

Equation Escape Route

Use properties to isolate x .

GRADE 8 • 8.PFA.4.b

8.PFA.4.b "Apply properties of real numbers and properties of equality to solve multistep linear equations in one variable (up to four steps). Coefficients and numeric terms will be rational..."

NAME _____

DATE _____

KEEP BOTH SIDES EQUAL

Use the distributive property first when a number multiplies parentheses. Combine like terms, then use the same operation on both sides to isolate x . Check your answer by substituting it into the original equation.

WORKED EXAMPLE

Solve: $11(x - 4) + 13 = 68$

1. Distribute: $11x - 44 + 13 = 68$
2. Combine constants: $11x - 31 = 68$
3. Add 31 to both sides: $11x = 99$
4. Divide both sides by 11: $x = 9$

Answer: $x = 9$

PRACTICE 6 problems

1 Solve: $6x + 14 = 50$

ANSWER _____

2 Solve: $8(x - 2) = 40$

ANSWER _____

3 Solve: $5x + 12 - 2x = 30$

ANSWER _____

4 Solve: $7(x + 1) - 8 = 34$

ANSWER _____

5 Solve: $\frac{3}{4}x + 6 = 18$

ANSWER _____

6 Solve: $2(x + 7) + 5x = 41$

ANSWER _____

APPLY IT Show your work

- 1** An art club makes 2 prize packs. Each pack has x custom buttons and 5 logo buttons. The club adds 6 loose buttons, making 32 buttons altogether. How many custom buttons are in each prize pack?

WORK SPACE

ANSWER _____

- 2** Six friends enter a gaming tournament. Each friend pays x dollars for entry and a \$2 equipment fee. The group also gives a \$3 donation, and their total is \$45. What is the entry fee for each friend?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Solve: $\frac{3}{2}(x - 2) + 5 = \frac{1}{2}x + 12$

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Solve: $6x + 14 = 50$	$x = 6$
2	Solve: $8(x - 2) = 40$	$x = 7$
3	Solve: $5x + 12 - 2x = 30$	$x = 6$
4	Solve: $7(x + 1) - 8 = 34$	$x = 5$
5	Solve: $3/4x + 6 = 18$	$x = 16$
6	Solve: $2(x + 7) + 5x = 41$	$x = 27/7$

PART 2 • APPLY IT

1. **8 custom buttons** Write $2(x + 5) + 6 = 32$. Distribute and solve to get $x = 8$.
2. **\$5** Write $6(x + 2) + 3 = 45$. Distribute and solve to get $x = 5$.

CHALLENGE

 $x = 10$

Accept equivalent fraction forms for problem 6, including $3 \frac{6}{7}$. In the word problems, accept the correct value with its stated unit.