

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)  $\frac{4}{3}(2y + 3) = 20$

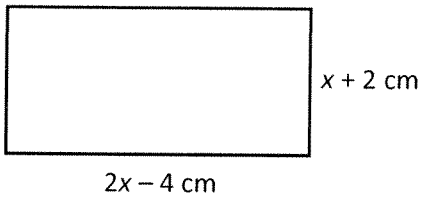
12)  $24 = \frac{3}{8}(8r - 16)$

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

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

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.  $-28t - 8t^2$