LESSON MAKER PRO

Balance Moves

Use models to solve for the unknown.

GRADE 6 · 6.PFA.3.b

6.PFA.3.b "Represent and solve 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 _____

KEEP IT EQUAL

An equation is balanced when both sides have the same value. To keep it balanced, add, subtract, multiply, or divide both sides by the same nonzero number. In a tile or chip model, isolate x by undoing the tiles or chips paired with it.

WORKED EXAMPLE

Seven x-tiles balance 49 unit tiles: $7x = 49$.

1. Start with $7x = 49$.
2. Divide both sides by 7: $x = 49 / 7$.
3. $x = 7$.

Answer: x = 7

PRACTICE 6 problems

1 A balance picture shows one x-tile and 13 unit tiles on the left. It matches 31 unit tiles on the right. Write and solve the equation.

ANSWER _____

2 Six x-tiles balance 36 unit tiles. Write and solve the equation.

ANSWER _____

3 A chip mat has x and 4 negative chips. The value of the mat is 15. Write and solve the equation.

ANSWER _____

4 A balance model shows that taking 3 unit tiles away from x leaves 22 unit tiles. Write and solve the equation.

ANSWER _____

5 Five x-tiles balance 45 unit tiles. Write and solve the equation.

ANSWER _____

6 A bar labeled x is split into 3 equal parts. One part matches 11 unit tiles. Write and solve the equation.

ANSWER _____

APPLY IT Show your work

1 Riley wants a $36 headset and has saved $15. Let x be the number of dollars Riley still needs. Write and solve an equation.

WORK SPACE

ANSWER _____

2 At an arcade, 4 identical game cards cost $52 total. Let x be the cost of one card. Write and solve an equation.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A balance has x and 16 positive chips on the left. The right side has 3 positive chips. What must x be? Explain how the balance model shows your answer.

_____

_____

ANSWER KEY

Balance Moves

GRADE 6 · 6.PFA.3.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A balance picture shows one x-tile and 13 unit tiles on the left. It matches 31 unit tiles on the right. Write and solve the equation.	**x + 13 = 31; x = 18**
2	Six x-tiles balance 36 unit tiles. Write and solve the equation.	**6x = 36; x = 6**
3	A chip mat has x and 4 negative chips. The value of the mat is 15. Write and solve the equation.	**x + (-4) = 15; x = 19**
4	A balance model shows that taking 3 unit tiles away from x leaves 22 unit tiles. Write and solve the equation.	**x - 3 = 22; x = 25**
5	Five x-tiles balance 45 unit tiles. Write and solve the equation.	**5x = 45; x = 9**
6	A bar labeled x is split into 3 equal parts. One part matches 11 unit tiles. Write and solve the equation.	**x / 3 = 11; x = 33**

PART 2 · APPLY IT

1. **x + 15 = 36; x = 21** Subtract 15 from both sides of x + 15 = 36. Riley still needs $21.
2. **4x = 52; x = 13** Divide both sides of 4x = 52 by 4. Each game card costs $13.

CHALLENGE

x + 16 = 3; x = -13. Remove 16 positive chips from both sides, so x = 3 - 16 = -13.

Accept equivalent equations that correctly match each model and lead to the stated value of x. For the challenge, accept a correct explanation that subtracts 16 from both sides or uses negative chips to show -13.