

Solving Multi-Step Linear Equations

Grade 8 math · Test · Standards: 8.EE.C.7a, 8.EE.C.7b

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points in total and should take about 45 minutes. Show every balance step and check your solutions. Write exact answers as fractions when needed.

Standards: 8.EE.C.7a, 8.EE.C.7b · **Level:** Grade 8

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Variables on both sides (2 points)

Solve $7x - 12 = 3x + 20$.

Question 2 Parentheses (3 points)

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

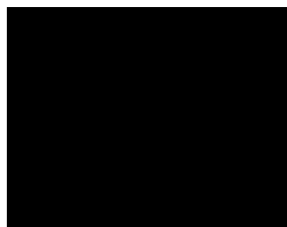
Question 3 Fractions (3 points)

Solve $\frac{2}{5}x + 3 = \frac{1}{5}x + 7$.

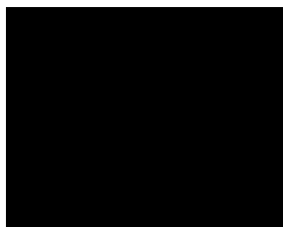
Question 4 Match the picture (3 points)

Panels A, B and C show the two sides of an equation as lines. Match each equation to a panel and state the number of solutions. (1 point each)

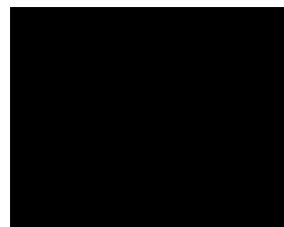
- a. $6x + 9 = 3(2x + 3)$
- b. $8x - 5 = 8x + 1$
- c. $2x + 11 = 5x - 1$



A



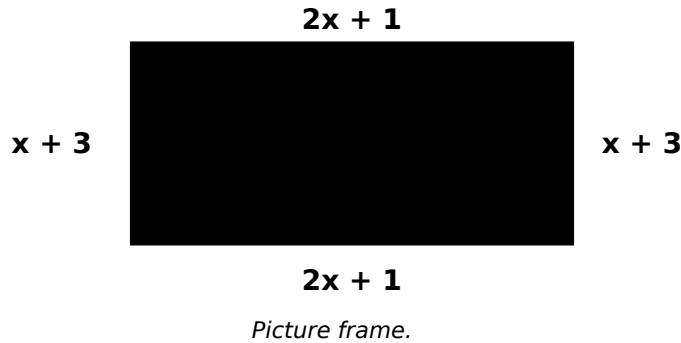
B



C

Question 5 Frame perimeter (3 points)

A rectangular picture frame has length $2x + 1$ inches and width $x + 3$ inches. The perimeter is 50 inches. Write an equation (1 point), solve it (1 point) and give the length and width (1 point).

**Question 6 Streaming plans (3 points)**

Plan A costs a \$30 setup fee plus \$12 per month. Plan B costs a \$6 setup fee plus \$15 per month. After how many months are the total costs equal (2 points), and what is that total (1 point)?

Question 7 Find Dev's error (2 points)

Dev solved $3(x + 4) = 2x + 20$ and wrote $3x + 4 = 2x + 20$, so $x = 16$. Find his mistake and give the correct solution.

Question 8 Choosing k (1 point)

Find k so that $5x + 2 = kx + 9$ has no solution.