Graph Proportional Relationships from Ratio Tables: Plot, Draw, and Verify

Original tasks 1, 2, 3 / complete keys

Task 1

A ratio table shows (2, 10), (4, 20), and (7, 35). Plot the pairs on a grid with horizontal axis 0 to 8 and vertical axis 0 to 40, draw the line through the origin, and state the constant of proportionality.

Answer: The constant is 5. The points (2, 10), (4, 20), and (7, 35) lie on a straight line through the origin with slope 5.

Reason: Divide each second quantity by the first: 10 divided by 2 equals 5; 20 divided by 4 equals 5; 35 divided by 7 equals 5. Equal quotients confirm proportionality with k = 5.

Check: Read (4, 20) from the line: 20 divided by 4 equals 5, matching the table's constant.

Task 2

A ratio table shows (3, 6), (5, 10), and (8, 16). Plot the pairs on a grid with horizontal axis 0 to 10 and vertical axis 0 to 20, draw the line, and verify the slope using (3, 6) and (8, 16).

Answer: The constant is 2. The slope from (3, 6) to (8, 16) is (16 minus 6) divided by (8 minus 3), which is 10 divided by 5, equal to 2.

Reason: Each quotient equals 2, so the relationship is proportional. The slope computation uses the same order of subtraction for both coordinates and matches the constant.

Check: Divide 6 by 3 and 16 by 8; both equal 2, confirming the line and table agree.

Task 3

A ratio table shows (1, 3), (4, 12), and (6, 18). Plot the pairs on a grid with horizontal axis 0 to 7 and vertical axis 0 to 20, draw the line through the origin, and explain how you know the graph is proportional.

Answer: The constant is 3. The points are collinear and the line passes through the origin, so the graph is proportional.

Reason: All quotients equal 3. A straight line through the origin with constant slope represents a proportional relationship.

Check: Pick (6, 18) on the line: 18 divided by 6 equals 3, matching the constant from the table.

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Original tasks 4 / complete keys

Task 4

A ratio table shows (2, 7), (4, 14), and (6, 21). Plot the pairs on a grid with horizontal axis 0 to 7 and vertical axis 0 to 25, draw the line, and verify the constant using two different pairs.

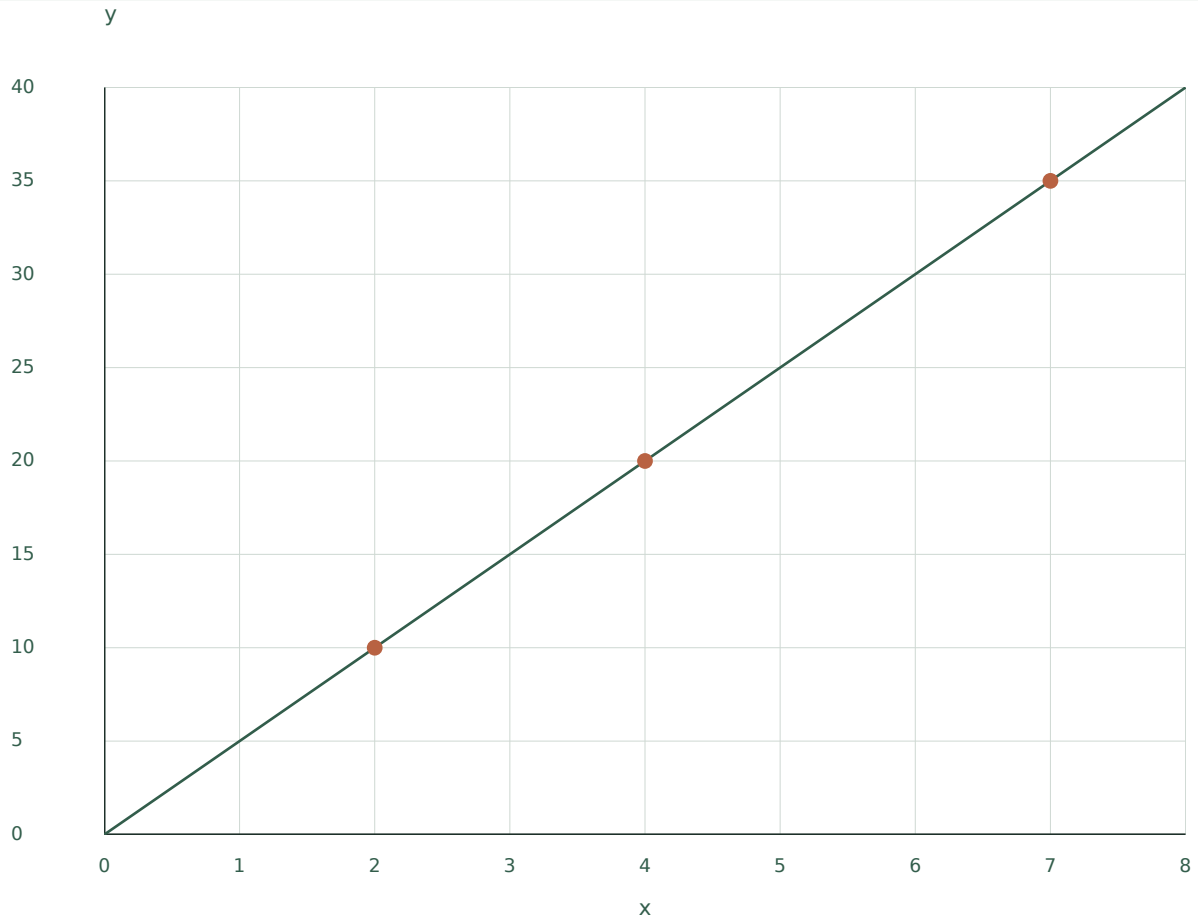
Answer: The constant is 3.5. Using (2, 7): 7 divided by 2 equals 3.5. Using (6, 21): 21 divided by 6 equals 3.5.

Reason: Both quotients equal 3.5, so the table is proportional. The plotted points lie on a straight line through the origin with slope 3.5.

Check: Compute the slope from (2, 7) to (6, 21): (21 minus 7) divided by (6 minus 2) equals 14 divided by 4, which equals 3.5.

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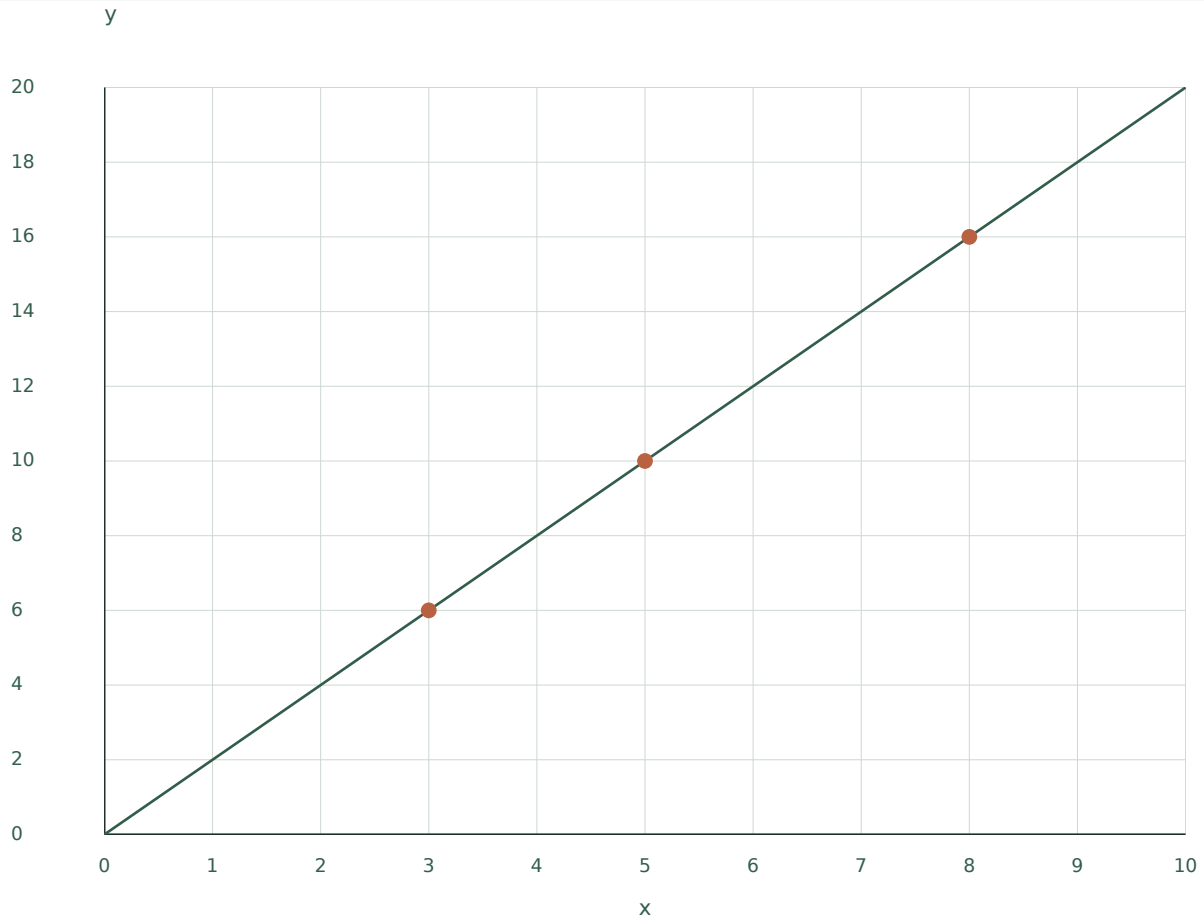
Task 1 / graph key



The original ratio-table points are marked red. The proportional line passes through the origin; read each axis using its own labelled scale.

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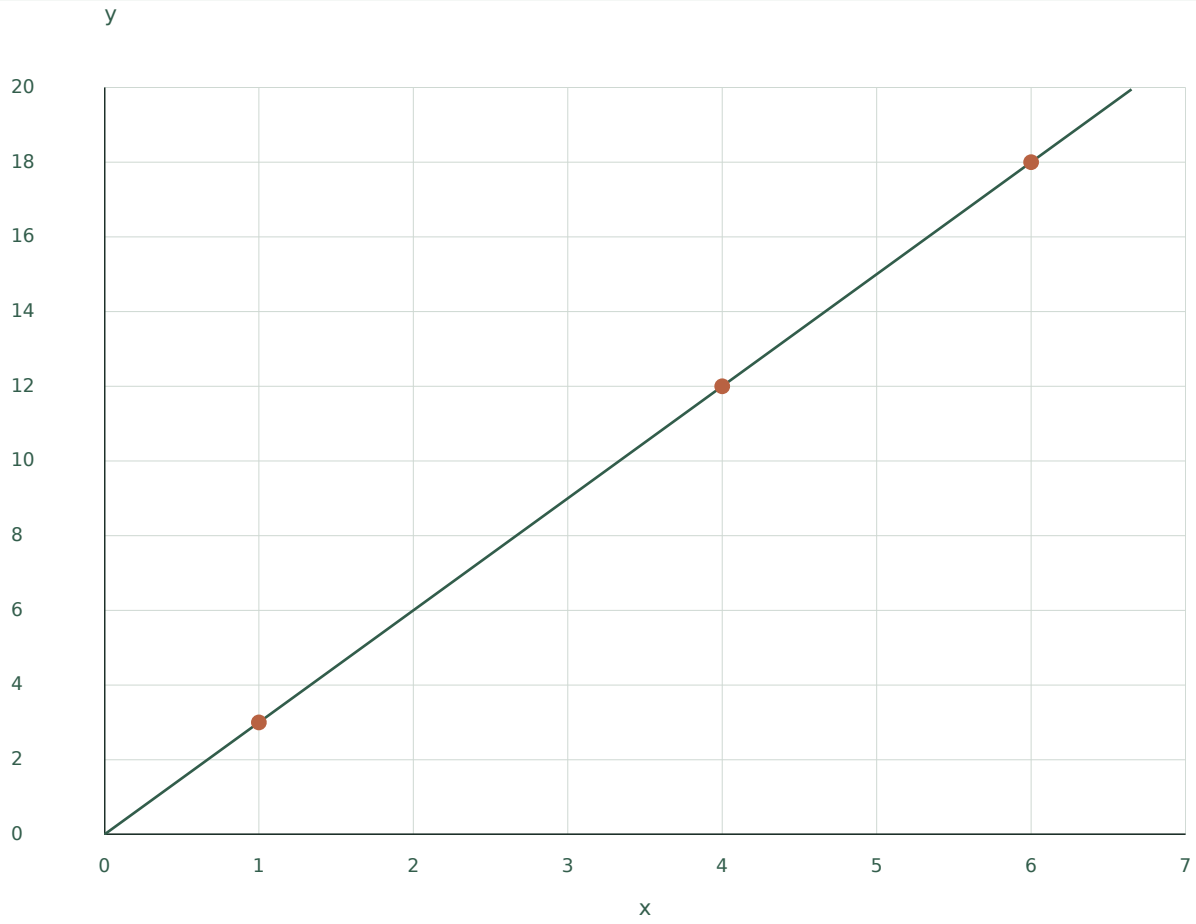
Task 2 / graph key



The original ratio-table points are marked red. The proportional line passes through the origin; read each axis using its own labelled scale.

Graph Proportional Relationships from Ratio Tables: Plot, Draw, and Verify

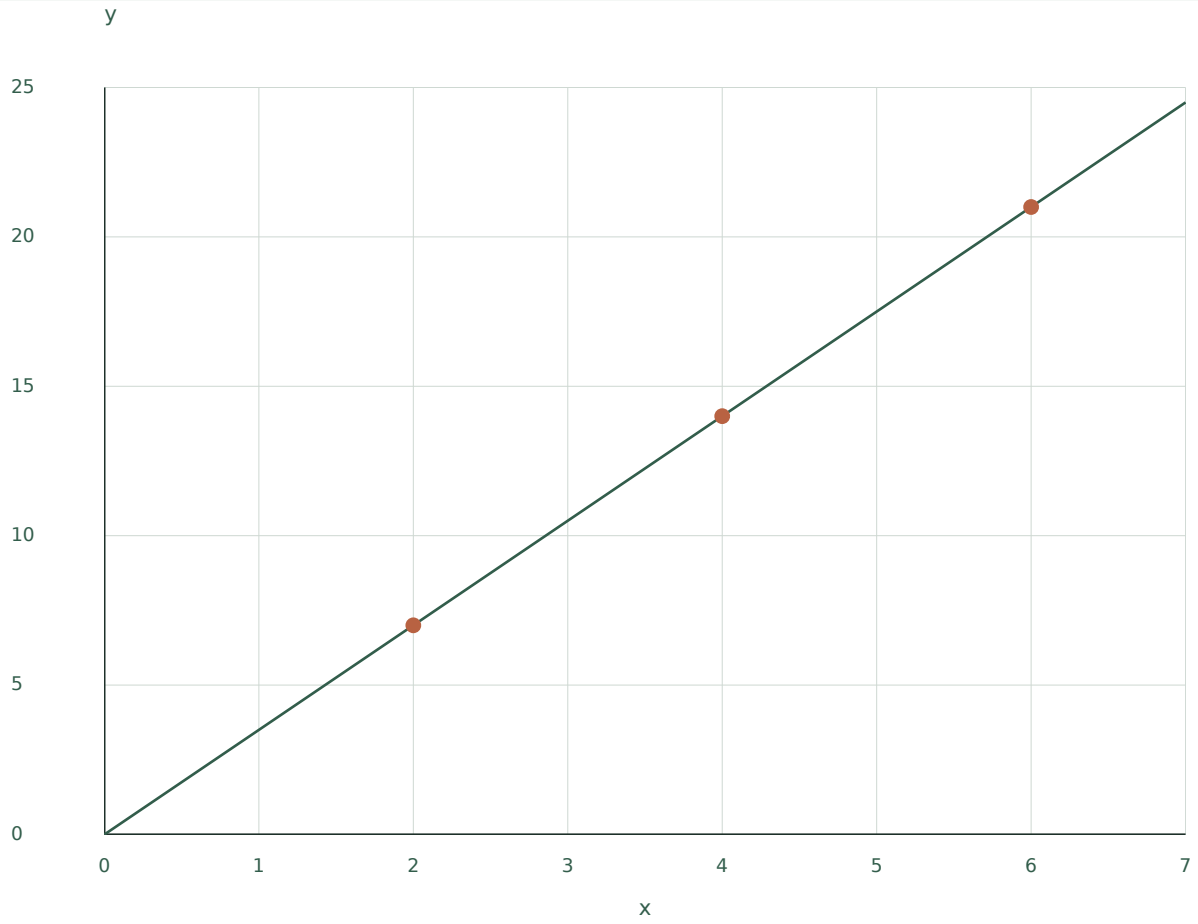
Task 3 / graph key



The original ratio-table points are marked red. The proportional line passes through the origin; read each axis using its own labelled scale.

Graph Proportional Relationships from Ratio Tables: Plot, Draw, and Verify

Task 4 / graph key



The original ratio-table points are marked red. The proportional line passes through the origin; read each axis using its own labelled scale.

Graph Proportional Relationships from Ratio Tables: Plot, Draw, and Verify

Source rubric / reflection

- [ ] Axes are labeled with the quantities from the table and a consistent scale.
- [ ] All ordered pairs from the table are plotted in the correct order.
- [ ] The drawn line is straight and passes through the origin.
- [ ] The constant of proportionality is computed from at least two pairs and stated clearly.
- [ ] The slope check uses two points on the line and matches the constant.
- [ ] Valid alternative axis scales or point labels are accepted if the plotted positions and slope check remain correct.

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