

Solve It Smart

Equations and inequalities, one variable at a time.

GRADE 7 • MA.7.AR.2

MA.7.AR.2 "Write and solve equations and inequalities in one variable."

NAME _____

DATE _____

KEEP BOTH SIDES BALANCED

Use inverse operations to get x alone, and do the same operation to both sides. For an inequality, reverse the inequality symbol only when you multiply or divide both sides by a negative number.

WORKED EXAMPLE

Solve: $31x - 24 = 565$

1. Add 24 to both sides: $31x = 589$.

2. Divide both sides by 31: $x = 19$.

Answer: $x = 19$

PRACTICE 6 problems

1 Solve: $x + 9 = 23$

ANSWER _____

2 Solve: $5x = 40$

ANSWER _____

3 Solve: $x/3 - 2 = 4$

ANSWER _____

4 Solve: $6x + 5 = 35$

ANSWER _____

5 Solve: $2x - 11 < 9$

ANSWER _____

6 Solve: $-3x + 12 \geq 0$

ANSWER _____

APPLY IT Show your work

- 1** A concert ticket costs \$85. Jalen has saved \$53 and earns \$4 for each dog-walking job. Write and solve an equation to find x , the number of jobs Jalen needs.

WORK SPACE

ANSWER _____

- 2** Priya has \$38 to spend on custom stickers. The website charges \$3 for shipping plus \$7 per sticker. Write and solve an inequality to find x , the greatest number of stickers Priya can buy.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Solve the inequality and explain why the inequality symbol changes, if it does: $-2(x - 3) \leq 10$

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Solve: $x + 9 = 23$	$x = 14$
2	Solve: $5x = 40$	$x = 8$
3	Solve: $x/3 - 2 = 4$	$x = 18$
4	Solve: $6x + 5 = 35$	$x = 5$
5	Solve: $2x - 11 < 9$	$x < 10$
6	Solve: $-3x + 12 \geq 0$	$x \leq 4$

PART 2 • APPLY IT

- $53 + 4x = 85$; $x = 8$** Set up $53 + 4x = 85$. Subtract 53, then divide by 4 to get $x = 8$.
- $3 + 7x \leq 38$; $x \leq 5$, so the greatest number is 5 stickers.** Set up $3 + 7x \leq 38$. Subtract 3 and divide by 7 to get $x \leq 5$.

CHALLENGE

$x \geq -2$; the symbol reverses because both sides are divided by -2.

Accept equivalent equation forms and equivalent inequality forms, such as $5 \geq x$ for $x \leq 5$. In the sticker context, accept $x \leq 5$ with a stated maximum of 5 whole stickers.