NAME _____ DATE _____

3-6

Solving Addition and Subtraction Equations (Pages 122–127)

You can add or subtract the same number on each side of an equation and the result is an **equivalent equation**. Equivalent equations have the same solution.

Addition Property of Equality	If you add the same number to each side of an equation, the two sides remain equal. For any numbers a, b, and c, if $a = b$, then $a + c = b + c$.
Subtraction Property of Equality	If you subtract the same number from each side of an equation, the two sides remain equal. For any numbers a, b, and c, if $a = b$, then $a - c = b - c$.

EXAMPLES

A Solve $x - \frac{2}{3} = \frac{1}{3}$.

$x - \frac{2}{3} = \frac{1}{3}$

$x - \frac{2}{3} + \frac{2}{3} = \frac{1}{3} + \frac{2}{3}$ *Add $\frac{2}{3}$ to each side.*

$x = 1$ *$-\frac{2}{3} + \frac{2}{3} = 0$, $\frac{1}{3} + \frac{2}{3} = 1$*

B Solve $9 + y = 13$.

$9 + y = 13$

$9 + y - 9 = 13 - 9$ *Subtract 9 from each side.*

$y = 4$ *$9 - 9 = 0$, $13 - 9 = 4$*

Try These Together

1. Solve $a + (-8) = 17$.
HINT: Add 8 to each side.

2. Solve $b - (-18) = 4$.
HINT: This equation is equivalent to $b + 18 = 4$.

PRACTICE

Solve each equation. Check your solution.

3. $11 - c = -16$

4. $5.4 = d + 6.2$

5. $e - (-23) = 31$

6. $4.8 + f = 9.6$

7. $g - (-20) = 11$

8. $14 = h - 21$

9. $-2.8 = j + (-5.1)$

10. $-12 + k = -19$

11. $m + (-8) = \frac{1}{2}$

12. Age Minya is 30 years younger than her mom, who is 44. How old is Minya?

13. **Standardized Test Practice** If the low temperature for the day is $-14°$F and the high is 22°F, by how much did the temperature increase?

A 8°F **B** 18°F **C** 28°F **D** 36°F

Answers: 1. 25 2. −14 3. 27 4. −0.8 5. 8 6. 4.8 7. −9 8. 35 9. 2.3 10. −7 11. $8\frac{1}{2}$ 12. 14 13. D