



Problems

1. Admission to the local cinema is \$3 for each child and \$7 for each adult. A group of 12 people pay \$64 admission. How many children are in this group?
2. How many positive integers have all digits odd and distinct?
3. Let $ABCD$ be a quadrilateral such that AB is parallel to CD . Let P be the intersection of AC and BD . If x is the area of ABP , and y is the area of CDP , then what is the area of $ABCD$ in terms of x and y .

4. Find the largest positive integer n such that

$$\lfloor \sqrt{1} \rfloor + \lfloor \sqrt{2} \rfloor + \lfloor \sqrt{3} \rfloor + \cdots + \lfloor \sqrt{n} \rfloor$$

is a prime number.

5. Does there exist a perfect square whose first nine digits are 123456789?
6. Roll a standard pair of six-sided dice, and note the sum. There is one way of obtaining a 2, two ways of obtaining a 3, and so on, up to one way of obtaining a 12. Find another pair of six-sided dice such that:
 - The set of dots on each die is not the standard $\{1, 2, 3, 4, 5, 6\}$.
 - Each face has at least one dot.
 - The number of ways of obtaining each sum is the same as for the standard dice.