Equations Inequalities and Relationships

Lesson 12 Interpreting Input Output Patterns

Standards 6.EE.C.9

Learning target I can connect an equation, a table, and a graph.

Materials Balance models, number lines, coordinate grids, rulers.

Lesson Flow 50 Minutes

0–5 Activate prior knowledge. Read the learning target. Ask students what they already know about interpreting input output patterns. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. Choose input values, substitute to find outputs, and write ordered pairs. Label horizontal input and vertical output axes. Plot each pair and interpret a point in the situation. Work through the two examples on the attached instruction page. Have students name the first step before showing it.

17–22 Guided practice. Revisit worked Example 2 with its solution covered. Students propose the next step and explain why it is valid; uncover and compare with the worked solution.

22–45 Independent classwork. Assign the attached 10 questions in order. Check items 1–3 for entry-level understanding, 4–6 for connected procedures, 7–8 for representation and explanation, and 9–10 for application or justification. Ask students to use the instruction-page notes area or extra grids for longer work.

45–50 Check understanding. Use classwork question 10 as an exit discussion: For $y = 6x + 2$, make a table for $x = 0, 1, 2, 6$. Plot the ordered pairs and label both axes. Explain what happens to y each time x increases by 1. Compare the result with the answer key and ask a student to defend the method.

Support and Extension

Support Model item 1 together with the listed tools, then have students attempt item 2 independently. Watch inverse operations, equality on both sides, open versus closed endpoints, and input/output order.

Extension Ask students to solve a final item another way, draw a second representation, or create a related problem with a checked answer.

Next step Record which students can explain the target independently. Begin the next teaching session with a brief correction for any recurring error.

Name _____ Date _____

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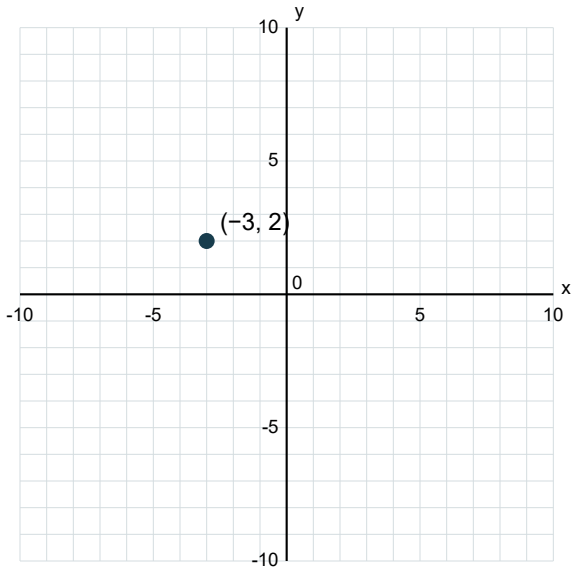
Learn and Discuss

Choose input values, substitute to find outputs, and write ordered pairs. Label horizontal input and vertical output axes. Plot each pair and interpret a point in the situation.

Example 1 For y = 7x, make a table for x = 0, 1, 2, 3. Plot the ordered pairs and label both axes.
Solution (0, 0); (1, 7); (2, 14); (3, 21). Substitute each input into y = 7x; x is horizontal and y vertical.
Example 2 For y = 6x + 3, make a table for x = 0, 1, 2, 6. Plot the ordered pairs and label both axes. Explain what happens to y each time x increases by 1.
Solution (0, 3); (1, 9); (2, 15); (6, 39); y increases by 6. Substitute each input into y = 6x + 3; x is horizontal and y vertical.

Classwork Show Your Work

Complete the 10 problems on the following page. Refer to the examples, draw models, and check your results.



Model a point (−3, 2) means move 3 left and 2 up from the origin. Label the axes and scale before plotting.

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Name _____ Show calculations, models, and units.

1. For y = 6x, make a table for x = 0, 1, 2, 4. Plot the ordered pairs and label both axes.

2. For y = 5x, make a table for x = 0, 1, 2, 6. Plot the ordered pairs and label both axes.

3. For y = 8x, make a table for x = 0, 1, 2, 5. Plot the ordered pairs and label both axes.

4. For y = 7x + 3, make a table for x = 0, 1, 2, 6. Plot the ordered pairs and label both axes.

5. For y = 5x + 5, make a table for x = 0, 1, 2, 4. Plot the ordered pairs and label both axes.

6. For y = 2x + 3, make a table for x = 0, 1, 2, 2. Plot the ordered pairs and label both axes.

7. For y = 8x + 3, make a table for x = 0, 1, 2, 4. Plot the ordered pairs and label both axes. Explain what happens to y each time x increases by 1.

8. For y = 8x + 6, make a table for x = 0, 1, 2, 6. Plot the ordered pairs and label both axes. Explain what happens to y each time x increases by 1.

9. For y = 4x + 6, make a table for x = 0, 1, 2, 4. Plot the ordered pairs and label both axes. Explain what happens to y each time x increases by 1.

10. For y = 6x + 2, make a table for x = 0, 1, 2, 6. Plot the ordered pairs and label both axes. Explain what happens to y each time x increases by 1.

Interpreting Input Output Patterns

Equations Inequalities and Relationships

1. (0, 0); (1, 6); (2, 12); (4, 24)
Reasoning Substitute each input into y = 6x; x is horizontal and y vertical.

2. (0, 0); (1, 5); (2, 10); (6, 30)
Reasoning Substitute each input into y = 5x; x is horizontal and y vertical.

3. (0, 0); (1, 8); (2, 16); (5, 40)
Reasoning Substitute each input into y = 8x; x is horizontal and y vertical.

4. (0, 3); (1, 10); (2, 17); (6, 45)
Reasoning Substitute each input into y = 7x + 3; x is horizontal and y vertical.

5. (0, 5); (1, 10); (2, 15); (4, 25)
Reasoning Substitute each input into y = 5x + 5; x is horizontal and y vertical.

6. (0, 3); (1, 5); (2, 7)
Reasoning Substitute each input into y = 2x + 3; x is horizontal and y vertical.

7. (0, 3); (1, 11); (2, 19); (4, 35); y increases by 8
Reasoning Substitute each input into y = 8x + 3; x is horizontal and y vertical.

8. (0, 6); (1, 14); (2, 22); (6, 54); y increases by 8
Reasoning Substitute each input into y = 8x + 6; x is horizontal and y vertical.

9. (0, 6); (1, 10); (2, 14); (4, 22); y increases by 4
Reasoning Substitute each input into y = 4x + 6; x is horizontal and y vertical.

10. (0, 2); (1, 8); (2, 14); (6, 38); y increases by 6
Reasoning Substitute each input into y = 6x + 2; x is horizontal and y vertical.