Equations Inequalities and Relationships

Lesson 1 Testing Equation Solutions

Standards 6.EE.B.5

Learning target I can test a proposed solution by substitution.

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 testing equation solutions. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. Replace the variable with the proposed value, compute each side, and compare. A number is a solution only when it makes the original equation true. 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: Does x = 5 solve 7x + 2 = 37? Show substitution. 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

Replace the variable with the proposed value, compute each side, and compare. A number is a solution only when it makes the original equation true.

Example 1 Does x = 3 solve 2x + 7 = 13? Show substitution.
Solution Yes; left side = 13. 2 × 3 + 7 = 13; compare with 13.
Example 2 Does x = 6 solve 6x + 4 = 40? Show substitution.
Solution Yes; left side = 40. 6 × 6 + 4 = 40; compare with 40.

Classwork Show Your Work

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

My Notes or Second Method

Lesson 1 Testing Equation Solutions

Name _____ Show calculations, models, and units.

1. Does x = 3 solve 3x + 4 = 10? Show substitution.

2. Does x = 4 solve 4x + 4 = 20? Show substitution.

3. Does x = 6 solve 3x + 6 = 21? Show substitution.

4. Does x = 6 solve 4x + 4 = 28? Show substitution.

5. Does x = 3 solve 2x + 7 = 11? Show substitution.

6. Does x = 4 solve 3x + 3 = 15? Show substitution.

7. Does x = 4 solve 4x + 7 = 19? Show substitution.

8. Does x = 3 solve 3x + 2 = 11? Show substitution.

9. Does x = 5 solve 3x + 2 = 14? Show substitution.

10. Does x = 5 solve 7x + 2 = 37? Show substitution.

Testing Equation Solutions

Equations Inequalities and Relationships

1. No; left side = 13
Reasoning 3 × 3 + 4 = 13; compare with 10.

2. Yes; left side = 20
Reasoning 4 × 4 + 4 = 20; compare with 20.

3. No; left side = 24
Reasoning 3 × 6 + 6 = 24; compare with 21.

4. Yes; left side = 28
Reasoning 4 × 6 + 4 = 28; compare with 28.

5. No; left side = 13
Reasoning 2 × 3 + 7 = 13; compare with 11.

6. Yes; left side = 15
Reasoning 3 × 4 + 3 = 15; compare with 15.

7. No; left side = 23
Reasoning 4 × 4 + 7 = 23; compare with 19.

8. Yes; left side = 11
Reasoning 3 × 3 + 2 = 11; compare with 11.

9. No; left side = 17
Reasoning 3 × 5 + 2 = 17; compare with 14.

10. Yes; left side = 37
Reasoning 7 × 5 + 2 = 37; compare with 37.