

POW!!

Week beginning 15.02.21

Nim-7

This is a basic form of the ancient game of Nim.

You will need seven objects, such as counters or blocks. It is a game for two players.

Place the 7 counters in a pile and decide who will go first. (In the next game, the other player will have the first turn.)

Each player takes turns to take away either one or two counters.
The player who takes the last counter wins.



Keep playing until you work out a winning strategy.

Does it matter who has the first turn?

What happens when you start the game with more counters?

Why play this game?

This game offers a motivating context in which children can improve their logical thinking skills. It is a [low threshold high ceiling](#) game that is easily accessible but, at the highest level, has the potential to be generalised.

Possible approach

To start with, play the game several times to get used to how it works. Everyone can have a go at playing randomly.

You may soon notice that you start looking for a way to win. So, start thinking about how to win. Does it matter who goes first?

Record your moves and try to explain or write down your ideas about

strategy with sentences such as, 'I noticed that when I ..., xxxx happened'. Think more than one step ahead: 'If I do this, then xxxx may happen and then I can xxxx. This would be useful because ...'.

Can you say or write down 'how to win'? Try this out a number of times. If it fails, try something else. You can play against someone else who thinks they have the winning strategy and see what happens. You can now work together to improve the strategy.

Record your winning strategy, maybe in the form of 'Top Tips'.

Key questions

What happens when there are three counters left?

Does it matter who goes first? Why or why not?

How can you win at this game?

Possible extension

Think about 'What if ...?' questions, such as what happens if you start the game with a different number of counters? (A series of key numbers will emerge, as well as some interesting observations about odds, evens and multiples.)

Possible support

Someone else can record your ideas. You can then look back together at key moments and discuss what each player could have done differently at certain points in the game.