**Algebra RH**

**Essential Question: What are literal equations?**

**Do Now:** Solve for $x$. $x + a = b$

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The **properties of equality** justify the series of **inverse operations** that are performed in order to solve an equation.

| | |
|---|---|
| Addition Property of Equality | If a = b, then a + c = b + c |
| Subtraction Property of Equality | If a = b, then a – c = b – c |
| Multiplication Property of Equality | If a = b, then ac = bc |
| Division Property of Equality | If a = b, then $\frac{a}{c} = \frac{b}{c}$, c ≠ 0 |

Example:
Write the property of equality used in each step in solving the equation.

| Steps | Property |
|---|---|
| $-5x - 4 = 16$ | |
| | |
| | |

**Literal Equations:** _____

**When solving for another variable in an equation:**

- Ask yourself, "What happened to the variable being solved?"
- Keep in mind, the last operation done is the first undone using inverse operations.
- Always keep your equation balanced (what you do to one side must be done to the other side).

**Examples:** Solve for $x$.

1. $ax = b$
2. $\frac{x}{a} = b$
3. $\frac{x}{a} + c = d$

4. $a(x - 4) = b$

5. $\frac{x}{a-b} = c$

6. $\frac{a}{x-b} = \frac{c}{d}$

7. $c = 3x - 3b$

8. $c - 2x = bx$

9. $a = \frac{1}{3}(b + x)$

Solve for the variable indicated.

10. $C = \frac{5}{9}(F - 32)$; $F$

11. $A = \frac{1}{2}h(b_1 + b_2)$; $h$

12. $P = 2(l + w)$; $w$

**Algebra RH** **HW #_____**

**On a separate sheet of paper, recopy the original equation and solve for $x$.**

1. $ax - b = c$

2. $\frac{x}{a} + b = c$

3. $(a - 3)x = b$

4. $\frac{a}{b}x = c$

5. $\frac{x - a}{b} = c$

6. $\frac{ax}{b} = c$

7. $b = ax - c + d$

8. $c = \frac{ax - b}{d}$

9. $abx = c$

10. $\frac{3x}{a + b} = c$

**On a separate sheet of paper, recopy the original equation and solve for the indicated variable.**

11. $A = \frac{1}{2}bh$ ; $b$

12. $c = \frac{a + y}{4b}$ ; $y$

13. $r = q + pq$ ; $p$

14. $c = i(h - j)$ ; $h$

15. $\frac{p}{r + q} = \frac{a}{t}$ ; $r$

16. $ax + bx = c$ ; $x$

17. $m = \frac{x + y + z}{3}$ ; $y$

18. $V = \frac{1}{3}Bh$ ; $B$

19. $2s = n(a + 1)$ ; $a$

20. $S = \frac{a}{a - r}$ ; $r$