



Try these problems before watching the lesson.

1. Find the value of u given the following two equations:

$$u + v + w + x + y + z = 45,$$

$$v + w + x + y + z = 21.$$

2. Expand the product $(x + 1)(y + 1)$.
3. Expand the product $(a + b)(a + b)$.
4. Find the sum of the reciprocals of two numbers if the sum of the two numbers is 6 and the product of the two numbers is 7.




First Problem: If $x^2 + \frac{1}{x^2} = 3$ and $x > 0$, what is the value of $x + \frac{1}{x}$?

Second Problem: If a and b are positive integers such that $\frac{1}{2} + \frac{1}{a} = \frac{1}{3} + \frac{1}{b}$, what is the sum of all possible values of a ?

 Follow-up Problems

5. If x , y , and z are positive numbers such that $xy = 4$, $yz = 18$, and $zx = 50$, then what is xyz ?
6. If $xyz = 45$ and $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = \frac{1}{5}$, then what is the arithmetic mean of the three products xy , yz , and zx ?
7. Find $a^3 + \frac{1}{a^3}$ if $a + \frac{1}{a} = 3$.
8. Suppose that $a + \frac{1}{a} = 6$. What is $a^4 + \frac{1}{a^4}$?
9. How many pairs of integers (b, c) satisfy the equation

$$\frac{b+7}{b+4} = \frac{c}{9}?$$

 Share Your Thoughts

Have some thoughts about the video? Want to discuss the problems on the Activity Sheet? Visit the MATHCOUNTS Facebook page or the Art of Problem Solving Online Community (www.artofproblemsolving.com).