

Maths Workshop

September 11th, 6:15pm to 8:15pm.

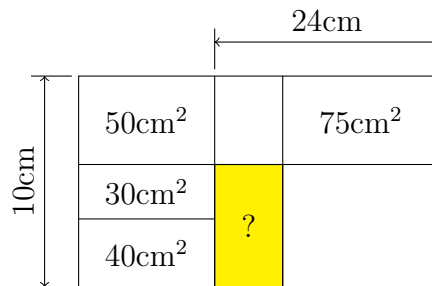
University of Auckland, rooms 303-G14 and 303-G15

Problems

1. Write 10 as the sum of positive real numbers so as to maximize their product.
2. If a , b and c are all positive integers, then how many solutions are there to the following equation?

$$a + 2b + 4c = 1024.$$

3. Find the area of the shaded rectangle.



4. How many positive integers are divisors of 50000?
5. The sum of the reciprocals of two real numbers is -1 , and the sum of their cubes is 4. What are the numbers?
6. Does there exist a set of 8 positive integers between 1 and 18 such that the difference between any two of them is either less than 7 or more than 11.
7. Four circles are constructed with the sides of a convex quadrilateral as the diameters. Does there exist a point inside the quadrilateral that is not inside any of the circles? Justify your answer.
8. Find all integer solutions to the equation $(a^2 - 1)(b^2 - 1) = (c^2 + 1)$.