NAME: ______ PERIOD: _____ DATE: _____

Homework Problem Set

1. Solve for *x* and fill in the reasons for each step.

$\frac{1}{5}[10-5(x-2)] = \frac{1}{10}(x+1)$	Original statement	
2[10-5(x-2)] = (x+1)	Multiply both sides byl	
2[10-5x+10] = (x+1)	Distribute the 5	
2[20-5x] = (x+1)	Combine like terms	
40 - 10x = x + 1	Distribute the 2	
40 = 11x + 1	Addition Property of Equa	lity
39 = 11x	Subtraction Property of E	quality
$\frac{39}{11} = x$	Division Property of Equali	

Solve each equation for x. Be sure to show each step, but you do not need to give a reason for each one.

2.
$$x+6-x=2x+10$$

$$6 = 2x+10$$

$$-10 = 2x$$

$$-4 = 2x$$

$$2 = 2x$$

3.
$$15 = \frac{3}{5}x$$

4.
$$5(x+5) = 10$$

$$5x + 25 = 10$$

$$-25 - 25$$

$$5x = -15$$

5.
$$x+11+x=-7$$

$$2x+1/ = -7$$

$$-/(-1)$$

$$2x = -18$$

$$2 = -9$$

6.
$$2x+7=4x-9$$

$$2x+7=4x-9$$

$$-2x$$

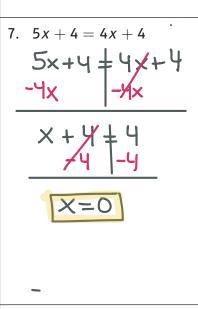
$$-2x$$

$$+9$$

$$16=2x$$

$$2=2x$$

$$3=2$$



8.
$$9(x+4) = 9x+4$$

 $9x+36 \neq 9x+4$
 $-9x$
 $-9x$
 $36 \neq 4$

9.
$$3x-7+5=2(x-2)$$

 $3x-2+2x-4$
 $-2x$
 $-2x$

10.
$$2x + 9 + x = 3(x - 2) + 15$$

 $3x + 9 = 3x - 6 + 15$
 $3x + 9 \neq 3x + 9$
 $9 = 9$
ALL REAL NUMBERS
OR
In finite Solutions

Solve each equation for x.

11.
$$7x - [4x - 3(x - 1)] = x + 12$$

 $7x - [4x - 3x + 3] = x + 12$
 $7x - [x + 3] = x + 12$
 $7x - x - 3 = x + 12$
 $6x - 3 = x + 12$
 $6x - 3 = x + 12$
 $5x - 3 = 12$
 $5x - 3 = 13$
 $5x = 15$
 $x = 3$

12.
$$2[2(3-5x)+4] = 5[2(3-3x)+2]$$

$$2[6-10x+4] = 5[6-6x+2]$$

$$2[-10x+10] = 5[-6x+8]$$

$$-20x+20 = -30x+40$$

$$10x+20 = 40$$

$$10x = 20$$

$$X = 20$$

13.
$$\frac{1}{2}(18-5x) = \frac{1}{3}(6-4x)$$

LCD: 6

3 $\left(\frac{1}{2}(18-5x)\right) = \left(\frac{1}{3}(6-4x)\right)^{\frac{3}{2}}$

3 $\left(18-5x\right) = 2(6-4x)$

54-15x=12-8x

54=12+7x

42=7x

6=x

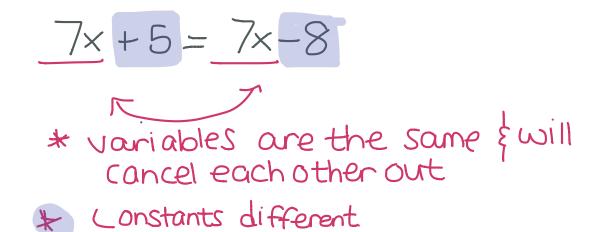
14.
$$18 = \frac{2}{3}x$$

$$3.18 = \frac{2}{3} \times \frac{3}{2}$$

$$27 = X$$

15. **Challenge** Write an equation that has no solution.

Answers will vary.



REVIEW-Evaluate Formulas

For each formula, substitute the given value and simplify.

16. Velocity:
$$v = \frac{d}{t}$$

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If d = 50 miles and t = 2 hours, what is the velocity, v? Be sure to include units in your answer.

17. Density:
$$\rho = \frac{m}{v}$$

If the mass, m, is 50 kg and the volume, V, is 25 cubic centimeters, cm³, what is the density, ρ ?

$$p = \frac{m}{v} \rightarrow p = \frac{50 \text{ kg}}{25 \text{ cm}^3} \rightarrow p = 2 \text{ kg/cm}^3$$

18. Acceleration:
$$a = \frac{v_f - v_i}{t}$$

If the final velocity, V_f , is 20 m/s², the initial velocity, V_f , is 10 m/s² and the time, t, in which the change occurs is 5 seconds, what is the acceleration?

$$\alpha = \frac{V_f - V_i}{t} \rightarrow \alpha = \frac{20 \text{ m/s}^2 - 10 \text{ m/s}^2}{5 \text{ seconds}} \rightarrow \alpha = \frac{10 \text{ m}}{5 \text{ s}} \rightarrow \frac{2 \text{ m/s}^3}{5 \text{ s}}$$

19. Momentum: p = mv

If the mass, m, is 10 kg and the velocity, V, is 10 m/s², what is the momentum, p?