

Truth Test

Use substitution to find values that make statements true.

GRADE 6 • 6.EE.B.5

CCSS.Math.Content.6.EE.B.5 "Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set..."

NAME _____

DATE _____

TEST EACH VALUE

A value is a solution only if substituting it for x makes an equation or inequality true. Replace x with each number in the specified set, then calculate and compare. Do not choose values outside the set.

WORKED EXAMPLE

From the set $\{2, 5, 8\}$, which value makes $3x + 1 = 16$ true?

1. Substitute $x = 2$: $3(2) + 1 = 7$, so $7 = 16$ is false.
2. Substitute $x = 5$: $3(5) + 1 = 16$, so $16 = 16$ is true.
3. Substitute $x = 8$: $3(8) + 1 = 25$, so $25 = 16$ is false.

Answer: $x = 5$

PRACTICE 6 problems

- 1** From the set $\{0, 4, 7\}$, which value makes $x + 6 = 10$ true?

ANSWER _____

- 2** From the set $\{-4, 9, 12\}$, which values make $11x > 80$ true?

ANSWER _____

- 3** From the set $\{13, 14, 15\}$, which value makes $4x - 9 = 47$ true?

ANSWER _____

- 4** From the set $\{0, 4, 7\}$, which values make $6x - 6 \geq 18$ true?

ANSWER _____

- 5** From the set $\{-36, -24, -12\}$, which value makes $x/6 = -4$ true?

ANSWER _____

- 6** From the set $\{20, 30, 40\}$, which values make $90 - x < 40$ true?

ANSWER _____

APPLY IT Show your work

- 1** Jalen has x game tokens, where x is one of $\{14, 18, 22\}$. He uses 9 tokens and wants to have at least 11 tokens left. Which starting number of tokens works?

WORK SPACE

ANSWER _____

- 2** A school club can order x sticker packs, where x is one of $\{6, 10, 14\}$. Each pack costs \$4, and shipping costs \$7. The club can spend at most \$55. Which numbers of packs can the club order?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

From the set $\{-18, -12, -6, 0, 6, 12\}$, which values make $4(x + 9) > 36$ true? Explain why each other value fails.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	From the set {0, 4, 7}, which value makes $x + 6 = 10$ true?	4
2	From the set {-4, 9, 12}, which values make $11x > 80$ true?	9 and 12
3	From the set {13, 14, 15}, which value makes $4x - 9 = 47$ true?	14
4	From the set {0, 4, 7}, which values make $6x - 6 \geq 18$ true?	4 and 7
5	From the set {-36, -24, -12}, which value makes $x/6 = -4$ true?	-24
6	From the set {20, 30, 40}, which values make $90 - x < 40$ true?	No values

PART 2 • APPLY IT

1. **22 tokens** Test $x - 9 \geq 11$ for each possible starting amount. Only 22 leaves at least 11 tokens.
2. **6 packs and 10 packs** Test $4x + 7 \leq 55$. The totals for 6 and 10 packs are \$31 and \$47, while 14 packs cost \$63.

CHALLENGE

6 and 12. Substitution gives $60 > 36$ and $84 > 36$. The other values produce numbers that are not greater than 36.

Accept correct values listed in any order. For the no-values item, accept "no values," "none," or an equivalent statement.