LESSON MAKER PRO

Balance It Out

Use models to check one-step equation solutions.

GRADE 6 · 6.PFA.3.d

6.PFA.3.d "Confirm solutions to one-step linear equations in one variable using a variety of concrete manipulatives and pictorial representations (e.g., colored chips, algebra tiles, weights on a balance scale)."

NAME _____ DATE _____

CHECK BOTH SIDES

A solution is a value of x that makes both sides of an equation equal. Use chips, tiles, equal groups, or a balance picture to show the same amount on each side.

WORKED EXAMPLE

Confirm x = 12 for x + 7 = 19 with a balance model.

1. Place an x tile and 7 unit tiles on the left side of a balance.
2. Place 19 unit tiles on the right side.
3. Remove 7 unit tiles from both sides.
4. The balance shows x equals 12 unit tiles.

Answer: Yes, x = 12 is confirmed.

PRACTICE 6 problems

1 A chip mat shows one x card and 2 positive chips matched with 10 positive chips. Does x = 8 confirm x + 2 = 10?

ANSWER _____

2 An algebra-tile picture represents x - 4 = 6. Does x = 2 confirm the equation?

ANSWER _____

3 A balance picture has x and 6 unit weights on the left side and 15 unit weights on the right side. Does x = 9 make the balance level?

ANSWER _____

4 Three x-tiles balance 18 positive unit tiles. Does x = 5 confirm 3x = 18?

ANSWER _____

5 A bar labeled x is split into 6 equal parts. Each part is 3 units. Does x = 18 confirm x/6 = 3?

ANSWER _____

6 A chip model shows x and 8 negative chips equal to 5 positive chips. Does x = 13 confirm x - 8 = 5?

ANSWER _____

APPLY IT Show your work

1 A gaming club has 45 prize tickets. Each player receives 5 tickets. The club says 9 players can receive tickets. Use equal groups or a balance model to confirm whether 9 is a solution for 5x = 45.

WORK SPACE

ANSWER _____

2 Ava had x beads for bracelet kits. She gave 8 beads to her cousin and had 17 beads left. Ava says she started with 25 beads. Use chips or a balance model to confirm her claim.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A balance model shows 4 identical bags labeled x balancing 32 unit weights. Lee says each bag holds 8 weights. Explain why Lee is correct or incorrect.

_____

_____

ANSWER KEY

Balance It Out

GRADE 6 · 6.PFA.3.d

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A chip mat shows one x card and 2 positive chips matched with 10 positive chips. Does x = 8 confirm x + 2 = 10?	**Yes, x = 8.**
2	An algebra-tile picture represents x - 4 = 6. Does x = 2 confirm the equation?	**No, x = 10.**
3	A balance picture has x and 6 unit weights on the left side and 15 unit weights on the right side. Does x = 9 make the balance level?	**Yes, x = 9.**
4	Three x-tiles balance 18 positive unit tiles. Does x = 5 confirm 3x = 18?	**No, x = 6.**
5	A bar labeled x is split into 6 equal parts. Each part is 3 units. Does x = 18 confirm x/6 = 3?	**Yes, x = 18.**
6	A chip model shows x and 8 negative chips equal to 5 positive chips. Does x = 13 confirm x - 8 = 5?	**Yes, x = 13.**

PART 2 · APPLY IT

1. **Yes, x = 9.** Make 9 equal groups of 5 tickets. The groups contain 45 tickets, so 5 x 9 = 45.
2. **Yes, x = 25.** A model for x - 8 = 17 shows that adding 8 beads to 17 beads gives 25 beads.

CHALLENGE

Lee is correct. Splitting 32 unit weights into 4 equal groups gives 8 weights in each bag, so 4x = 32.

Accept any accurate model description that shows equal amounts on both sides or equal groups. For incorrect claims, students should identify that the claim fails and give the correct value of x.