Practice: U1A L3 Variables in Two Positions | Name: KEY | HR: ____

Directions: Solve each equation showing work as demonstrated in class. **Quick Review**

1. $\frac{2}{3}x = 10$

$\frac{2x}{2} = \frac{30}{2}$ * POE

$x = 15$ ÷ POE

$x \geq 15$

Answer: 15

2. $-\frac{3}{5}x = 12$

$\frac{-3x}{-3} = \frac{60}{-3}$ * POE

$x = -20$ ÷ POE

$x \leq -20$

Answer: ____

3. $\frac{7}{4}x = 21$

$\frac{7x}{7} = \frac{84}{7}$ * POE

$x = 12$ ÷ POE

$x \geq 12$

Answer: ____

Variables in Two Positions - Easy to Moderate

4. $6x + 2x = 40$

$8x = 40$ combine like terms CLT

$\frac{8x}{8} = \frac{40}{8}$ ÷ POE

$x = 5$

$x \geq 5$

Answer: ____

5. $9x - 4x = 30$

$5x = 30$ CLT

$\frac{5x}{5} = \frac{30}{5}$ ÷ POE

$x = 6$

$x \geq 6$

Answer: ____

6. $4x + 7 \neq 2x + 17$

$-2x \quad -2x$ - POE

$2x + 7 \neq 17$

$-7 \quad -7$ - POE

$\frac{2x}{2} = \frac{10}{2}$ ÷ POE

$x = 5$

Answer: ____

7. $7x - 5 \neq 3x + 15$

$-3x \quad -3x$ - POE

$4x - 5 \neq 15$ - simplify

$+5 \quad +5$ ~ ADD POE

$\frac{4x}{4} \neq \frac{20}{4}$ - simplify

$x = 5$ ÷ POE

Answer: ____

8. $8x \neq 5x + 18$

$-5x \quad -5x$ - POE

$\frac{3x}{3} \neq \frac{18}{3}$ ÷ POE

$x = 6$

Answer: ____

9. $3x + 12 \neq 5x + 2$

$-3x \quad -3x$

$12 \neq 2x + 2$

$2x + 2 = 12$

$2x = 10$

$x = 5$

Answer: ____

10. $10x - 6 = 4x + 24$

$-4x \quad -4x$

$6x - 6 = 24$

$+6 \quad +6$

$6x = 30$

$x = 5$

Answer: ____

11. $5x + 3 = -x + 21$

$+1x \quad +x$

$6x + 3 = 21$

$-3 \quad -3$

$6x = 18$

$x = 18/6 = 3$

Answer: ____

12. $\frac{1}{2}x + 4 = x - 2$

$-\frac{1}{2}x \quad -\frac{1}{2}x$

$4 = \frac{1}{2}x - 2$

$+2 \quad +2$

$6 = \frac{1}{2}x$

$12 = x$

$x = 12$

Answer: ____

Alternate

$x + 8 = 2x - 4$

$8 = x - 4$

$12 = x$

$x = 12$

Practice: U1A L3 Variables in Two Positions (back) | Name: _____ HR: ____

Directions: Continue solving and justify each step. Problems increase in difficulty.

Variables on Both Sides - Moderate to Challenging

13. $\frac{3}{4}x + 1 = \frac{1}{2}x + 5$

$-\frac{1}{2}x \quad -\frac{1}{2}x$) - POE

$\frac{1}{4}x + 1 = 5$

$-1 \quad -1$) - POE

$4 \cdot \frac{1}{4}x = 4 \cdot 4$) * POE

$x = 16$

Answer: $x = 16$

14. $3x + 5x - 2 = 6x + 10$

$8x - 2 = 6x + 10$

$-6x \quad -6x$

$2x - 2 = 10$

$+2 \quad +2$

$2x = 12$

Answer: $x = 6$

15. $2x + 7x + 4 = 5x + 28$

$9x + 4 = 5x + 28$

$-5x \quad -5x$

$4x + 4 = 28$

$-4 \quad -4$

$\frac{4x}{4} = \frac{24}{4}$

Answer: $x = 6$

Mixed Review

16. Solve: $x - 9 = 14$

$+9 \quad +9$

$x = 23$

$x =$

Answer: 23

17. Solve the following AND name the property(ies) of equality use.

$6 \cdot \frac{5}{6}x = 20 \cdot 6$

$5x = 120$

$\frac{5x}{5} = \frac{120}{5}$

$x = 24$

Properties Used:

* POE

÷ POE

18. Solve the following AND name the property(ies) of equality use.

$4x + 7 = 31$

$-7 \quad -7$

$4x = 24$

$\frac{4x}{4} = \frac{24}{4}$

$x = 6$

Properties Used:

- POE

÷ POE

19. Given $a = 18$ and $b = -7$, the sum of a and b is 5 more than what number?

Equation:

$a + b = x + 5$

$18 + -7 = x + 5$

$11 = x + 5$

$6 = x$

What is the number?

6

$a + b = 11$

$6 + 5 = 11$

20. Given $m = -4$ and $n = 9$, the product of m and n is equal to the product of 6 and what number?

Equation: $m = -4 \quad n = 9$

$-4(9) = 6x$

$\frac{-36}{6} = \frac{6x}{6}$

$-6 = x$

What is the number?

$x = -6$

21. Given $x = 30$ and $y = -5$, the ratio of x to y is equal to the ratio of 18 to what number?

$x = 30 \quad y = -5$

Equation:

$x \cdot \frac{30}{-5} = \frac{18}{x} \cdot x$

$-5 \cdot \frac{30x}{-5} = 18 \cdot -5$

$30x = -90$

What is the number?

$x = -3$