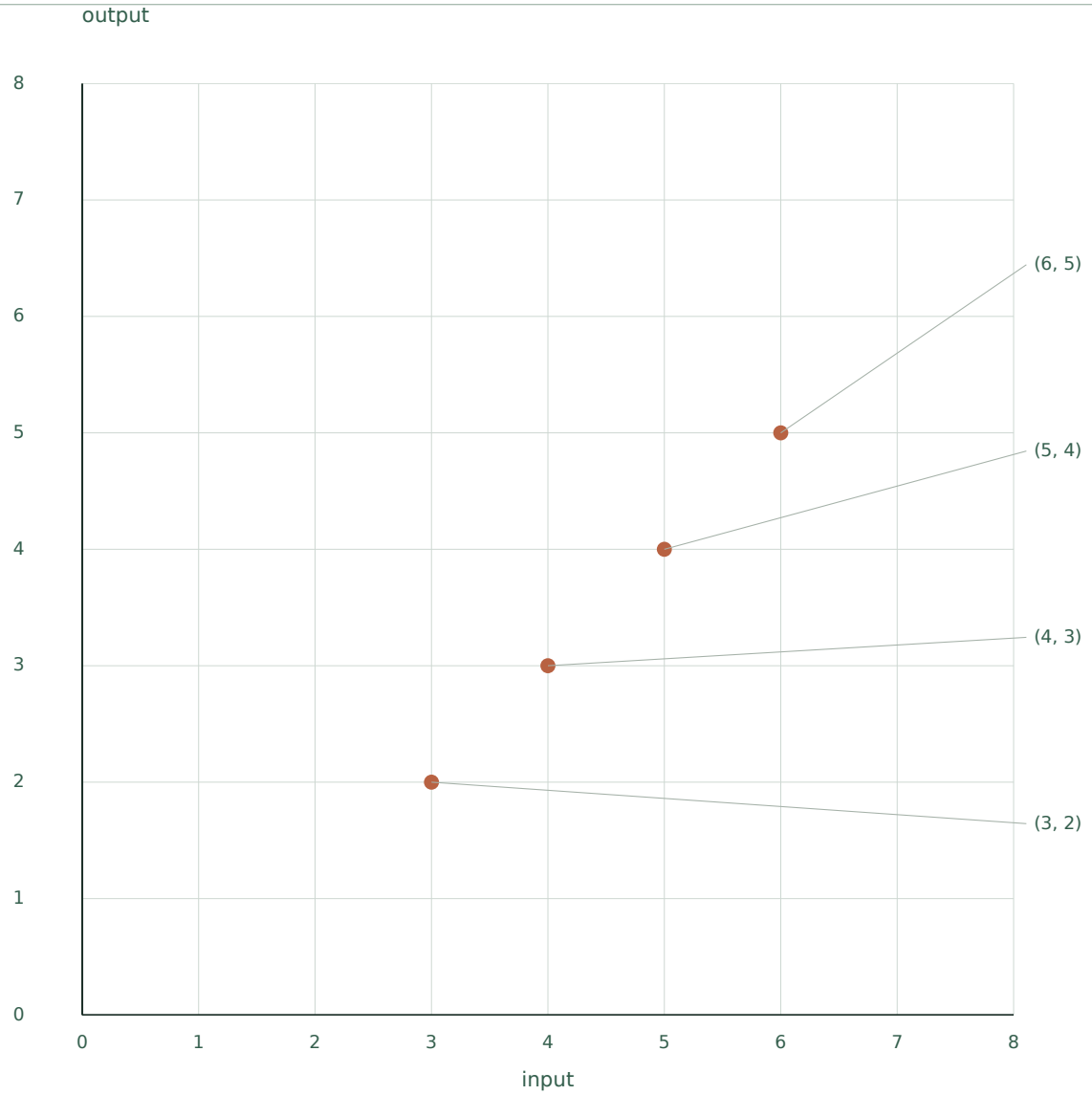
Answer plot: add five pairs



Answer key plot of the four add five ordered pairs. Coordinate labels sit outside the plot; thin grey leaders are annotations, not function curves.

Graphing Number Patterns from Rule Tables

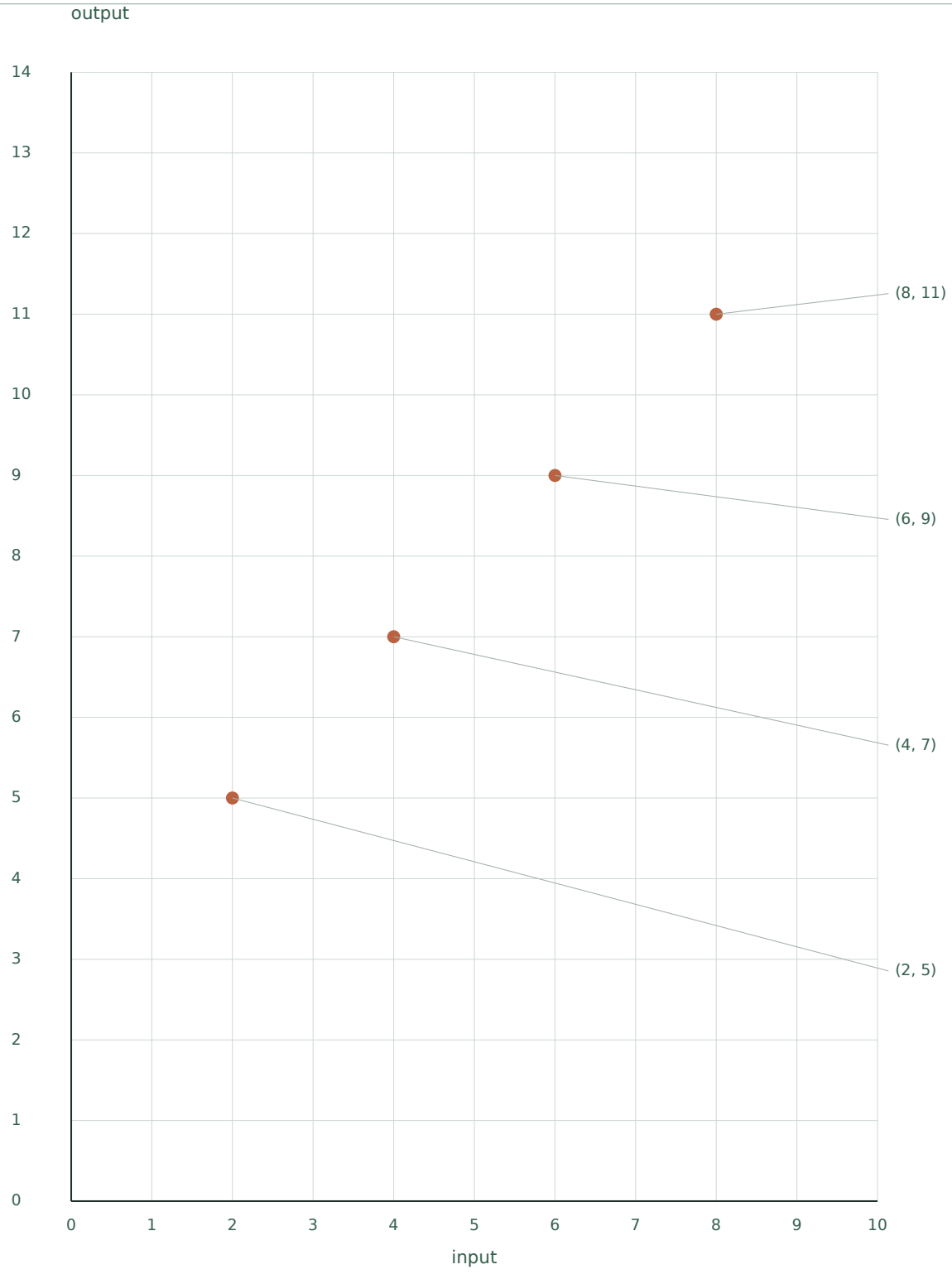
Answer plot: subtract one pairs



Answer key plot of the four subtract one ordered pairs. Coordinate labels sit outside the plot; thin grey leaders are annotations, not function curves.

Graphing Number Patterns from Rule Tables

Answer plot: add three pairs



Answer key plot of the four add three ordered pairs. Coordinate labels sit outside the plot; thin grey leaders are annotations, not function curves.

Graphing Number Patterns from Rule Tables

Source rubric / reflection

- [ ] The table is completed correctly for every input using the stated rule.
- [ ] Each ordered pair is written with the input first and the output second.
- [ ] Each point is plotted from the origin with the correct horizontal and vertical moves.
- [ ] The growth statement matches the rule and is supported by two neighbouring points.
- [ ] Valid alternative presentations, such as a neatly labelled grid with equal spacing, are accepted if the positions are correct.

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