

## Algebra: Solving Two-Step Linear Equations



Use the matching sheet ID when checking answers.

**Part A: Solve each linear equation. Show algebraic inverse operations and select the correct solution.**

1. Solve for  $x$  in the equation:  $4x - 17 = 35$

Answer: B.  $x = 13$

Step 1: Add 17 to both sides:  $4x = 35 + 17 = 52$ . Step 2: Divide both sides by 4:  $x = 52 \div 4 = 13$ .

2. An equipment rental company charges a fixed reservation fee of \$25 plus \$18 per hour of use. If Liam's total rental invoice was \$115, which equation models this scenario, and how many hours  $h$  did Liam use the equipment?

Answer: B.  $18h + 25 = 115$ ;  $h = 5$  hours

The cost equation is  $18h + 25 = 115$ . Subtract 25:  $18h = 90$ . Divide by 18:  $h = 90 \div 18 = 5$  hours.

3. Solve the fractional linear equation:  $(y / 3) + 8 = 14$

Answer: A.  $y = 18$

Subtract 8 from both sides:  $y / 3 = 14 - 8 = 6$ . Multiply both sides by 3:  $y = 6 \times 3 = 18$ . Check:  $(18 / 3) + 8 = 6 + 8 = 14$ .

**Part B: Step-by-Step Inverse Operation Fluency. Fill in the missing numerical value for each algebraic transformation.**

1. For  $5x + 15 = 55$ , subtracting 15 gives  $5x = 40$ ; then dividing by 5 yields  $x = 8$  as the exact solution.

2. In the equation  $3(k - 2) = 15$ , distributing gives  $3k - 6 = 15$ ; adding 6 gives  $3k = 21$ , so  $k = 7$  is the single root.

3. Solving  $(w / 4) - 2 = 4$ , first add 2 to both sides to get  $w / 4 = 6$ ; multiplying by 4 results in  $w = 24$ .

4. When solving  $-2m + 10 = 20$ , subtract 10 to obtain  $-2m = 10$ ; dividing by -2 gives  $m = -5$ .