3.4 GN Multi-Step Equations

Solve for x.

$$2(2x+5)-7=19$$

DO	UNDO

Solve the following equations by using a reciprocal:

$$18 = \frac{1}{2}(-3 + 3n)$$

DO	UNDO

There are several ways to solve this equation. You decide for yourself the best method:

$$-5 - 6(x - 4) = 31 \qquad\qquad -5 - 6(x - 4) = 31$$

3.4 Multi-Step Equations

When we have: $r^2 = x$

then: $r = \pm\sqrt{x}$

Solve for x.

$$4x^2 + 7 = 23$$

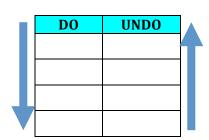| DO	UNDO

Solve for x.

$$\frac{7}{20}(x-3)^2 = 35$$

DO	UNDO

Solve for x.

$$3 + \sqrt{2x+9} = 8$$

DO	UNDO

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3.4 *Multi-Step Equation* Practice Problem Set

Solve each equation.		
1. $18 = 3(3x-6)$	2. $30 = -5(6n+6)$	3. $37 = -3+5(x+6)$
4. $-13 = 5(1+4m)-2m$	5. $4(-x+4)=12$	6. $-2 = -(n-8)$
7. $\dfrac{2x-3}{4}=9$	8. $-22 = 14+\dfrac{2g}{3}$	9. $\dfrac{-4m-3}{-6}=-9$
10. $-\dfrac{3+n}{7}=-5$	11. $\dfrac{3(5x-2)}{4}=6$	12. $\dfrac{2}{3}(5-a)=10$

Solve the equation below. Justify each step in the proof table

13. $-5n-8(1+7n)=-8$

Statements	Reasons

Write and Solve an equation for the given scenario.

14. I'm thinking of a number. When I multiply the number by 2, subtract 3 from the result, multiply the result by -4, and then subtract 10 from the result, I get 26. What is the number?

15. Fill in the table.

EQUATION	STEPS	ANSWER	CHECK
	1. I am thinking of a number. 2. Multiply by 4. 3. Subtract 2. 4. Divide by 6. 5. Add 5.		
$\dfrac{2x-10}{5}=8$			
		-7	

16. Which value of x is a solution to the equation 5x - (2x - 3) = 7?

17. If $3 - \frac{2}{3}x = 7$, then x = ?

Solve the equations.

17. $4r^2 + 1 = 325$

18. $7v^2 + 1 = 29$

19. $\frac{2}{3}\left(m^2 + 5\right) = 70$

20. $(5x-1)^2 = 16$

21. $\frac{3(x+2)^2}{4} = 12$

22. $3(x-4)^2 + 2 = 77$

Solve the radical equations ("Radical" means square root). **Then check you solution.**

17. $\sqrt{x} - 3 = 5$

18. $\sqrt{3x+1} - 3 = 7$

19. $5 - \sqrt{2k} = 3$

20. $3 - \sqrt{x+1} = 0$

21. $4 - \sqrt{x+1} = 5$

22. $9 - \sqrt{t+2} = 5$

1. Multiply: $$\frac{3}{2} \cdot \frac{14}{15}$$	2. Evaluate if x = -5 and y = -1 -x - y	3. Simplify: $$\frac{-2-35}{-4+5} + 36$$
4. Distribute: - (-x - 1)	5. Simplify: -x – (y – 3x)	6. Simplify $$\frac{-6p+15}{6}$$	7. Simplify $$4\frac{2}{3} + \left(-3\frac{1}{6}\right)$$

_____ **[Packet 3.4: Solve Multi-Step Equations** `5`

Application And Extension

1. The velocity (v, measured in meters per second) of an object can be measured in terms of its mass (m, measured in kilograms) and Kinetic Energy (E_k, measured in Joules):

$$V = \sqrt{\frac{2E_k}{m}}$$

What is the Kinetic Energy of a bowling ball with a mass of 3 kg that is traveling at 6 m/s?

2. The height (h, measured in feet) of a falling object can be measured in terms of its initial height (h_0, measured in feet) and time (t, measured in seconds):

$$h = -16t^2 + h_0$$

Wile E. Coyote is trying to catch the Roadrunner. He plans to drop an anvil on him as he passes by. The coyote is on a 150-foot cliff. How long will it take for the anvil to hit the ground?