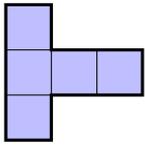


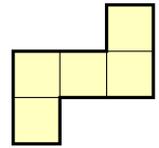
## Game

*Games are a great resource.*

*They support talk in maths and, just as important, they motivate us to persevere.*



### Place that pentomino!



**AIMS:** Visualise position and direction. Identify game strategy.

#### You will need:

- Set of 12 pentominoes
- Scissors
- Game board

Carefully cut out the **12 pentominoes**.

Alternatively, copy them onto thin card and cut out.

#### Aim of the game

Be last person to place a pentomino piece on the playing board.

*To do that, you have to find a strategy that prevents your opponent from finding space to place their pentomino pieces on the board.*

#### How to play

- Share the set of **pentominoes** between 2 players, 6 pieces each.
- Toss a coin to decide who will go first.
- Take turns to place a **pentomino** on the board to cover **any five squares**.
- Place your **pentomino** without overlapping any pieces already placed.
- **Once a piece has been placed it can't be moved!**
- Try to block your opponent by leaving no space for them to place a piece.
- The winner is the last person to place a piece on the board.
- If both players are able to place all 6 of their pieces the game is a draw.
- First to **5 wins** and is the **pentomino champion!**

**Play several times.**

## GOOD STRATEGIES

Now let's think about a *good strategy* to become a **pentomino champion!**

- Do you think it is better to go first or second?
- Which piece(s) is it best to place first?
- Which of the pentomino pieces is it best to keep for later in the game?
- Is it better to place pieces in the centre of the board or towards the sides?

### Try this alternative version...

- Instead of taking 6 pieces each, lay out all of the 12 pentomino pieces.
- Take it in turns to place one of the pieces, choosing from any of the remaining pieces.
- The aim is the same – block your opponent and be the last person to place a pentomino piece!
- How does the change of rules change your strategy?

## Investigate

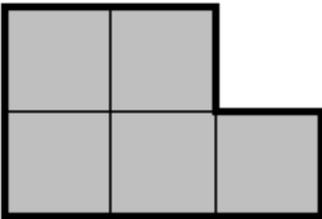
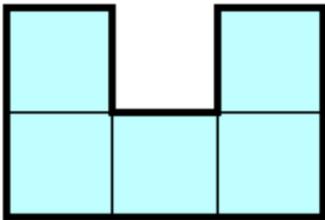
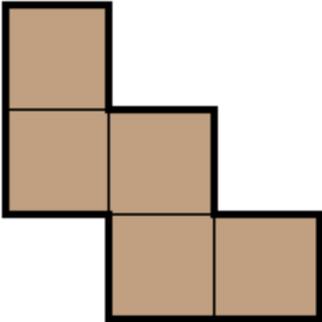
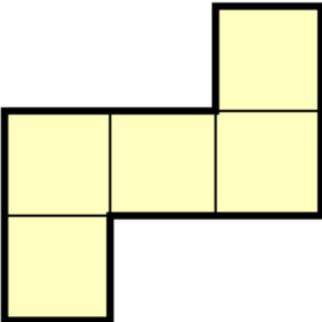
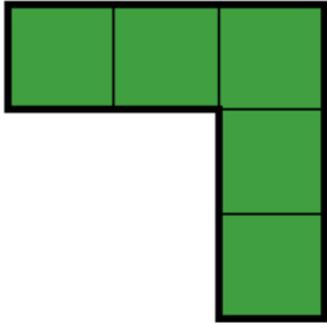
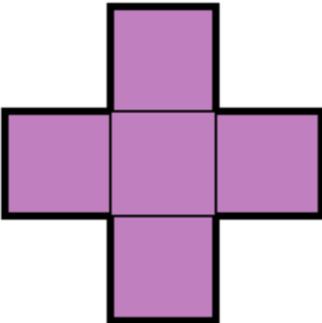
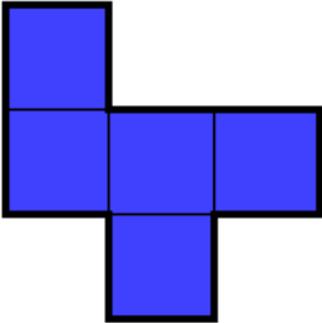
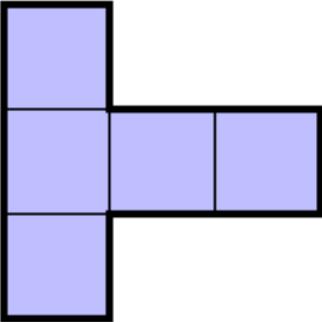
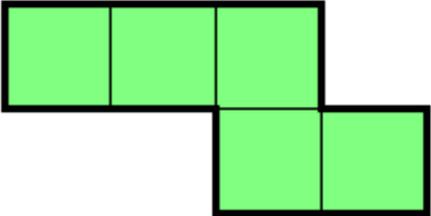
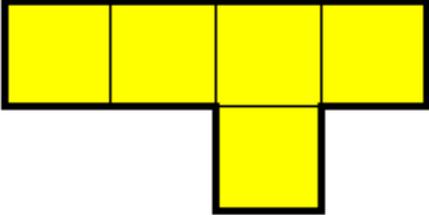
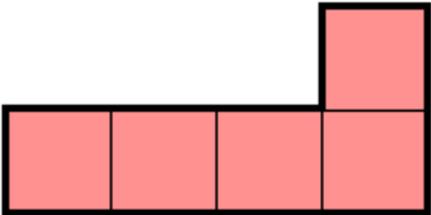
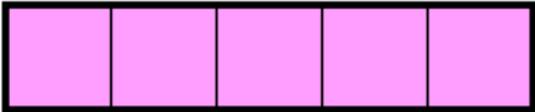
At the moment, the game board is 8 by 8, the same as a chess board.

- What if you changed the size of the board? Try a 6 by 6 or 10 by 10 board.
- Does it make the game easier or harder?
- What if you tried a rectangle board, e.g. 6 by 8 or 7 by 9?

### Did you know?

This game was invented by **Solomon Golomb** who was a professor of electrical engineering at the University of Southern California. In his spare time, he enjoyed playing games and inventing interesting new ones.

Set of 12 pentominoes



# Place-the-Pentomino Game Board

