

**3-4 Practice****Solving Multi-Step Equations**

M Solve each problem by working backward.

1. Three is added to a number, and then the sum is multiplied by 4. The result is 16. Find the number.
2. A number is divided by 4, and the quotient is added to 3. The result is 24. What is the number?
3. Two is subtracted from a number, and then the difference is multiplied by 5. The result is 30. Find the number.
4. **BIRD WATCHING** While Michelle sat observing birds at a bird feeder, one fourth of the birds flew away when they were startled by a noise. Two birds left the feeder to go to another stationed a few feet away. Three more birds flew into the branches of a nearby tree. Four birds remained at the feeder. How many birds were at the feeder initially?

Solve each equation. Then check your solution.

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|--|--------------------------------|-----------------------------|
| 5. $-12n - 19 = 77$ | 6. $17 + 3f = 14$ | 7. $15t + 4 = 49$ |
| 8. $\frac{u}{5} + 6 = 2$ | 9. $\frac{d}{-4} + 3 = 15$ | 10. $\frac{b}{3} - 6 = -2$ |
| 11. $\frac{1}{2}y - \frac{1}{8} = \frac{7}{8}$ | 12. $-32 - \frac{3}{5}f = -17$ | 13. $8 - \frac{3}{8}k = -4$ |
| 14. $\frac{r + 13}{12} = 1$ | 15. $\frac{15 - a}{3} = -9$ | 16. $\frac{3k - 7}{5} = 16$ |
| 17. $\frac{x}{7} - 0.5 = 2.5$ | 18. $2.5g + 0.45 = 0.95$ | 19. $0.4m - 0.7 = 0.22$ |

Write an equation and solve each problem.

20. Seven less than four times a number equals 13. What is the number?
21. Find two consecutive odd integers whose sum is 116.
22. Find two consecutive even integers whose sum is 126.
23. Find three consecutive odd integers whose sum is 117.
24. **COIN COLLECTING** Jung has a total of 92 coins in his coin collection. This is 8 more than three times the number of quarters in the collection. How many quarters does Jung have in his collection?

3-5 Skills Practice

Solving Equations with the Variable on Each Side

Justify each step.

1. $4k - 3 = 2k + 5$

$4k - 3 - 2k = 2k + 5 - 2k$

$2k - 3 = 5$

$2k - 3 + 3 = 5 + 3$

$2k = 8$

$\frac{2k}{2} = \frac{8}{2}$

$k = 4$

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____

2. $2(8u + 2) = 3(2u - 7)$

$16u + 4 = 6u - 21$

$16u + 4 - 6u = 6u - 21 - 6u$

$10u + 4 = -21$

$10u + 4 - 4 = -21 - 4$

$10u = -25$

$\frac{10u}{10} = \frac{-25}{10}$

$u = -2.5$

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____

Solve each equation. Then check your solution.

3. $2m + 12 = 3m - 31$

4. $2h - 8 = h + 17$

5. $7a - 3 = 3 - 2a$

6. $4n - 12 = 12 - 4n$

7. $4x - 9 = 7x + 12$

8. $-6y - 3 = 3 - 6y$

9. $5 + 3r = 5r - 19$

10. $-9 + 8k = 7 + 4k$

11. $8q + 12 = 4(3 + 2q)$

12. $3(5j + 2) = 2(3j - 6)$

13. $6(-3v + 1) = 5(-2v - 2)$

14. $-7(2b - 4) = 5(-2b + 6)$

15. $3(8 - 3t) = 5(2 + t)$

16. $2(3u + 7) = -4(3 - 2u)$

17. $8(2f - 2) = 7(3f + 2)$

18. $5(-6 - 3d) = 3(8 + 7d)$

19. $6(w - 1) = 3(3w + 5)$

20. $7(-3y + 2) = 8(3y - 2)$

21. $\frac{2}{3}v - 6 = 6 - \frac{2}{3}v$

22. $\frac{1}{2} - \frac{5}{8}x = \frac{7}{8}x + \frac{7}{2}$