

Solving Linear Equations with Fractions

Core Worksheet

Worked Examples & Guided Practice

I Do (Teacher Model) Solve

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

Show clear algebraic working.

We Do (Guided Practice) Solve

$$\frac{5x + 3}{2} = 4x - 1$$

Show clear algebraic working.

You Do (Independent Practice) Solve

$$\frac{3x - 1}{5} = 2x + 4$$

Show clear algebraic working.

Challenge (Extension) Solve

$$\frac{4x + 1}{3} = \frac{2x - 5}{2}$$

Show clear algebraic working.

Practice Perfect Questions

Q1. Solve $\frac{x + 5}{3} = 2x - 1$

Q2. Solve $\frac{2x - 7}{4} = x + 2$

Q3. Solve $\frac{5x + 1}{2} = 3x - 4$

Q4. Solve $\frac{3 - 2x}{5} = x - 5$

Q5. Solve $\frac{4x - 3}{6} = \frac{x + 2}{3}$

Q6. Solve $\frac{x - 1}{2} + \frac{x + 3}{4} = 5$ (Hint: find a common denominator first).

Answers & Worked Solutions

Model Solutions

- **I Do:** $7x - 2 = 4(3x + 1) \implies 7x - 2 = 12x + 4 \implies -2 - 4 = 12x - 7x \implies -6 = 5x \implies x = -\frac{6}{5}$ or -1.2
- **We Do:** $5x + 3 = 2(4x - 1) \implies 5x + 3 = 8x - 2 \implies 3 + 2 = 8x - 5x \implies 5 = 3x \implies x = \frac{5}{3}$
- **You Do:** $3x - 1 = 5(2x + 4) \implies 3x - 1 = 10x + 20 \implies -1 - 20 = 10x - 3x \implies -21 = 7x \implies x = -3$
- **Challenge:** Multiply both sides by 6 (or cross-multiply): $2(4x + 1) = 3(2x - 5) \implies 8x + 2 = 6x - 15 \implies 8x - 6x = -15 - 2 \implies 2x = -17 \implies x = -8.5$

Practice Perfect Questions Solutions

- Q1.** $x + 5 = 3(2x - 1) \implies x + 5 = 6x - 3 \implies 8 = 5x \implies x = \frac{8}{5} = 1.6$
- Q2.** $2x - 7 = 4(x + 2) \implies 2x - 7 = 4x + 8 \implies -15 = 2x \implies x = -7.5$
- Q3.** $5x + 1 = 2(3x - 4) \implies 5x + 1 = 6x - 8 \implies 9 = x \implies x = 9$
- Q4.** $3 - 2x = 5(x - 5) \implies 3 - 2x = 5x - 25 \implies 28 = 7x \implies x = 4$
- Q5.** $4x - 3 = 2(x + 2) \implies 4x - 3 = 2x + 4 \implies 2x = 7 \implies x = 3.5$
- Q6.** Multiply entire equation by 4: $2(x - 1) + (x + 3) = 20 \implies 2x - 2 + x + 3 = 20 \implies 3x + 1 = 20 \implies 3x = 19 \implies x = \frac{19}{3}$