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INTELLECTUAL OUTPUT 02

MATHEMATICAL CREATIVITY

4 Creativities Project
№2019-1-BG01-KA201-062354





INTRODUCTION

The aim of FCREATIVITIES project is to improve the teachers' abilities to generate a creative education, leading to the creation of students who are able to think, analyze and solve daily problems. With the following six activities we aim to equip the teachers with some easy to implement, fun to organize exercises to be used with **10 to 12 year old students**, focusing on enhancing their motivation, logical thinking and mathematical creativity. The very nature of mathematics provides a suitable platform for developing creativity. Mathematical creativity could be defined as the process that results in unusual and insightful solutions to a given problem, irrespective of its level of complexity. Mathematical creativity is observed when one generates a non-standard solution for a problem which may not be solved so easily using the conventional methods.



Title of the activity

Battleship



Description

This activity is a more mathematical version of the well-known game Battleship. The rules are simple and easy to follow, and its biggest advantage is that it can be adapted to fit the learning theme, the age and mathematical knowledge of the students. The game provides an opportunity for students to learn about co-ordinate geometry in a fun and innovative way, and the competitive element maintains their interest and desire to learn new things.



Aims

1. Students will develop an understanding of the co-ordinate plane.
2. Students will gain experience with applying logic.
3. Students will foster problem solving skills.
4. Students will practice fast and precise thinking.
5. Students will practice verbal mathematical communication.



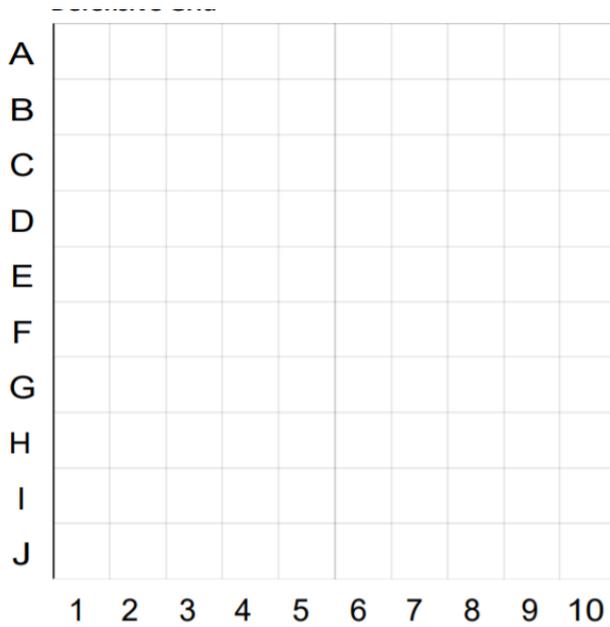
Steps we must follow

1. The students will be divided into pairs, with each student given a handout for their Battleship game.
2. Students must first fill in their Battleship grid with their own Ships – horizontally, vertically (or diagonally for increased difficulty) – without letting their opponent see.
3. Student A calls out a grid number (e.g. H,4). Their opponent says “Hit” or “Miss” depending on whether they had a Ship in that grid box. Throughout the game, each student should not be able to see their opponents Battleship grid, but may keep track of their hits and misses on their ‘offensive grid’.
4. If Student A gets a “Hit”, they may play again – otherwise Student B takes their turn.
5. Once Student A has scored a “Hit” on all parts of their opponent’s ship, Player B calls out “Hit, you sunk my Battleship”.
6. Once a player sinks all of their opponents’ Battleships, they are the winner.



Materials (if needed)

- Battleship grid hand out with offensive grid.
- Partition 'wall' between players so that they cannot see each other's grids.
- Pens/markers



Place the following ships on your defensive grid by placing each boat's letters horizontally, vertically or diagonally.

1 - Aircraft Carrier

A	A	A	A	A
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1 - Battleship

B	B	B	B
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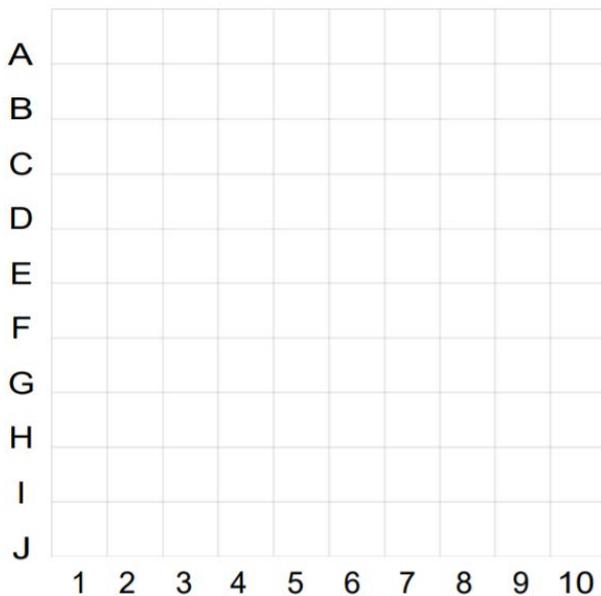
1 - Cruiser

C	C	C
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2 - Destroyers

D	D	D	D
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Offensive Grid





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Tips

This game works well with grades 5 and 6. This example is the game at its most basic, but could be played in groups of 4 with 2 per team if the group was particularly weak. It can be made increasingly more difficult, i.e. both axes having numbers instead of a letter and a number; 4 quadrants could be introduced to make the game more complex; at a higher level, the students could begin to focus on the exact location of the co-ordinates rather than the entire box.