

Equation Balance Lab

Use equations and inequalities to solve real situations.

GRADE 7 • 7.EE.B

CCSS.Math.Content.7.EE.B "Solve real-life and mathematical problems using numerical and algebraic expressions and equations."

NAME _____

DATE _____

UNDO IN REVERSE ORDER

To solve an equation, use inverse operations to undo the operations in the reverse order they affect the variable. Keep both sides balanced by doing the same operation to each side, then check by substituting your answer.

WORKED EXAMPLE

Solve: $3x/8 - 6 = 12$

1. Add 6 to both sides: $3x/8 = 18$.
2. Multiply both sides by 8: $3x = 144$.
3. Divide both sides by 3: $x = 48$.
4. Check: $3(48)/8 - 6 = 12$.

Answer: $x = 48$

PRACTICE 6 problems

1 Solve: $x/2 + 1 = 11$

ANSWER _____

2 Solve: $9x - 1 = 44$

ANSWER _____

3 Solve: $4x + 11 = 39$

ANSWER _____

4 Solve: $2(x + 10) = 34$

ANSWER _____

5 Solve: $n/7 - 2 = 4$

ANSWER _____

6 Solve: $5p + 2 \leq 27$

ANSWER _____

APPLY IT Show your work

- 1** A gaming club charges \$9 to join and \$4 for each gaming session. Jordan has \$37 to spend. What is the greatest number of sessions Jordan can attend?

WORK SPACE

ANSWER _____

- 2** Maya wants \$49 headphones. She has \$29 and earns \$4 for each dog-walking job. How many jobs must she complete to have enough money?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Solve $7(x - 5) + 2 = 5x + 31$. Then explain how you know your answer makes the equation true.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Solve: $x/2 + 1 = 11$	$x = 20$
2	Solve: $9x - 1 = 44$	$x = 5$
3	Solve: $4x + 11 = 39$	$x = 7$
4	Solve: $2(x + 10) = 34$	$x = 7$
5	Solve: $n/7 - 2 = 4$	$n = 42$
6	Solve: $5p + 2 \leq 27$	$p \leq 5$

PART 2 • APPLY IT

- 7 sessions** Write $4s + 9 \leq 37$. Subtract 9, then divide by 4 to get $s \leq 7$, so Jordan can attend 7 sessions.
- At least 5 jobs** Write $29 + 4j \geq 49$. Subtract 29 and divide by 4 to get $j \geq 5$.

CHALLENGE

$x = 32$. Substituting gives $7(32 - 5) + 2 = 191$ and $5(32) + 31 = 191$, so both sides are equal.

Accept equivalent inequality notation, such as p is less than or equal to 5. For the word problems, accept a correct equation or inequality and the stated whole-number result.