Name: _____

Sec. 3.3: Solve Multi-Step Equations

Multi-step equations involve several concepts put together. Generally, steps required to solve them include:

- Use
- Combine
- Use
- Perform

Examples

Solve the equation.

1. $8x + 6x - 5 = 23$	2. $15 = 7y - 2(y + 10)$
3. $8 - 2(3q - 4) = -14$	4. $\frac{3}{4}(2x - 8) = 12$

Sec. 3.3 Practice Problems

Solve the equation.

1) $x + 8x - 4 = 14$	2) $m + 4 + 2m = 19$	3) $t + 2 - 3t = 16$
4) $13 = \frac{20x}{4} - 3x + 7$	5) $2.5 = 6.8y - 6.1 - 2.5y$	6) $5\frac{1}{2} = 2z + 4\frac{3}{8} + 2z$
7) $4 + 2(3a + 5) = 26$	8) $8 - 4(-2a - 4) = 48$	9) $-3 = 12y - 5(2y - 7)$
10) $\frac{1}{2}(-6x - 4) = 10$	11) $\frac{4}{3}(2y + 3) = 20$	12) $24 = \frac{3}{8}(8r - 16)$

13) $\frac{1}{5}(4h + 9) = 21$

14) $\frac{1}{3}(2x - 8) + 4 = -10$

15) $\frac{5}{2}(3m - 7) + 2 = -23$

16) Find the value of x for the rectangle, given that the perimeter of the rectangle is 200 cm.

17) CHALLENGE: An even integer can be represented by the expression $2n$. Find three consecutive even integers that have a sum of 54.

18) A ticket agency sells tickets for a concert. The agency charges $50.00 for each ticket, a convenience fee of $2.50 per ticket, and a processing fee of $3.00 per order. If a group places an order that comes to a total charge of $948.00, how many tickets did the group order?

19) An industrious student decided to start a t-shirt business. If the start-up costs will be $750, and each shirt will cost $6.00 to produce and sell, how many shirts will the student need to sell at $10.00 each to break even?

20) Sue rode her bike to a viewpoint for a picturesque lunch. She averaged 15 mph on her way to the viewpoint. Then she rode to a friend's house, averaging a more relaxed rate of 12 mph. It took her 20 minutes longer to reach her friend's house than it had taken her to reach the viewpoint. If t represents the amount of time (in hours) that the ride to the viewpoint took, and d represents the total distance (in miles) Sue rode, we can model the situation with the equation

$$12(t+\frac{1}{3}) = d - 15t$$

If she traveled a total distance of 22 miles, how long did it take Sue to ride from her house to the viewpoint?

REVIEW: Simplify the expression.

21) $8x(2x-6)$	22) $-3y(-6-5y)$	23) $(7+2t)(-4t)$

Answers to Sec. 3.3 Practice Problems

1. $x = 2$
2. $m = 5$
3. $t = -7$
4. $x = 3$
5. $y = 2$
6. $z = \frac{9}{32}$
7. $a = 2$
8. $a = 3$
9. $y = -19$
10. $x = -4$
11. $y = 6$
12. $r = 10$
13. $h = 24$
14. $x = -17$
15. $m = -1$
16. $x = 34$ cm
17. 16, 18, 20
18. The group ordered 18 tickets.
19. The student will need to sell 188 shirts to break even. (The student will actually make a profit of $2, but selling 187 shirts would give a loss of $2.)
20. It took Sue 40 minutes ($\frac{2}{3}$ of an hour) to ride to the viewpoint.
21. $16x^2 - 48x$
22. $18y + 15y^2$
23. $-28t - 8t^2$