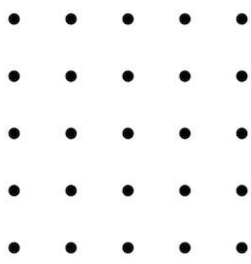




## SQUARES GAME

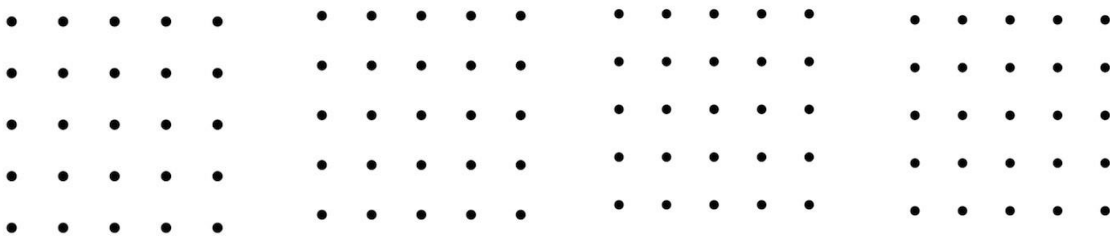


**TEAM GAME:** Draw a dotted grid on a board or a piece of scrap card where everyone can see it. This game can be played by two teams. Take it in turn for a player from each team to mark a point with the team colour. The winning team is the first to have 4 points in their colour at the vertices of a square. The teams must try to stop their opponents from making squares.

**GAME FOR 2 PLAYERS** Play exactly as in the team game. Score a point for each win. Try to find winning strategies that will help you to win.

## HELP

Start by drawing squares on these dotted grids to use later during the games. Look for tilted squares. Compare the squares that you have drawn with other people. Are your quadrilaterals all squares? Have they found squares that you did not see?



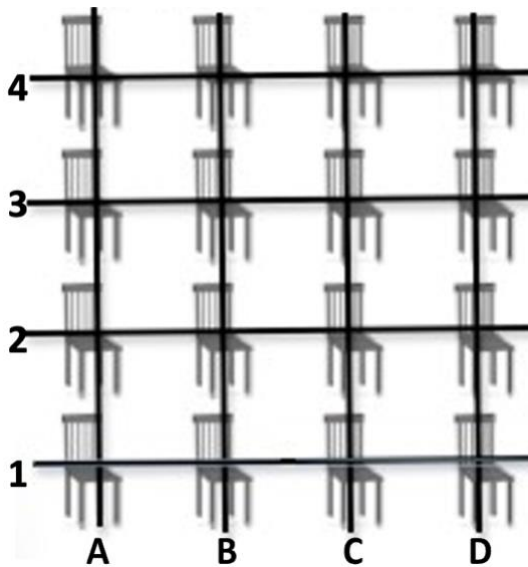
## NEXT

If you can play against a computer at <http://nrich.maths.org/2526> then try to learn how to win by thinking about the strategies used by the computer. For games like Chess and Go people become world champions by studying past games. If you can't play against a computer you can still go back over the game and see what difference an alternative move could have made. Study your moves and your opponent's and try to decide what are winning moves and what are losing moves.

The computer follows an algorithm (which may or may not be random) to place its pieces. By studying the moves over a series of games can you work out the computer's strategy?

Do you think that it is random or deterministic (i.e. the computer will always play in a certain position given a certain configuration of pieces)?

## SQUARES TEAM GAME



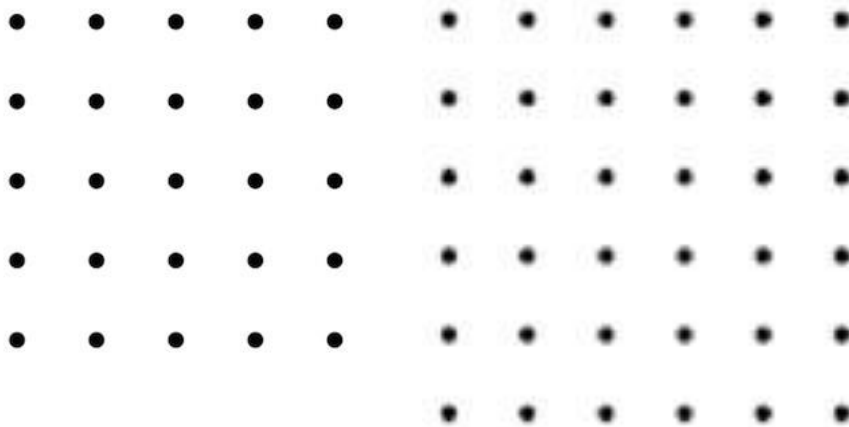
This game can be played by two teams and can be played by a whole class. Take it in turn for a player from each team to sit on one of the chairs. The winning team is the first to have 4 team members sitting at the vertices of a square. The teams must try to stop their opponents from making squares.

This works well if the learners stand together in 2 groups so that they can consult each other and if they are given time to decide where their next player should sit.

If there is doubt use the rope to check whether the 4 points form a square.

## UPGRADE TO A 5x5 GRID OR 6x6 GRID

This is a game for 2 players. The game is more challenging with a 5x5 or 6x6 grid. Take it in turn to mark an intersection point with your mark. The winner is the first to mark 4 points that are vertices of a square.



PLAY THE GAME AGAINST A COMPUTER

<http://nrich.maths.org/2526>

## SQUARES COORDINATE GAME

This is a game for 2 players. Take it in turn to give the coordinates of your chosen points. Both players must write down the coordinates and mark them on their charts. The winner is the first to capture 4 points that are vertices of a square.

				y	5				
					4				
					3				
					2				
					1				
-5	-4	-3	-2	-1	0	1	2	3	4
					-1				
					-2				
					-3				
					-4				

<b>Player 1 coordinates</b>	<b>Player 2 coordinates</b>