

7 HARD Problems for the AUG 2024 DSAT (Problem Sette #8)

Video Solutions at: <https://youtu.be/xPRCwbPXt7o>

Question 1

A fruit orchard has 8 rows of apple trees and 4 rows of orange trees. Each row of apple trees has 15 trees that are healthy and 6 trees that are unhealthy. Each row of orange trees has 10 trees that are healthy and 2 trees that are unhealthy. The probability of selecting an apple tree, given that the tree is unhealthy, is equal to w . The probability of selecting an unhealthy tree, given that the tree is an orange tree, is equal to z . Note that w and z are positive constants. What is the positive difference between w and z ?



Question 2

$$(3x - 7p)(5x^2 + 8x - 4p)(x^3 + 3x^2 - 16x - 48) = 0$$

In the given equation, p is a positive constant. The product of the solutions to the equation is $-\frac{560}{9}$. What is the value of p ?



Question 3

In triangles ABC and JKL , angles B and K each have a measure of 44° . The length of side BC and the length of side KL are both equal to 25. Which additional piece of information is sufficient to prove that triangle ABC is congruent to triangle JKL ?

- A) The length of side AC is 13 and the length of side JL is 13
- B) The measure of angle A is 58° and the measure of angle L is 58°
- C) The measure of angle A is 37° and the measure of angle J is 37°
- D) No additional information is necessary



Question 4

If $4k - x$ is a factor of $x^3 - 72nk^3$, where n and k are constants and $k > 0$, what is the value of n ?



Question 5

The numbers a , b , c , p , and w are positive constants, where $b > c$.

The number a is 1,156% more than the positive difference between b and c , and c is 62.5% of b .

If a is $p\%$ greater than c , and c is $w\%$ of a , what is the value of pw ?

Round your answer to the nearest integer.



Question 6

$$(10b + 6a)x^2 + (9a^2 - 25b^2)x - 12ab = 0$$

The equation above has two real solutions, where a and b are positive constants.

The sum of the solutions to the given equation is $k(21a - 35b)$, where k is a constant. What is the value of k ?

Question 7

$$T(x) = \frac{3}{4}\left(\frac{26}{7}x - 800\right) + 15.50$$

Kyle invented a new temperature scale he called the Tutorllini scale. The function T gives the temperature, in degrees Torte, that corresponds to a temperature of x degrees Celsius. If a temperature increased by 3.3 degrees Torte, by how much did the temperature increase, in degrees Celsius?