Equations Inequalities and Relationships

Lesson 6 One Step Equation Models

Standards 6.EE.B.6, 6.EE.B.7

Learning target I can model a situation with a one-step equation and solve it.

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 one step equation models. Use a quick model or estimate to make their starting ideas visible.

5–17 Teach and model. Define the unknown quantity. Translate the relationship into an equation before calculating. Use the inverse operation and check whether the answer makes sense 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: 5 identical lengths of rope total 20 m. Let x be the length of one piece. Write and solve an equation, then check. 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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Learning target I can model a situation with a one-step equation and solve it.

Learn and Discuss

Define the unknown quantity. Translate the relationship into an equation before calculating. Use the inverse operation and check whether the answer makes sense in the situation.

Example 1 A collection grows by 3 cards to 6 cards. Let x be the starting count. Write and solve an equation.
Solution x + 3 = 6; x = 3 cards. Subtract 3 from both sides; 3 + 3 = 6.
Example 2 5 identical lengths of rope total 35/2 m. Let x be the length of one piece. Write and solve an equation, then check.
Solution 5x = 35/2; x = 7/2 m. Divide the total by 5: 35/2 ÷ 5 = 7/2.

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

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Name _____ Show calculations, models, and units.

1. A collection grows by 4 cards to 12 cards. Let x be the starting count. Write and solve an equation.

2. A collection grows by 8 cards to 56 cards. Let x be the starting count. Write and solve an equation.

3. A collection grows by 3 cards to 6 cards. Let x be the starting count. Write and solve an equation.

4. 7 identical lengths of rope total 28 m. Let x be the length of one piece. Write and solve an equation, then check.

5. 5 identical lengths of rope total 10 m. Let x be the length of one piece. Write and solve an equation, then check.

6. 6 identical lengths of rope total 24 m. Let x be the length of one piece. Write and solve an equation, then check.

7. 4 identical lengths of rope total 16 m. Let x be the length of one piece. Write and solve an equation, then check.

8. 2 identical lengths of rope total 6 m. Let x be the length of one piece. Write and solve an equation, then check.

9. 3 identical lengths of rope total 9/2 m. Let x be the length of one piece. Write and solve an equation, then check.

10. 5 identical lengths of rope total 20 m. Let x be the length of one piece. Write and solve an equation, then check.

One Step Equation Models

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1. x + 4 = 12; x = 8 cards
Reasoning Subtract 4 from both sides; 8 + 4 = 12.

2. x + 8 = 56; x = 48 cards
Reasoning Subtract 8 from both sides; 48 + 8 = 56.

3. x + 3 = 6; x = 3 cards
Reasoning Subtract 3 from both sides; 3 + 3 = 6.

4. 7x = 28; x = 4 m
Reasoning Divide the total by 7: 28 ÷ 7 = 4.

5. 5x = 10; x = 2 m
Reasoning Divide the total by 5: 10 ÷ 5 = 2.

6. 6x = 24; x = 4 m
Reasoning Divide the total by 6: 24 ÷ 6 = 4.

7. 4x = 16; x = 4 m
Reasoning Divide the total by 4: 16 ÷ 4 = 4.

8. 2x = 6; x = 3 m
Reasoning Divide the total by 2: 6 ÷ 2 = 3.

9. 3x = 9/2; x = 3/2 m
Reasoning Divide the total by 3: 9/2 ÷ 3 = 3/2.

10. 5x = 20; x = 4 m
Reasoning Divide the total by 5: 20 ÷ 5 = 4.