

Balance and Bound

Solve equations and inequalities one step at a time.

GRADE 7 • TEKS 7.11.A

7.11.A "model and solve one-variable, two-step equations and inequalities;"

NAME _____

DATE _____

UNDO IN REVERSE

Use inverse operations to undo addition or subtraction first, then multiplication or division. Do the same operation to both sides. When you multiply or divide an inequality by a negative number, reverse the inequality sign.

WORKED EXAMPLE

$$4x - 7 = 21$$

1. Add 7 to both sides: $4x = 28$.

2. Divide both sides by 4: $x = 7$.

Answer: $x = 7$

PRACTICE 6 problems

1 $3x + 5 = 20$

ANSWER _____

2 $6x - 8 = 22$

ANSWER _____

3 $x/2 + 9 = 15$

ANSWER _____

4 $5x + 6 \leq 31$

ANSWER _____

5 $9 - 2x > -3$

ANSWER _____

6 $2x/3 - 1 \geq 5$

ANSWER _____

APPLY IT Show your work

- 1** An online game charges 5 coins for each extra level you unlock. You have spent 9 coins, and your total is 39 coins. How many extra levels did you unlock?

WORK SPACE

ANSWER _____

- 2** To earn a badge, you must reach at least 33 points. You start with 3 points and earn 6 points for each challenge you complete. How many challenges must you complete?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve the inequality. Explain why the inequality sign changes: $-2x + 5 > -11$.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	$3x + 5 = 20$	$x=5$
2	$6x - 8 = 22$	$x=5$
3	$x/2 + 9 = 15$	$x = 12$
4	$5x + 6 \leq 31$	$x \leq 5$
5	$9 - 2x > -3$	$x < 6$
6	$2x/3 - 1 \geq 5$	$x \geq 9$

PART 2 • APPLY IT

1. **6 extra levels** Write $5x + 9 = 39$. Subtract 9, then divide by 5 to get $x = 6$.
2. **At least 5 challenges** Write $6x + 3 \geq 33$. Subtract 3, then divide by 6 to get $x \geq 5$.

CHALLENGE

$x < 8$. After subtracting 5, divide both sides by -2. Dividing an inequality by a negative number reverses the sign.

Accept equivalent equation forms with the variable isolated. For inequalities, accept equivalent wording such as "less than 6" and require the sign to reverse when dividing by a negative number.