

Algebra 1 · Linear Equations and Literal Equations · Worksheet

Common Core A-REI.A.1, A-REI.B.3, A-CED.A.1, A-CED.A.4 · mathovore.fr

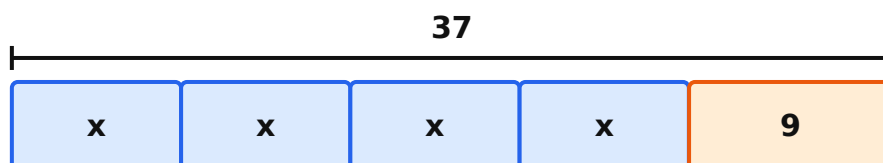
Name: _____ Date: ____/____/____ Score: _____

These 22 problems practice Common Core standards A-REI.A.1, A-REI.B.3, A-CED.A.1 and A-CED.A.4. Solve multi-step linear equations with fractions, decimals and variables on both sides, justify steps, recognize equations with no solution or infinitely many solutions, and rearrange formulas. The last six are word problems that start with writing an equation. Work from easiest to hardest.

Algebra 1 Common Core: A-REI.A.1 · A-REI.B.3 · A-CED.A.1 · A-CED.A.4

Problem 1: Two steps with a tape diagram

Solve $4x + 9 = 37$.



Four equal parts of size x and a part of size 9 make 37.

Problem 2: Variables on both sides

Solve $7x - 3 = 5x + 11$.

Problem 3: Distribute first

Solve $3(x + 4) = 2x + 19$.

Problem 4: Fractional coefficient

Solve $\frac{2}{3}x - 5 = 7$.

Problem 5: Fractions with a common denominator

Solve $\frac{x}{2} + \frac{x}{3} = 10$.

Problem 6: Fractions on both sides

Solve $\frac{x+3}{4} = \frac{2x-1}{3}$.

Problem 7: Decimals on both sides

Solve $0.4x + 1.2 = 0.7x - 0.3$.

Problem 8: Give the reasons

Maya solved $2(x-3)+5=x+7$ in the five steps shown. Write the reason for each step after the first.

1. $2(x-3)+5=x+7$
2. $2x-6+5=x+7$
3. $2x-1=x+7$
4. $x-1=7$
5. $x=8$

$2(x - 3) + 5 = x + 7$	→ Given
$2x - 6 + 5 = x + 7$	→ Distributive property
$2x - 1 = x + 7$	→ Combine like terms
$x - 1 = 7$	→ Subtraction property of equality
$x = 8$	→ Addition property of equality

Reasons for each step of $2(x-3)+5=x+7$.

Problem 9: Find the error

Jamal solved $3(x-2)=12$ like this: $3x-2=12$, $3x=14$, $x=\frac{14}{3}$. Find his mistake and solve correctly.

Problem 10: No solution or not?

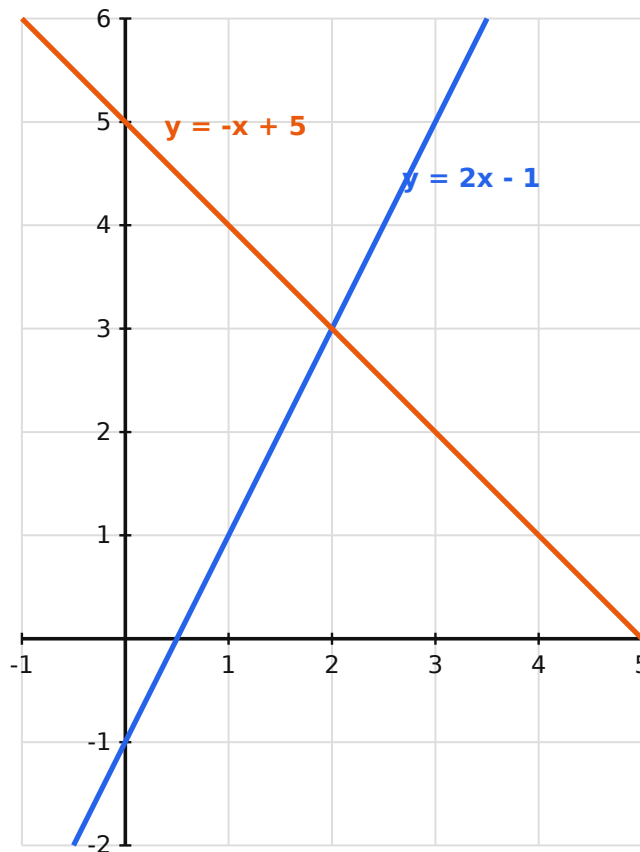
Solve $2(x+3)=2x+5$. Explain the result.

Problem 11: Infinitely many solutions?

Solve $4(x-2)+3=4x-5$. Explain the result.

Problem 12: Solve by graphing

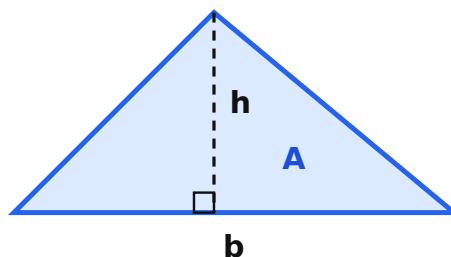
The graph shows $y = 2x - 1$ and $y = -x + 5$. Use it to estimate the solution of $2x - 1 = -x + 5$, then solve algebraically.



Graphs of $y = 2x - 1$ and $y = -x + 5$.

Problem 13: Solve for the height

The area of a triangle is $A = \frac{1}{2}bh$. Solve for h , then find h when $A = 36$ and $b = 9$.



A triangle with base b , height h and area A .

Problem 14: Solve for width

The perimeter of a rectangle is $P = 2l + 2w$. Solve for w , then find w when $P = 50$ and $l = 15$.

Problem 15: Standard form to y

Solve $2x + 3y = 12$ for y . Then find y when $x = 3$.

Problem 16: Temperature formula

Solve $C = \frac{5}{9}(F - 32)$ for F . Then convert 35°C to degrees Fahrenheit.

Problem 17: Taxi fare

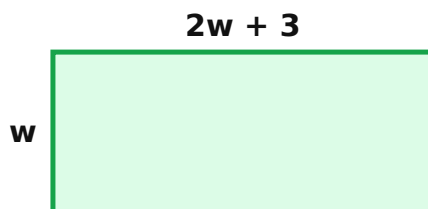
Priya's taxi ride costs \$3.50 plus \$2.25 per mile. The total was \$17.00. Write and solve an equation for the number of miles.

Problem 18: Gym plans

Gym A charges a \$60 sign-up fee and \$25 per month. Gym B charges no fee and \$40 per month. After how many months do both cost the same, and what is that cost?

Problem 19: Garden fence

The length of a rectangular garden is 3 feet more than twice its width. The perimeter is 54 feet. Find the dimensions.



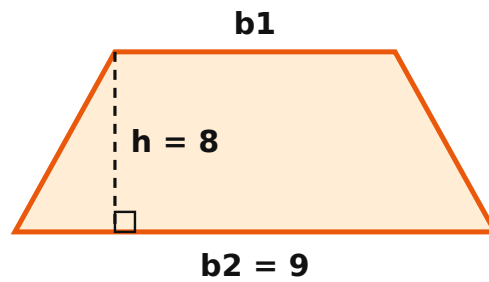
A garden with width w and length $2w + 3$.

Problem 20: Consecutive odd integers

The sum of three consecutive odd integers is 87. Find the integers.

Problem 21: Trapezoid base

The area of a trapezoid is $A = \frac{1}{2}(b_1 + b_2)h$. Solve for b_1 . Then find b_1 when $A = 84$, $b_2 = 9$ and $h = 8$.



A trapezoid with area 84, bases b_1 and 9, and height 8.

Problem 22: Shopping with fractions

Ethan spent one third of his savings on a game and one fourth on a jacket. He has \$35 left. How much did he save?