

Balance Both Sides

Solve equations with x on each side.

GRADE 8 • TEKS 8.8.C

8.8.C "model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants; and"

NAME _____

DATE _____

KEEP THE EQUATION BALANCED

Use inverse operations to move all x terms to one side and all constants to the other side. Combine like terms, then divide by the coefficient of x to find the solution.

WORKED EXAMPLE

Solve: $1.5x + 13 = 0.5x + 25$

1. Subtract $0.5x$ from both sides: $x + 13 = 25$

2. Subtract 13 from both sides: $x = 12$

Answer: $x = 12$

PRACTICE 6 problems

1 Solve: $(2/3)x + 4 = (1/6)x + 9$

ANSWER _____

2 Solve: $(3/4)x - 2 = (1/4)x + 6$

ANSWER _____

3 Solve: $(5/9)x + 2 = (2/9)x + 8$

ANSWER _____

4 Solve: $(3/5)x + 11 = (1/5)x + 3$

ANSWER _____

5 Solve: $(7/10)x - 3/2 = (1/10)x + 3/2$

ANSWER _____

6 Solve: $(4/11)x + 5/3 = (1/11)x + 14/3$

ANSWER _____

APPLY IT Show your work

- 1** Two music apps charge a monthly fee plus a cost for each song download. App A costs \$3 plus \$2/5 per song. App B costs \$7 plus \$1/5 per song. How many songs must you download for the total costs to be equal?

WORK SPACE

ANSWER _____

- 2** Ari is saving for headphones. Ari has \$8 and saves \$3/8 each week. Jordan has \$14 and saves \$1/8 each week. After how many weeks will they have the same amount of money?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Solve: $(\frac{2}{3})(x - 3) + 5 = (\frac{1}{6})(x + 6) + 7$

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Solve: $(\frac{2}{3})x + 4 = (\frac{1}{6})x + 9$	x = 10
2	Solve: $(\frac{3}{4})x - 2 = (\frac{1}{4})x + 6$	x = 16
3	Solve: $(\frac{5}{9})x + 2 = (\frac{2}{9})x + 8$	x = 18
4	Solve: $(\frac{3}{5})x + 11 = (\frac{1}{5})x + 3$	x = -20
5	Solve: $(\frac{7}{10})x - \frac{3}{2} = (\frac{1}{10})x + \frac{3}{2}$	x=5
6	Solve: $(\frac{4}{11})x + \frac{5}{3} = (\frac{1}{11})x + \frac{14}{3}$	x = 11

PART 2 • APPLY IT

- 20 songs** Let x be the number of songs. Solve $3 + (\frac{2}{5})x = 7 + (\frac{1}{5})x$ to get $x = 20$.
- 24 weeks** Let x be the number of weeks. Solve $8 + (\frac{3}{8})x = 14 + (\frac{1}{8})x$ to get $x = 24$.

CHALLENGE

x = 10

Accept equivalent fraction, decimal, or integer forms when they represent the same solution. For word problems, require the correct unit, songs or weeks.