

Something to make

Cube nets

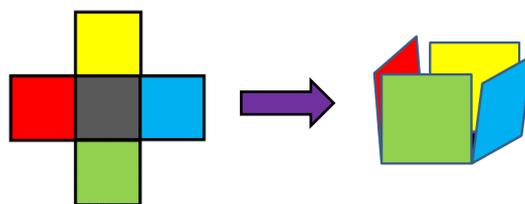
Have fun making and exploring nets of open and closed cubes.

Can you predict which ones will 'work'?

Open cubes

You will need: Squared paper (2 sheets), scissors.

Some of the **pentominoes** from Day 1 can be folded to make an **open cube**:



- Imagine that the **cross shape pentomino** has been cut out and the edges folded.
- The grey square in the middle has been used as the base of the open cube and the red, yellow, green and blue squares folded to make four faces.
- On Day 1, we discovered **12 unique pentominoes**.

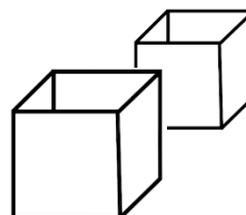
Which of these can be folded to make an open cube?

- On the squared paper, draw some more pentominoes, cut them out and try folding them.
- Can you **predict** which can be used for an open cube and which cannot?
- Find at least two that will make an open cube and two which will not before checking the solutions.

Hint!

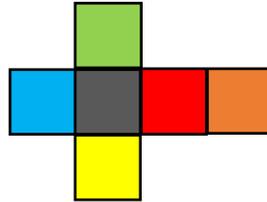
When folding the pentominoes, it is helpful to decide which of the squares will be the base...

- Study the page of solutions.
- Are there any that surprise you?
- Cut them out and fold them to check!

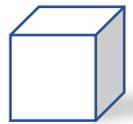


Closed cubes

- A sixth square can be added to a **pentomino** to make a **hexomino**.
- A **hexomino** can fold to make a **closed cube**.
- If this hexomino 'cross' shape was cut out and folded which colour faces would be opposite each other?



- Use the squared paper to draw 4 or 5 **hexominoes**. You can start with a favourite pentomino and add one more square.
- Can you predict which will fold into a cube and which will not?
- Cut them out and check your predictions.



Hint!

There are 35 possible hexominoes, including 11 which are cube nets, so you should have plenty to choose from...!

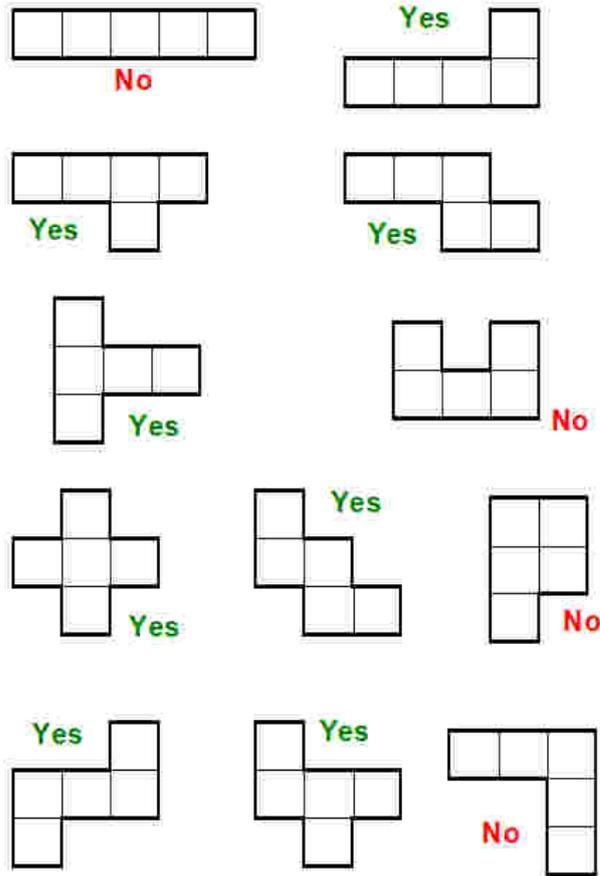
Dice challenge



- Find a 1-6 dice. What does each pair of opposite faces add to?
- Now, on the solutions page, look at the hexomino nets that make a cube.
- If you were to cut each of these out where would you put the numbers 1 to 6 so that opposite faces always add to 7?
- Are some more obvious than others?
Cut out some of the trickier arrangements to check your ideas.

Solutions

There are 8 possible pentomino solutions for open cubes:



There are 11 possible hexomino solutions for open cubes:

