Pan Balance Problems: One Worksheet for Missing Weights

Original tasks 1, 2, 3, 4 / complete keys

Task 1

A level balance has an unknown block and a 12 g weight on the left pan. The right pan has a 40 g weight. Find the block's mass.

Answer: 28 g

Reason: Write x + 12 = 40. Subtract 12 from both sides: x = 28. Check: 28 + 12 = 40.

Check: Substitute 28 into x + 12 and confirm the left total is 40 g, matching the right pan.

Task 2

A level balance has three identical unknown blocks on the left pan. The right pan has a 90 g weight. Find the mass of one block.

Answer: 30 g

Reason: Write 3x = 90. Divide both sides by 3: x = 30. Check: 3 times 30 = 90.

Check: Multiply 30 by 3 and confirm the product is 90 g.

Task 3

A level balance has two identical unknown blocks and a 15 g weight on the left pan. The right pan has a 55 g weight. Find the mass of one block.

Answer: 20 g

Reason: Write 2x + 15 = 55. Subtract 15 from both sides: 2x = 40. Divide by 2: x = 20. Check: 2 times 20 plus 15 equals 55.

Check: Substitute 20 into 2x + 15 and confirm the left total is 55 g.

Task 4

A level balance has an unknown block and a 25 g weight on the left pan. The right pan has two identical unknown blocks and a 5 g weight. Find the mass of one block.

Answer: 20 g

Reason: Write x + 25 = 2x + 5. Subtract x from both sides: 25 = x + 5. Subtract 5 from both sides: 20 = x. Check: left is 20 + 25 = 45; right is 2 times 20 + 5 = 45.

Check: Substitute 20 into both pan totals and confirm each equals 45 g.

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Source rubric / reflection

- [ ] Writes an equation that matches the pan totals, using a letter for the unknown.
- [ ] Applies inverse operations to both sides and shows the steps.
- [ ] States the final value with correct units.
- [ ] Substitutes the answer back and confirms both pan totals are equal.
- [ ] Uses different letters for different unknown objects and combines repeated identical objects correctly.

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