

# Game on

Game theory is a branch of mathematics that deals with determining the optimal strategy in a competitive situation. This theory is often used when analysing real world situations in economics, politics and military planning.

Mensa is an international society that identifies and fosters human intelligence for the benefit of humanity by actively encouraging research into the nature, characteristics and uses of intelligence. The prisoner's dilemma is a classic problem in game theory.

## The prisoner's dilemma

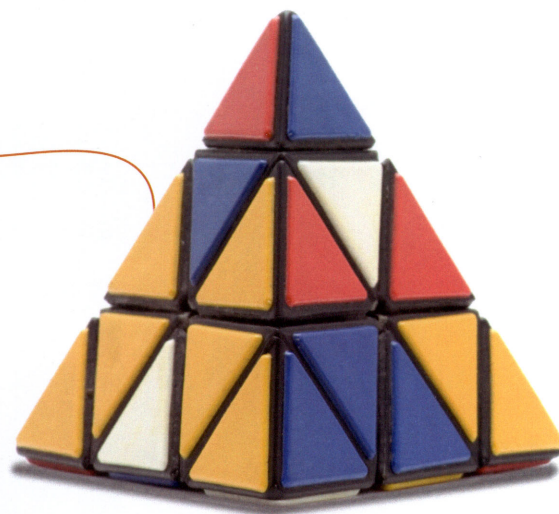
Two prisoners, A and B, are arrested for a crime they jointly committed and each is given the opportunity to confess. If neither confesses, then both will be jailed for one year; if both confess, then they will both be jailed for 10 years; and if one confesses and the other doesn't, the one who confesses will be released, while the one who doesn't will be jailed for 20 years. The prisoners are held in separate cells and not allowed to communicate.

*What should the prisoners do?*

## Match point

There is a pile of 99 matches. Two people play a variant of the ancient mathematical strategy game Nim where they take it in turns to remove 1, 2, 3, 4 or 5 matches from the pile. The winner is the player to remove the final match.

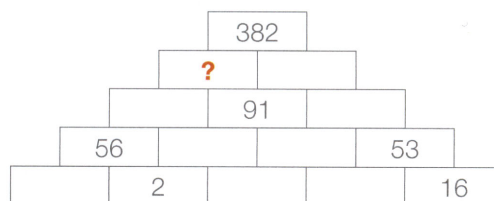
*What is the optimal strategy for playing this game?*



## More puzzles

### Pyramid scheme

The sum of each two adjacent squares gives the number above. What number should replace the question mark?



### Letter in sequence

What letter should appear next in this sequence?

C X F U I R L O O ?

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strategic thinking  $\geq$  judgement x skill