

MATHCOUNTS®

You Don't Have to Solve for x !



Warm-Up!

Try these problems before watching the lesson.

1. What is the value of $12(p + 9) - 12(p - 3)$?
2. If $\frac{1}{6}$ of 400 equals $\frac{5}{6}$ of x , what is the value of x ?
3. If $5x - 4 = 26$, what is the value of x ?
4. If $6x + px = 14x$ and $x \neq 0$, what is the value of p ?
5. If $\frac{1}{b} = \frac{b}{a}$ and $b = -1$, what is the value of a ?



The Problems

Take a look at the following problems and follow along as they are explained in the video.

6. If $3x + 1 = 10$, what is the value of $6x + 1$?
7. Given that $x + \frac{1}{x} = 4$, what is the value of $x^4 + \frac{1}{x^4}$?



Piece It Together

Use the skills you practiced in the warm-up and strategies from the video to solve the following problems.

8. If $3x + 155 = 272$, then what is the value of $3x + 160$?
9. Given $7x + 13 = 328$, what is the value of $14x + 13$?
10. If $5x + 2 = 4.003$, what is the value of $20x + 7$? Express your answer as a decimal to the nearest thousandth.
11. If $x + \frac{1}{x} = 6$, what is the value of $x^3 + \frac{1}{x^3}$?
12. If a , b and c are integers such that $a + b = 6$, $b + c = 8$ and $a + c = 10$, what is the value of $a + b + c$?



Optional Extension

To extend your understanding and have a little fun with math, try the following activities.

Practice being a mathemagician; make people think you are a mind reader when you are just using your algebra skills! Here is an example of a “trick”:

Think of a number between 1 and 50.

Double your number.

Add 6 to your new number.

Divide by 2.

Subtract your original number.

Is your new number...3?

The saying goes, “a magician never reveals the secret,” but all you need is algebra to figure this out. Try translating each of the lines of the instructions of the trick into algebraic expressions with the original number as a variable to prove why it works. Try this trick on your friends or family members! Can you come up with more tricks of your own?