

Solving Linear Equations: math practice, Grade 8 – download the PDF

22 problems graded by difficulty (★ easy, ★★ medium, ★★★ hard). Try first, without looking at the solutions!

1 Undo a subtraction

★ ★ ★

Solve $y - 7 = 12$ and check your answer.

2 Negative coefficient

★ ★ ★

Solve $-4a = 36$.

3 A basic two-step equation

★ ★ ★

Solve $3x + 8 = 26$.

4 Dividing first

★ ★ ★

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

5 Subtracting from a number



Solve $6 - 2k = 18$.

6 Is it a solution?



Is $x = -3$ a solution of $5x + 7 = 2x - 2$? Show your work.

7 Taxi ride



A taxi charges a \$3.50 pickup fee plus \$2 for each mile. Maria's ride cost \$15.50. Write an equation and find how many miles she rode.

8 Opening parentheses



Solve $4(x - 3) = 28$ in two different ways: first by dividing by 4, then by distributing.

9 Like terms first



Solve $3x + 4x - 9 = 19$.

10 The variable on both sides



Solve $9x - 5 = 4x + 20$.

11 A minus sign before parentheses



Solve $6 - 3(x + 1) = 15$.

12 Find the error

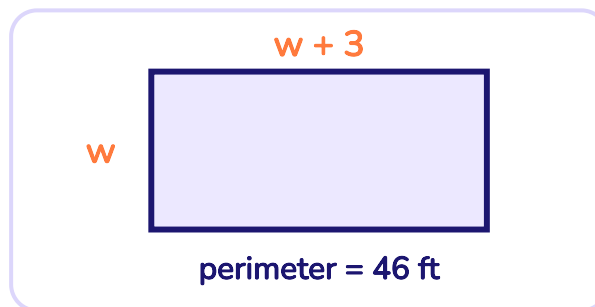
Jon solves $2x + 1 = 2x + 3$. He subtracts $2x$ from both sides, gets $1 = 3$, and writes “ $x = 1$ ”. Explain what is wrong and give the correct conclusion.

13 Equation with a fraction bar

Solve $\frac{2x - 1}{5} = 3$.

14 Garden perimeter

A rectangular garden is 3 feet longer than it is wide, and its perimeter is 46 feet (about 14 meters). Use the figure to write an equation, then find the width and the length.

**15 Fahrenheit and Celsius**

The formula $F = 1.8C + 32$ converts degrees Celsius to degrees Fahrenheit. On a hot day a thermometer reads 95°F . What is the temperature in degrees Celsius?

16 Distribute on both sides

Solve $5(2x - 3) - 4x = 3(x + 4) + 6$.

17 Fractions on both sides

★★★

Solve $\frac{3}{4}x + 2 = \frac{1}{4}x + \frac{7}{2}$.

18 Decimals and parentheses

★★★

Solve $0.6(x - 5) = 0.2x + 1$.

19 How many solutions?

★★★

Consider the equation $2(x + 3) = 2x + c$, where c is a number.

- For which value of c does it have infinitely many solutions?
- For which values of c does it have no solution?
- Can it ever have exactly one solution? Explain.

20 Bike rental showdown

★★★

Shop A rents a bike for \$12 plus \$4 per hour. Shop B charges \$4 plus \$6 per hour. After how many hours do the two shops cost the same, and what is that cost? Write an equation and solve it.

21 Consecutive integers

★★★

The sum of three consecutive integers is 9 less than 4 times the smallest one. Find the three integers.

22 Fractions of expressions

★★★

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



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