LESSON MAKER PRO

Does It Fit?

Test values in equations and inequalities.

GRADE 6 · 6.AF.B.18

6.AF.B.18 "Determine whether a value is a solution to an equation or inequality by using substitution to conclude whether a given value makes the equation or inequality true."

NAME _____ DATE _____

SUBSTITUTE AND CHECK

To test a value, replace x with that value and simplify. The value is a solution only if the number statement is true. Check the inequality sign carefully: equal numbers do not make < or > true.

WORKED EXAMPLE

Is x = 5 a solution to 9x + 14 = 59?

1. Replace x with 5: 9(5) + 14 = 59.
2. Multiply: 45 + 14 = 59.
3. Add: 59 = 59, which is true.

Answer: Yes, x = 5 is a solution.

PRACTICE 6 problems

1 Is x = 6 a solution to 3x + 8 = 26? Write the number statement and your decision.

ANSWER _____

2 Is x = 10 a solution to 2x - 7 < 12? Write the number statement and your decision.

ANSWER _____

3 Substitute x = 20 into x/4 + 3 = 8. Is it a solution?

ANSWER _____

4 Substitute x = 4 into 6x + 1 >= 25. Is it a solution?

ANSWER _____

5 Is x = 7 a solution to 30 - 2x > 18? Write the number statement and your decision.

ANSWER _____

6 Substitute x = 16 into x/2 - 3 = 6. Is it a solution?

ANSWER _____

APPLY IT Show your work

1 A skateboard rental costs $8 plus $3 per hour. The equation 8 + 3x = 26 represents a $26 rental for x hours. Is x = 6 a solution? Show your substitution.

WORK SPACE

ANSWER _____

2 You have 30 arcade credits. Each game costs 4 credits. The inequality 4x <= 30 shows the number of games, x, you can afford. Is x = 8 a solution? Show your substitution.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A classmate says x = 8 is a solution to both 2(x + 3) <= 22 and x/4 + 2 = 6. Is the classmate correct? Show each substitution and explain.

WORK SPACE AND ANSWER

ANSWER KEY

Does It Fit?

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Is x = 6 a solution to 3x + 8 = 26? Write the number statement and your decision.	**3(6) + 8 = 26, so 26 = 26. Yes.**
2	Is x = 10 a solution to 2x - 7 < 12? Write the number statement and your decision.	**2(10) - 7 < 12 becomes 13 < 12. No.**
3	Substitute x = 20 into x/4 + 3 = 8. Is it a solution?	**Yes. 20/4 + 3 = 8.**
4	Substitute x = 4 into 6x + 1 >= 25. Is it a solution?	**Yes. 6(4) + 1 = 25, and 25 >= 25.**
5	Is x = 7 a solution to 30 - 2x > 18? Write the number statement and your decision.	**30 - 2(7) > 18 becomes 16 > 18. No.**
6	Substitute x = 16 into x/2 - 3 = 6. Is it a solution?	**No. 16/2 - 3 = 5, not 6.**

PART 2 · APPLY IT

1. **Yes, x = 6 is a solution.** Substitute 6: 8 + 3(6) = 26. The statement is true.
2. **No, x = 8 is not a solution.** Substitute 8: 4(8) <= 30 becomes 32 <= 30. The statement is false.

CHALLENGE

No. For x = 8, 2(8 + 3) = 22, so 22 <= 22 is true. But 8/4 + 2 = 4, and 4 = 6 is false. The value solves only the inequality.

Accept equivalent substituted statements that correctly show whether each comparison is true or false. For the challenge, students must check both statements.