

Challenge On Boarding – Using number bonds to 10,20...

Using basic number bonds to 10

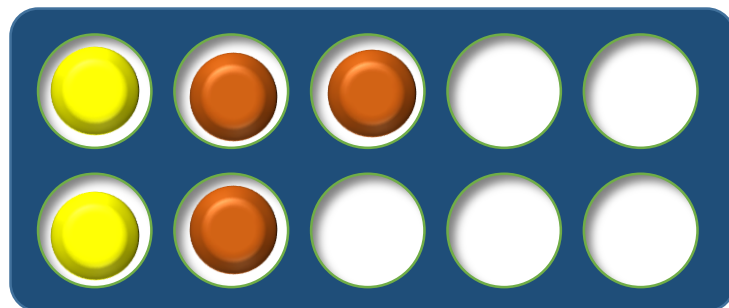
First of all, work out all the number bond pairs (2 numbers) that add up to 10.

Then see if you can find any 3 number groups that add up to 10

e.g. $2 + 3 + \underline{\quad}$

Ten Frames

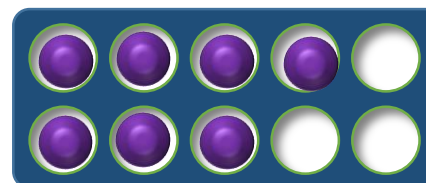
Ten frames (such as a Numicon ten piece) can be helpful.



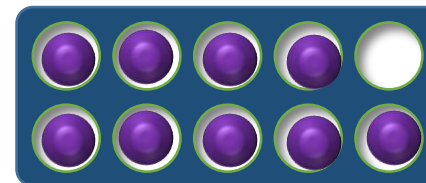
Using number bonds to 20

The easiest way to make 20 is by getting two sets of number bonds to 10

e.g. $3 + 7$ & $9 + 1$

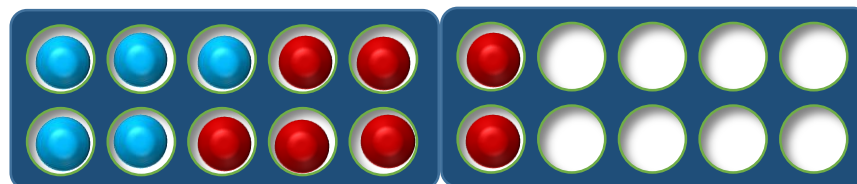


$7 + 3$

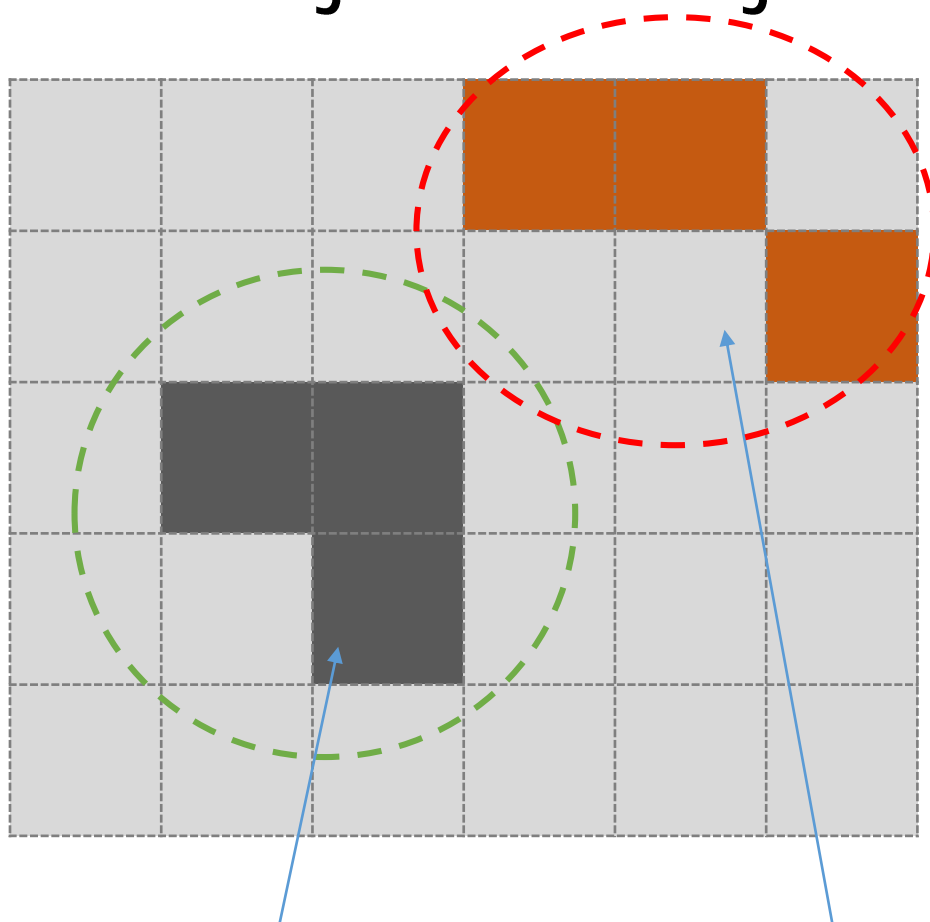


$9 + 1$

Or find ways to make 20 using 3, or 5 numbers



Challenge On Boarding – How to make a polyomino



polyomino

Not a polyomino
It's actually 2 polyominoes
a monomino and a domino

You'll need:

A square grid and a pencil

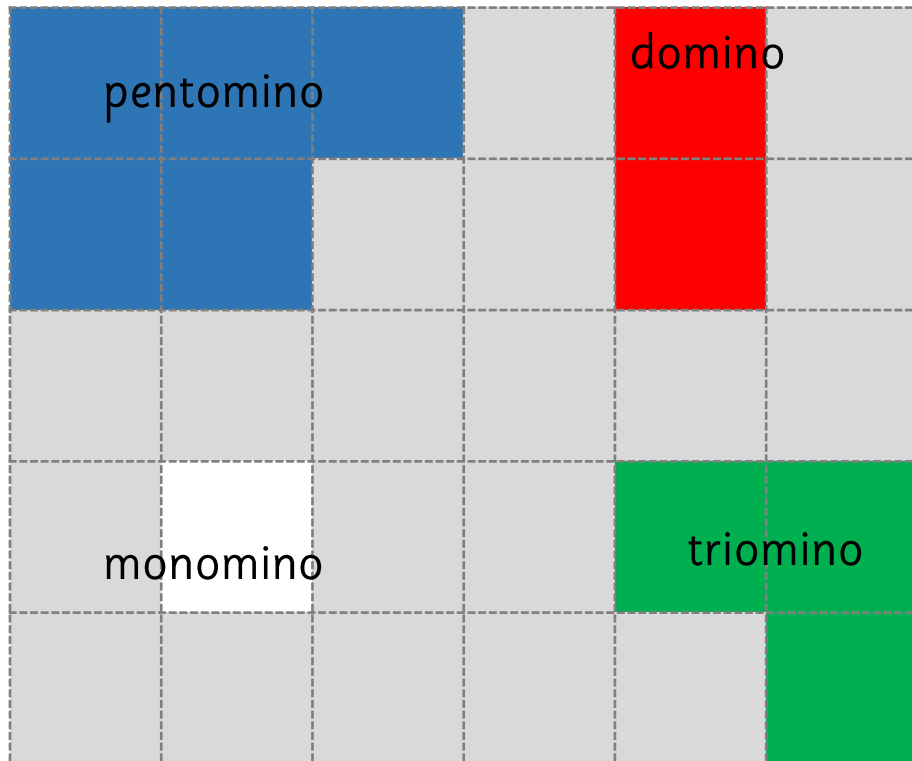
Steps

- Choose a number of squares that you want in your polyomino
- Colour in that number of squares

Constraints

- Every square must be connected edge to edge with at least one other square
- Squares in the polyomino must be continuously connected.

Challenge On Boarding – Getting to know polyominoes



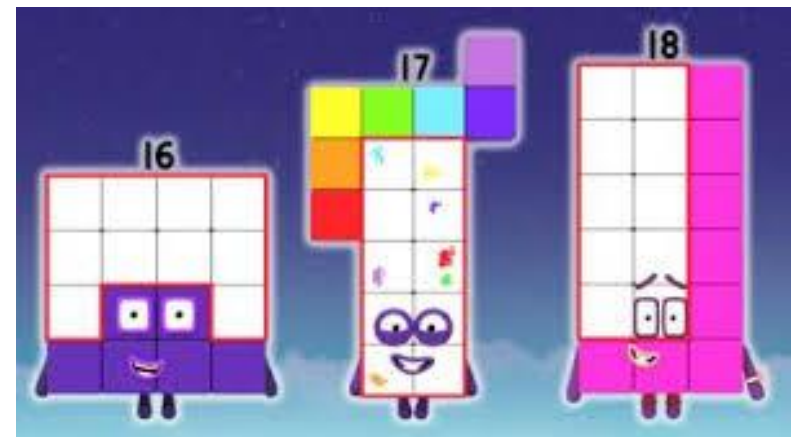
Naming Polyominoes

- Names are based on the number of squares.
- 1 – monomino, 2 – domino, 3 – triomino, 4 – tetromino, 5 – pentomino, 6 – hexomino etc.
- They have similar naming conventions to polygons after 4
- i.e. pentagon, hexagon, heptagon, octagon

Examples

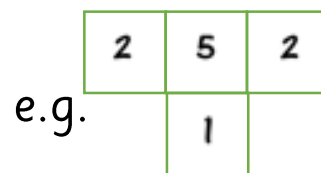
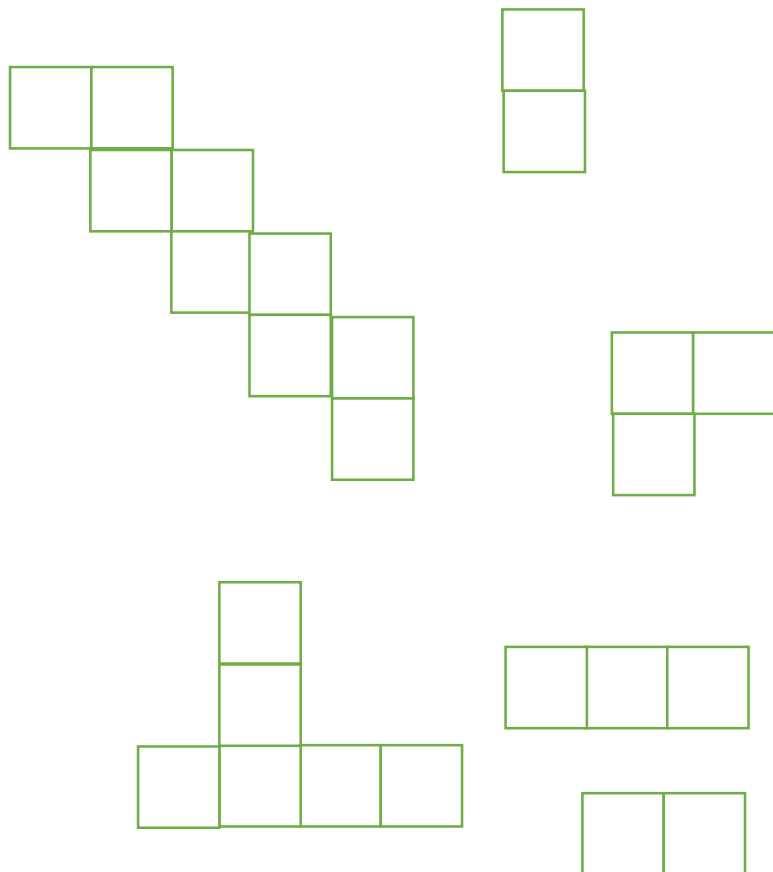
Numberblocks are a great example of polyominoes

- <https://youtu.be/SJr4DvrfyfA>



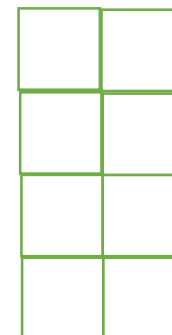
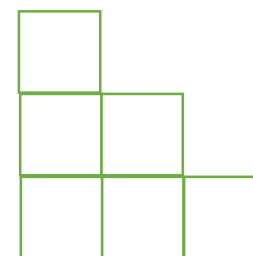
Challenge 1 – Polyomino Islands that add up to 10x

Can you find the right place for each of the following polyominoes?



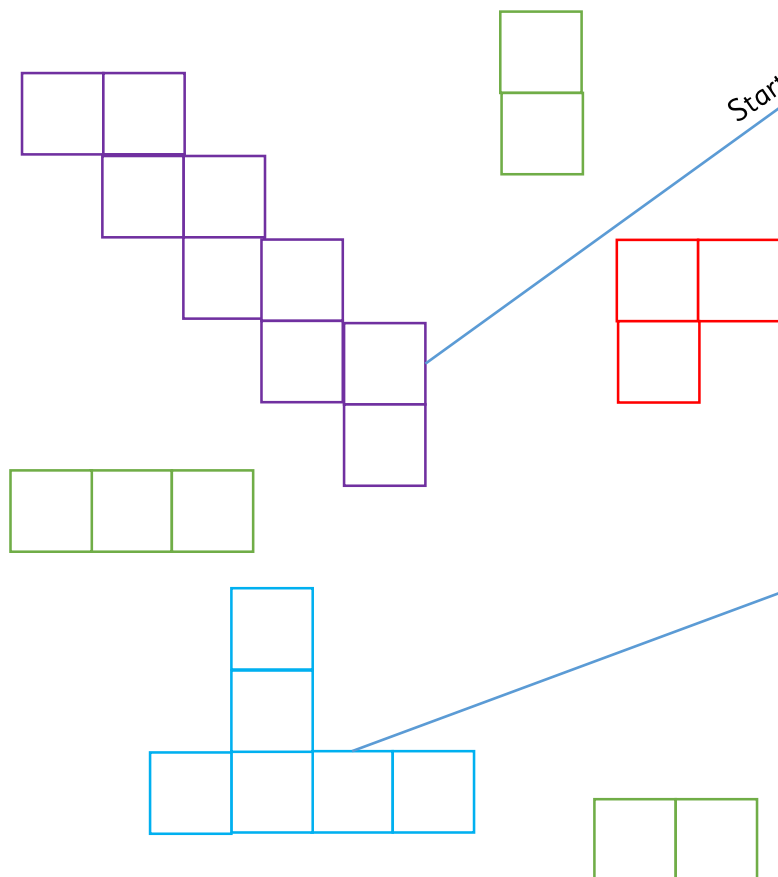
1	4	2	5	2	2	3
6	7	4	1	4	3	9
7	5	1	5	6	8	8
9	9	1	4	5	1	8
2	8	7	5	9	2	5
2	1	7	7	7	5	4
8	8	4	8	6	5	4
8	5	7	7	9	2	9
6	3	5	6	9	9	2

If you find it, write the numbers in

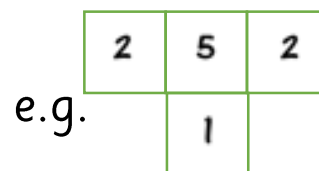


Challenge 1 – Some answers

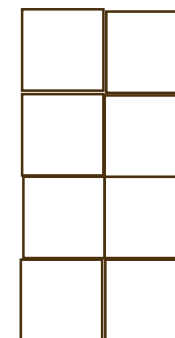
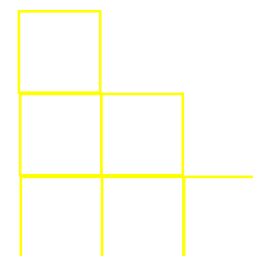
Can you find the right place for each of the following polyominoes?



Start here

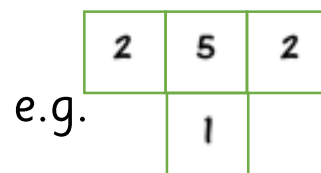
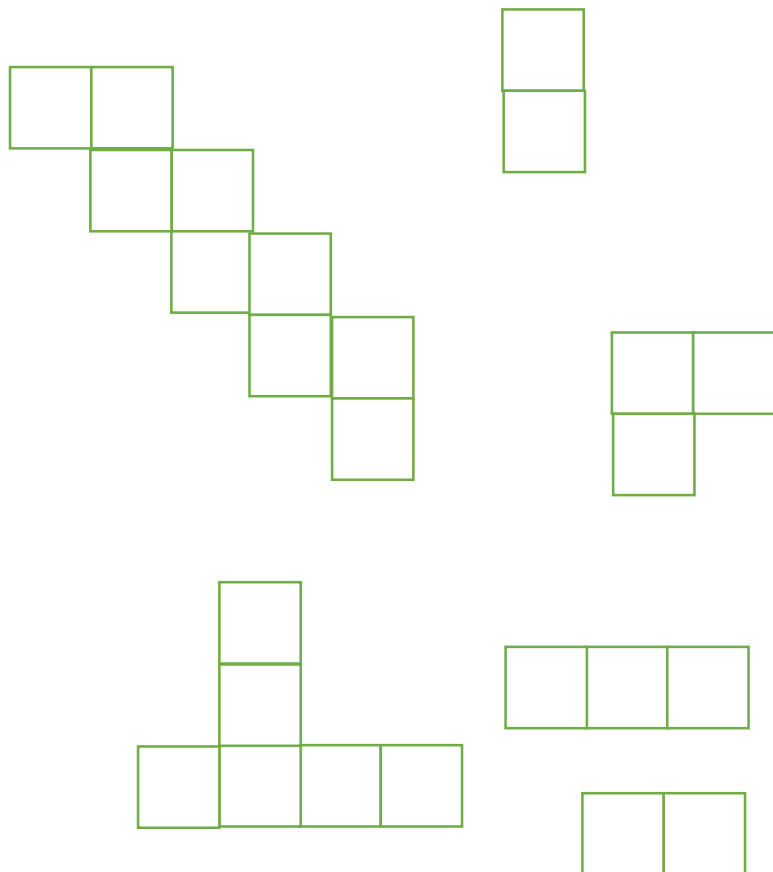


1	4	2	5	2	2	3
6	7	4	1	4	3	9
7	5	1	5	6	8	8
9	9	1	4	5	1	8
2	8	7	5	9	2	5
2	1	7	7	7	5	4
8	8	4	8	6	5	4
8	5	7	7	9	2	9
6	3	5	6	9	9	2



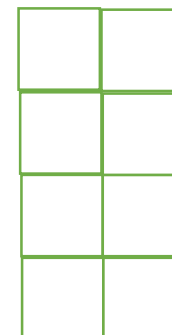
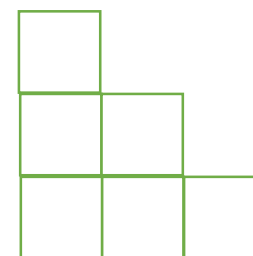
Challenge 1 – Polyomino Islands that add up to 10x

Can you find the right place for each of the following polyominoes?



1	4	2	5	2	2	3
6	7	4	1	4	3	9
7	5	1	5	6	8	8
9	9	1	4	5	1	8
2	8	7	5	9	2	5
2	1	7	7	7	5	4
8	8	4	8	6	5	4
8	5	7	7	9	2	9
6	3	5	6	9	9	2

If you find it, write the numbers in



Challenge 2 – Number Islands – How many can you make on the map below?

To make number islands, you need

- A polyomino
- Numbers that add up to a multiple of 10
- They need to be surrounded by the sea

e.g.

7					
5		5	6		
9		4			8
8		5		2	5
1				5	
8	4	8			

The Map

8	6	5	5	2	3	2	4	6	3	5
8	8	1	4	2	5	2	2	3	4	7
7	2	6	7	4	1	4	3	9	1	2
4	1	7	5	1	5	6	8	8	1	9
6	9	9	9	1	4	5	1	8	6	8
7	6	2	8	7	5	9	2	5	1	2
6	2	2	1	7	7	7	5	4	3	9
4	9	8	8	4	8	6	5	4	4	7
4	1	8	5	7	7	9	2	9	5	7
3	8	6	3	5	6	9	9	2	8	2
8	3	4	5	9	3	1	9	6	4	7

Activity – Complete the Number Islands – Make a game

Can you think up a game using a map like this?

Steps

Complete the map – find as many number islands as you can.

Colour our the remaining numbers as sea.

Get some dice and come up with a game (involving pirates perhaps?)

The Map

9	9	2	4	7	1	6	9	6	2	7
4	1	9	5	6	7	3	8	9	3	2
9	8	1	9	8	3	1	1	1	1	3
9	7	3	5	7	8	2	9	7	6	4
1	4	4	6	1	9	2	4	8	2	2
8	7	4	9	6	2	3	2	3	3	9
7	3	4	1	4	7	3	5	9	2	5
2	6	2	4	1	9	3	6	9	8	6
2	3	5	3	1	8	7	8	5	8	9
2	6	7	5	9	8	5	2	3	4	4
1	6	9	7	3	6	6	3	7	1	8