

Solving Two-Step Equations with Rational Numbers

Grade 7 math · Test · Standards: 7.EE.B.3, 7.EE.B.4a

Name: _____ Date: _____ Class: _____

This test covers two-step equations of the forms $px + q = r$ and $p(x + q) = r$ with whole numbers, decimals, fractions and negatives, plus equations from diagrams and real situations. Show each step. Calculators are not allowed. Plan on 45 minutes for the 8 questions.

Standards: 7.EE.B.3, 7.EE.B.4a · **Level:** Grade 7

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

Question 1 Solve Two Equations (2 points)

Solve each equation.

- a. $6x + 9 = 51$ (1 point)
- b. $4x - 11 = -35$ (1 point)

Question 2 A Quotient Equation (2 points)

Solve $\frac{x}{5} - 8 = -3$.

Question 3 Decimal Coefficients (2 points)

Solve $3.2x + 1.6 = 14.4$.

Question 4 Two Ways with Parentheses (3 points)

Consider $5(x - 2.4) = 16$.

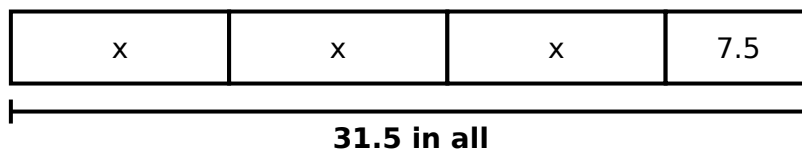
- a. Solve by dividing first. (1 point)
- b. Solve by distributing first. (1 point)
- c. Check the solution in the original equation. (1 point)

Question 5 Fractions in an Equation (3 points)

Solve $\frac{3}{4}(x + \frac{2}{3}) = \frac{7}{2}$. Show every step.

Question 6 Equation from a Diagram (3 points)

The tape diagram shows three equal parts and one part of 7.5.



Tape diagram.

- Write an equation for the diagram. (1 point)
- Solve it. (1 point)
- Check the solution. (1 point)

Question 7 Gym Membership (3 points)

A gym charges a \$35 sign-up fee plus \$18.50 each month. Nia has paid \$146 in total.

- Write an equation for the number of months m . (1 point)
- Solve the equation. (1 point)
- State what the solution means. (1 point)

Question 8 Find the Mistake (2 points)

Marcus's work is shown.

Line	Marcus's work
1	$2(x + 5) = 18$
2	$x + 5 = 36$
3	$x = 31$

Marcus's three lines.

- Identify his error. (1 point)
- Find the correct solution. (1 point)