LESSON MAKER PRO

True or Not?

Test values in equations by substituting.

GRADE 6 · 6.AT.C.8.a

6.AT.C.8.a "Explain that a variable can represent an unknown number and use substitution to determine whether a given number makes an equation true."

NAME _____ DATE _____

TEST A VALUE

A variable such as x can stand for a number you do not know. To test a possible value, replace x with that number and simplify both sides. If the sides have the same value, the number makes the equation true.

WORKED EXAMPLE

Does x = 5 make 7x + 13 = 48 true?

1. Replace x with 5: 7(5) + 13 = 48.
2. Multiply: 35 + 13 = 48.
3. Add: 48 = 48.

Answer: Yes, x = 5 makes the equation true.

PRACTICE 6 problems

1 Does x = 6 make 4x + 2 = 26 true? Show your substitution.

ANSWER _____

2 Does x = 4 make 9x - 8 = 38 true? Show your substitution.

ANSWER _____

3 Does x = 12 make x/3 + 6 = 10 true? Show your substitution.

ANSWER _____

4 Does x = 8 make 2(x + 3) = 20 true? Show your substitution.

ANSWER _____

5 Does x = 8 make 3x + 2 = x + 18 true? Show your substitutions.

ANSWER _____

6 Does x = 9 make 30 - x = 2x + 3 true? Show your substitutions.

ANSWER _____

APPLY IT Show your work

1 In a video game, you earn 12 points for finishing a level and 3 points for each hidden star. The equation 12 + 3x = 27 represents a score of 27 points, where x is the number of hidden stars. Does x = 4 make the equation true? Show your substitution.

WORK SPACE

ANSWER _____

2 At a school movie night, a ticket costs $8 and a snack costs $4. The equation 8x + 4 = 28 gives the total cost for x tickets and one snack. Does x = 3 make the equation true? Show your substitution.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Maya says x = 6 makes both 4x + 3 = 27 and 2(x + 4) = 22 true. Is Maya correct? Substitute into both equations and explain.

WORK SPACE AND ANSWER

ANSWER KEY

True or Not?

GRADE 6 · 6.AT.C.8.a

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Does x = 6 make 4x + 2 = 26 true? Show your substitution.	**4(6) + 2 = 26, so yes.**
2	Does x = 4 make 9x - 8 = 38 true? Show your substitution.	**9(4) - 8 = 28, not 38, so no.**
3	Does x = 12 make x/3 + 6 = 10 true? Show your substitution.	**12/3 + 6 = 10, so yes.**
4	Does x = 8 make 2(x + 3) = 20 true? Show your substitution.	**2(8 + 3) = 22, not 20, so no.**
5	Does x = 8 make 3x + 2 = x + 18 true? Show your substitutions.	**3(8) + 2 = 26 and 8 + 18 = 26, so yes.**
6	Does x = 9 make 30 - x = 2x + 3 true? Show your substitutions.	**30 - 9 = 21 and 2(9) + 3 = 21, so yes.**

PART 2 · APPLY IT

1. **No. 12 + 3(4) = 24, not 27.** Substitute 4 for x. The total is 24 points, so the equation is not true.
2. **Yes. 8(3) + 4 = 28.** Substitute 3 for x. Three tickets and one snack cost $28, which matches the equation.

CHALLENGE

No. In the first equation, 4(6) + 3 = 27, so it is true. In the second, 2(6 + 4) = 20, not 22, so it is false.

Accept equivalent calculations that clearly show the substituted value and a correct yes or no decision. For the challenge, students must check both equations.