2.2 Solving One-Step Equations

What are inverse operations?

operations that "undo" each other

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What are equivalent equations?

equations that have the same solution

Solve each equation & check your solution.

1. $x + 4.3 = 1.2$

$-4.3 \quad -4.3$

$x = -3.1$

Check: $-3.1 + 4.3 \stackrel{?}{=} 1.2$

$1.2 = 1.2$ ✓

2. $k + (-10) = -1$

$k - 10 = -1$

$+10 \quad +10$

$k = 9$

Check: $9 + (-10) \stackrel{?}{=} -1$

$-1 = -1$ ✓

Solve each equation & check your solution.

3. $-8 + d = -15$

$d + -8 = -15$

$d - 8 = -15$

$+8 \quad +8$

$d = -7$

$-8 + d = -15$

$+8 \quad +8$

$d = -7$

Check: $-8 + -7 \stackrel{?}{=} -15$

$-15 = -15$ ✓

4. $-12.2 = n + (-7.5)$

$-12.2 = n - 7.5$

$+7.5 \quad +7.5$

$-4.7 = n$

Check: $-12.2 \stackrel{?}{=} -4.7 + (-7.5)$

$-12.2 = -12.2$ ✓

Solve each equation.

5. $m - (-\frac{3}{8}) = -\frac{5}{16}$

$m + \frac{3}{8} = -\frac{5}{16}$

$-\frac{3}{8} \quad -\frac{3}{8}$

$m = -\frac{11}{16}$

Check: $-\frac{11}{16} - (-\frac{3}{8}) \stackrel{?}{=} -\frac{5}{16}$

$-\frac{5}{16} = -\frac{5}{16}$ ✓

6. $-\frac{5}{6} + f = -3\frac{1}{2}$ * must change to improper

$-\frac{5}{6} + f = -\frac{7}{2}$

$+\frac{5}{6} \quad +\frac{5}{6}$

$f = -\frac{8}{3}$

Check: $-\frac{5}{6} + -\frac{8}{3} \stackrel{?}{=} -\frac{7}{2}$

$-\frac{7}{2} = -\frac{7}{2}$ ✓

Solve each equation & check your solution.

7. $\frac{-6k}{-6} = \frac{3}{-6}$

$k = -0.5$

Check: $-6(-0.5) \stackrel{?}{=} 3$

$3 = 3$ ✓

8. $\frac{-2.4p}{-2.4} = \frac{-1.44}{-2.4}$

$p = 0.6$

Check: $-2.4(0.6) \stackrel{?}{=} -1.44$

$-1.44 = -1.44$ ✓

9. $16 \cdot \frac{d}{16} = -4 \cdot 16$

$d = -64$

Check: $\frac{-64}{16} \stackrel{?}{=} -4$

$-4 = -4$ ✓

10. $-8 \cdot \frac{5}{12} = \frac{h}{-8} \cdot -8$

$-\frac{10}{3} = h$

Check: $\frac{5}{12} \stackrel{?}{=} \frac{-\frac{10}{3}}{-8}$

$\frac{5}{12} = \frac{5}{12}$ ✓

Solve each equation.

11. $2\frac{1}{3}m = -3\frac{1}{9}$

$\frac{\frac{7}{3}m}{\frac{7}{3}} = \frac{-\frac{28}{9}}{\frac{7}{3}}$

$m = -\frac{4}{3}$

$\frac{3}{7} \cdot \frac{7}{3}m = -\frac{28}{9} \cdot \frac{3}{7}$

12. $\frac{-5w}{-5} = \frac{-0.75}{-5}$

$w = 0.15$

13. $\frac{-15}{45} = \frac{45k}{45}$

$-\frac{1}{3} = k$

14. $5\frac{1}{4} = 3\frac{1}{2}f$

$\frac{\frac{21}{4}}{\frac{7}{2}} = \frac{\frac{7}{2}f}{\frac{7}{2}}$

$\frac{3}{2} = f$

15. What number increased by 45 is −78? Define a variable, write an equation, and solve.

+ =

Let x = a number

$x + 45 = -78$

$-45 \quad -45$

$x = -123$

16. A traffic helicopter descended 160 meters to observe road conditions. It leveled off at 225 meters. What was its original altitude? Define a variable, write an equation, & solve.

goes down; subtraction; height

Let x = original altitude

$x - 160 = 225$

$+160 \quad +160$

$x = 385$ meters

17. The area of a rectangle is 28 cm^2. Find the width. Write an equation and solve.

area

$A = lw$

$\frac{28}{6} = \frac{6w}{6}$

$\frac{14}{3}$ cm $= w$

18. One fourth of a number is −16.325. What is the number? Define a variable, write an equation and solve.

multiply; equals

Let x = the number

$\frac{1}{4} \cdot x = -16.325$

$\frac{1}{4} \quad \frac{1}{4}$

$x = -65.3$