

Battleship Game

Apparatus

battleship game or other board game that uses a similar grid
(Cheap non-electronic “travel” versions of battleship are available)

Action

The students examine the board and note the use of vectors in the game play. Given the position of a pin they should describe its position using vectors in two different ways – letter and number; and angle with length.

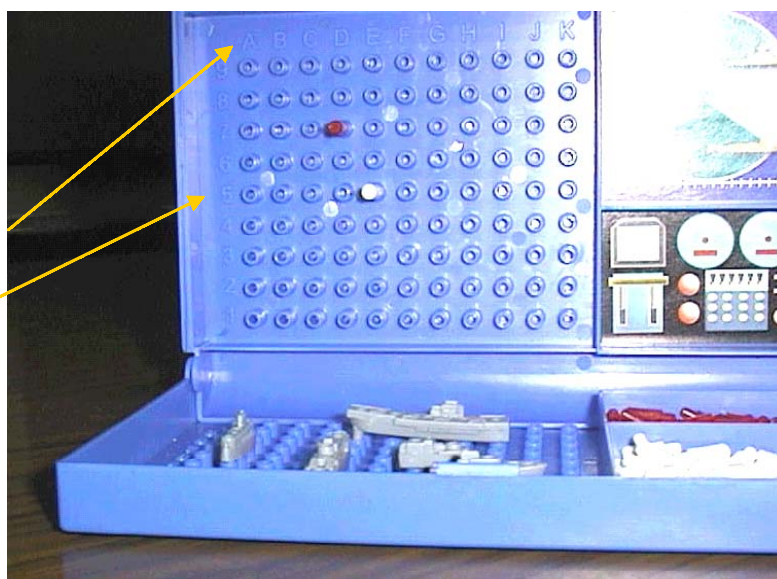
(Note that they may need to be discouraged from settling down and having a game.)

The Physics

Battleship and similar games use vectors to determine the position of a ship. The vectors are usually written in terms of letter and number axes, rather than x , y axes, but are otherwise identical to vectors used in physics and mathematics. The origin is generally the bottom left hand corner. One way of describing the position of a pin is to give the lengths of perpendicular components, for example horizontal (numbers) and vertical (letters). Another way is to give the length of the vector and its angle to the horizontal. For example a pin at position C4 is also 5 units from the origin on a line 49° above the horizontal. (In polar coordinates this would be written as $(r, \theta) = (5 \text{ spaces}, 49^\circ)$.)

Note that some computer games such as “Cow Wars” use an angle input by the user to determine projectile range. This is another example of vector use, but using angle rather than x , y values.

“battleship” game
showing letters
along top and
numbers down side
for coordinates



Accompanying sheet

Battleship Game

Examine the game.
How are vectors used in this game?
Where is the origin?

Explain two ways you could use vectors to
describe a position of a pin on the board.