

Equation Escape

Use inverse operations to isolate x .

GRADE 8 • 8.EE.C.7

CCSS.Math.Content.8.EE.C.7 "Solve linear equations in one variable."

NAME _____

DATE _____

BALANCE AND SOLVE

To solve a linear equation, use inverse operations to get the variable alone. First simplify each side by distributing and combining like terms, then keep the equation balanced by doing the same operation to both sides.

WORKED EXAMPLE

$$5(x - 2) = 3x + 14$$

1. Distribute: $5x - 10 = 3x + 14$
2. Subtract $3x$: $2x - 10 = 14$
3. Add 10: $2x = 24$
4. Divide by 2: $x = 12$

Answer: $x = 12$

PRACTICE 6 problems

1 $7x + 8 = 50$

ANSWER _____

2 $4x - 7 = x + 20$

ANSWER _____

3 $x/7 + 9 = 15$

ANSWER _____

4 $8(x + 1) = 72$

ANSWER _____

5 $18 - 7x = -31$

ANSWER _____

6 $9(x - 4) + 6 = 4x + 45$

ANSWER _____

APPLY IT Show your work

- 1** A music app has a \$7 activation fee and costs \$9 each month. You have spent \$70 total. How many months have you paid for the app?

WORK SPACE

ANSWER _____

- 2** Plan A charges \$7 per month plus an \$8 start-up fee. Plan B charges \$4 per month plus a \$26 start-up fee. After how many months will the plans cost the same amount?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Solve the equation. Show how you clear the fractions before isolating x : $(x - 8)/4 + 7 = (x + 16)/8$

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	$7x + 8 = 50$	$x = 6$
2	$4x - 7 = x + 20$	$x = 9$
3	$x/7 + 9 = 15$	$x = 42$
4	$8(x + 1) = 72$	$x = 8$
5	$18 - 7x = -31$	$x = 7$
6	$9(x - 4) + 6 = 4x + 45$	$x = 15$

PART 2 • APPLY IT

- 7 months** Let m be the number of months. Solve $7 + 9m = 70$ to get $m = 7$.
- 6 months** Let m be the number of months. Solve $7m + 8 = 4m + 26$, so $3m = 18$ and $m = 6$.

CHALLENGE

 $x = -24$

Accept equivalent algebraic steps that keep both sides balanced and reach the stated solution. For word problems, accept answers with the correct unit, months.