

Solving One-Step Equations with Inverse Operations

Grade 6 math · Worksheet Answer Key · Standards: 6.EE.B.5, 6.EE.B.6, 6.EE.B.7

Each solution names the inverse operation and applies it to both sides, then checks by substitution. If your answer differs, compare the operation you chose, since choosing the wrong inverse is the most common slip.

Standards: 6.EE.B.5, 6.EE.B.6, 6.EE.B.7 · **Level:** Grade 6

Problem 1 Testing values

Substitute each. $4 - 3 = 1$, no. $7 - 3 = 4$, no. $11 - 3 = 8$, yes. **11**.

Problem 2 Solve an addition equation

Subtract 8 from both sides: $x = 21 - 8 = \mathbf{13}$. Check: $13 + 8 = 21$.

Problem 3 Solve a subtraction equation

Add 5 to both sides: $n = 12 + 5 = \mathbf{17}$. Check: $17 - 5 = 12$.

Problem 4 Solve a multiplication equation

Divide both sides by 6: $k = 54 \div 6 = \mathbf{9}$. Check: $6 \times 9 = 54$.

Problem 5 Solve a division equation

Multiply both sides by 4: $m = 7 \times 4 = \mathbf{28}$. Check: $28 \div 4 = 7$.

Problem 6 Variable on the right

The equation reads the same either way. Subtract 9: $a = 15 - 9 = \mathbf{6}$. Check: $6 + 9 = 15$.

Problem 7 Decimal addition

Subtract 3.5: $x = 10 - 3.5 = \mathbf{6.5}$. Check: $6.5 + 3.5 = 10$.

Problem 8 Decimal subtraction

Add 2.25: $y = 4 + 2.25 = \mathbf{6.25}$. Check: $6.25 - 2.25 = 4$.

Problem 9 Decimal coefficient

Divide by 1.5: $z = 9 \div 1.5 = \mathbf{6}$. Check: $1.5 \times 6 = 9$.

Problem 10 Fraction addition

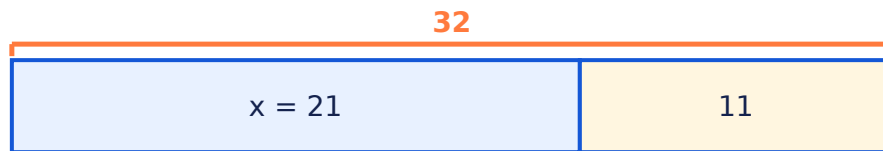
Subtract $\frac{3}{4}$: $x = 2 - \frac{3}{4} = \frac{8}{4} - \frac{3}{4} = \frac{5}{4}$, or $1\frac{1}{4}$. Check: $\frac{5}{4} + \frac{3}{4} = 2$.

Problem 11 Fraction coefficient

Divide both sides by $\frac{3}{5}$, which means multiply by $\frac{5}{3}$: $x = 9 \times \frac{5}{3} = \mathbf{15}$. Check: $\frac{3}{5} \times 15 = 9$.

Problem 12 Tape diagram: parts and total

The two parts make 32, so $x + 11 = 32$. Subtract 11: $x = 21$.



$$x + 11 = 32, \text{ so } x = 21.$$

$x = 21$.

Problem 13 Tape diagram: equal parts

Five equal parts make 45, so $5x = 45$. Divide by 5: $x = 9$.



$$5x = 45, \text{ so } x = 9.$$

$x = 9$.

Problem 14 Writing equations

a. $4n = 36$, so $n = 36 \div 4 = \mathbf{9}$.

b. $n - 7 = 20$, so $n = 20 + 7 = \mathbf{27}$.

Problem 15 Jersey purchase

He had m dollars, spent 27 and has 13 left, so $m - 27 = 13$. Add 27: $m = 40$. **\$40.**

Problem 16 Sticker teams

Each team gets s , so $8s = 72$. Divide by 8: $s = 9$. **9 stickers per team.**

Problem 17 Hiking trail

The distance hiked plus the distance remaining is the whole trail: $h + 2.9 = 8.4$. Subtract 2.9: $h = 5.5$. **5.5 miles.**

Problem 18 Ride tickets

$1.25t = 7.50$. Divide by 1.25: $t = 7.50 \div 1.25 = 6$. Check: $1.25 \times 6 = 7.50$. **6 tickets.**

Problem 19 Check a solution

Check: $21 + 6 = 27$, not 15. Sam added 6 instead of subtracting it. The inverse of adding 6 is subtracting 6: $x = 15 - 6$. **$x = 9$** ; check $9 + 6 = 15$.

Problem 20 Ribbon for a costume

What he has plus what he needs equals the total: $f + \frac{5}{6} = 2\frac{1}{6} = \frac{13}{6}$. Subtract: $f = \frac{13}{6} - \frac{5}{6} = \frac{8}{6} = \frac{4}{3}$. **$1\frac{1}{3}$ yards.**