

Equations w/Variables on Both Sides Practice Problems

Solve the equation for the unknown variable. Remember to keep the equation balanced by performing the same operation on both sides of the equation in order to cancel!

1. $4n - 6 = n + 9$

5. $-4x - 3 = -6x + 9$

9. $\frac{1}{3}(6y - 9) = -2y + 13$

2. $-(y + 7) = -6y + 8$

6. $5a = 2a - 42 - 3a$

10. $7(x + 1) = 5(2x - 3) + 1$

3. $3(4x - 9) = 5(2x - 5)$

7. $14 - x = 3x + 8$

11. $\frac{3s}{2} + 7 = 4s - 3$

4. $\frac{3z}{2} + 7 = 4z - 3$

8. $\frac{5n - 3}{2} = 3n + 8$

12. $\frac{2(2b + 1)}{3} = 3(b - 2)$

Determine if the given value makes the open sentence true or false. (An "open sentence" is an equation with a variable)

Example

$$a = 2$$

$$\frac{3(a+2)}{4} - 1 = 5$$

$$\frac{3((2)+2)}{4} - 1 = 5$$

$$\frac{3(4)}{4} - 1 = 5$$

$$\frac{12}{4} - 1 = 5$$

$$3 - 1 = 5$$

$$2 \neq 5$$

$$\frac{3(a+2)}{4} - 1 = 5 \text{ is}$$

FALSE when $a = 2$.

$$16. 2(d+5) = 6(d-1) \quad d = 4$$

$$17. \quad n = 8$$

$$\frac{3}{4}n - 1 = -\frac{1}{2}n + 9$$

$$18. y^2 - 1 = 2x + 2 \quad y = 8$$

19. Which of the following values of x make this a true statement? $x = -2$, $x = 0$, $x = 2$

$$4y + 2 = 2(y + 3) + 2(y - 2)$$

20. Now solve for x .

$$4y + 2 = 2(y + 3) + 2(y - 2)$$

21. What strange thing do you notice about your solution? Can you find any value of x that would NOT make this a true solution? Why or why not?

22. Which of the following values of x make this a true statement? $x = -2$, $x = 0$, $x = 2$

$$3(a-2) + 2(a+5) = 5(a+1) + 1$$

23. Now solve for x.

$$3(a-2) + 2(a+5) = 5(a+1) + 1$$

24. What strange thing do you notice about your solution? Can you find any value of x that WOULD make this a true solution? Why or why not?

Look at the steps taken in the equations solved below. Write the operation performed in that step in each blank.

<p>Example</p> <p><u>Steps:</u> Given Equation: $4n - 6 = n + 9$ Step 1: $4n - n - 6 = n - n + 9$ Step 2: $3n - 6 + 6 = 9 + 6$ Step 3: $\frac{3n}{n} = \frac{15}{n}$ $n = 5$</p>	<p><u>Operations:</u> <u>n/a (or "Given")</u> <u>Subtraction</u> <u>Addition</u> <u>Division</u></p>	<p>25.</p> <p><u>Steps:</u> Given Equation: $\frac{5n-3}{2} = 3n+8$ Step 1: $2\left(\frac{5n-3}{2}\right) = 2(3n+8)$ Step 2: $5n-3-3 = 6n+16-3$ Step 3: $5n-6n = 6n-6n+13$ Step 4: $\frac{-n}{-1} = \frac{13}{-1}$ $n = -13$</p>	<p><u>Operations:</u> <u>n/a (or "Given")</u> <hr/> <hr/> <hr/> <hr/></p>
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