Maths Circle Guidance Pack 1

The resources in this pack use maths normally met at ages 5 to 7.

The activities and games have been selected to encourage mathematical thinking such as working systematically and reasoning and also communication skills and perseverance.

For these activities although the maths is accessible to young children the instructions may need to be read by an older child or an adult helper.

Some of these activities require equipment, including multilink cubes, dominoes and dice. You may also wish to use plastic counters, plastic tiles and teddy counters although a printable version is included.

For longevity you may wish to laminate the instructions and the printable pieces.

4 Dom	4 dominoes: (5,1) (6,4) (4,3) (6,2)
Butterfly Flowers	Included printable - *Make sure you remove a flower and a butterfly*
Creating cubes*	27 multilink cubes - 9 each of red, yellow and blue
Domino Sequences*	Full set of dominoes
Four Colours*	8 cubes - 2 each of red, blue, green, yellow
Four Triangles Puzzle	Printable pieces or origami paper and scissors
Mixed up Socks	Included printable
Noah	Paper and pencils
Robot Monsters	Included printable
Teddy bear Line-up	Teddy bear counters - 4 each of red, blue, yellow, green
Teddy Town	Teddy bear counters - 3 each of red, blue and yellow Attached printable houses
Three Block Tower*	4 cubes - 1 each of red, blue, yellow, green
Three by three	9 counters - 3 each of red, yellow, blue
Three Way Mix up	9 tiles - 3 each of blue, yellow, green
Two Dice*	2 dice
Two Digit Targets	Included printable digit cards

* Requires additional equipment.

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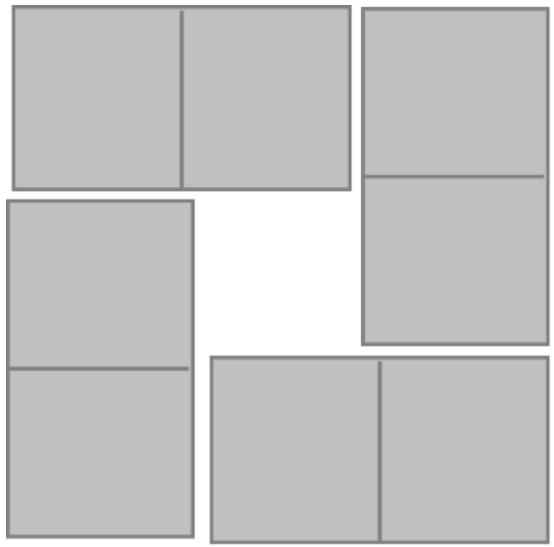
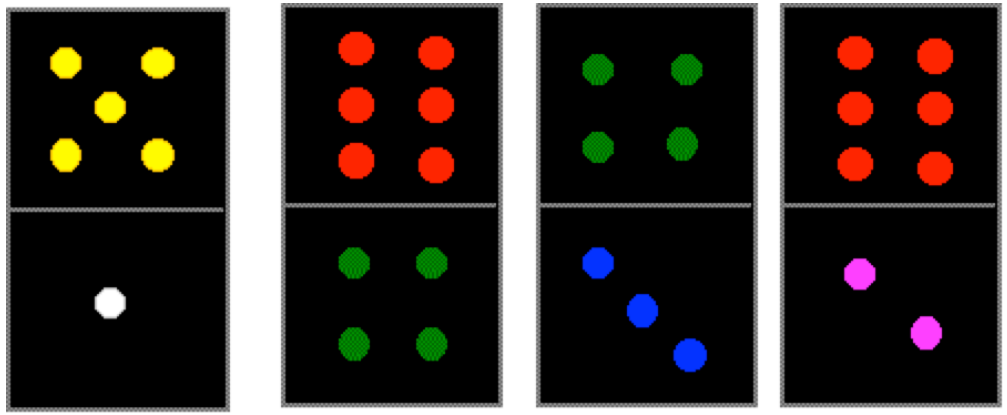
4 DOM

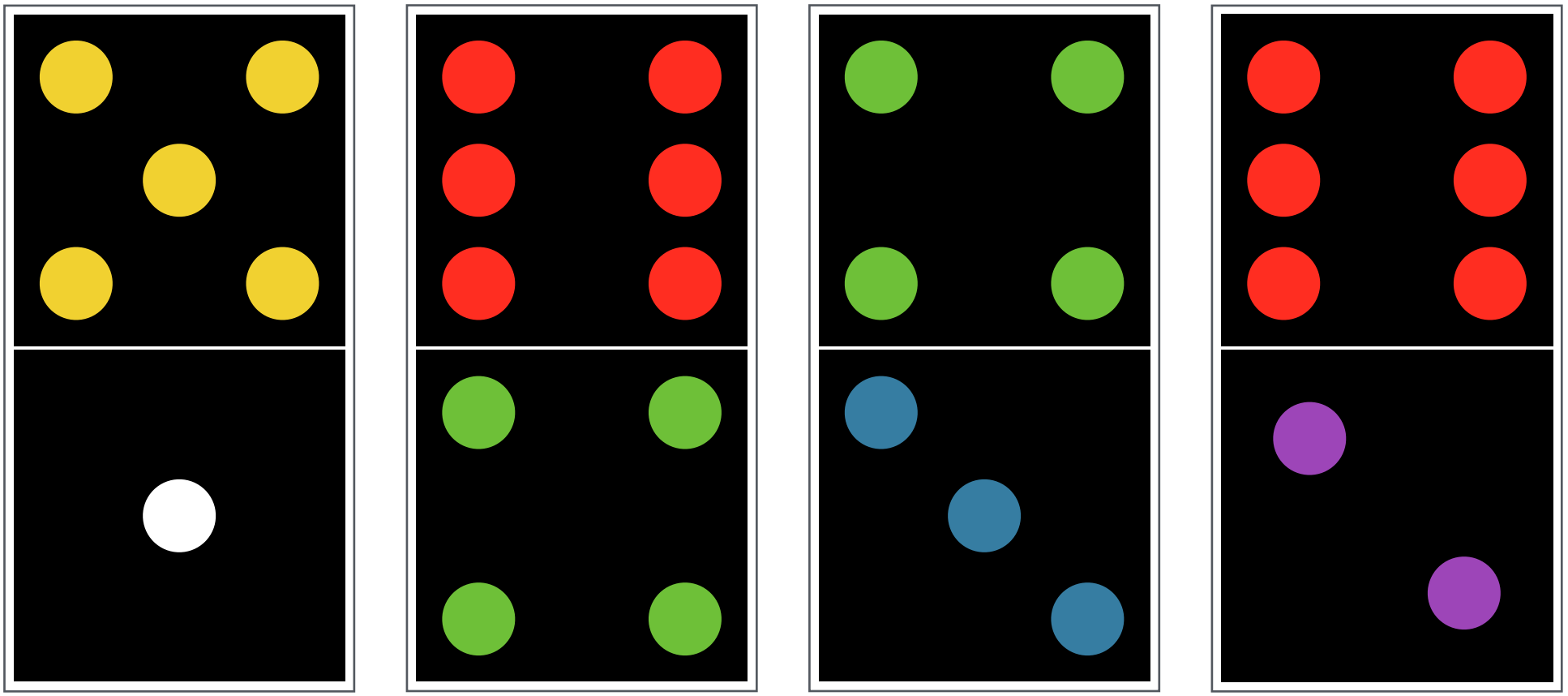
Use the four dominoes to make a square ‘window’ that has the same number of dots on each side.

(The dominoes do not need to match where they touch.)





4 Dom Pieces

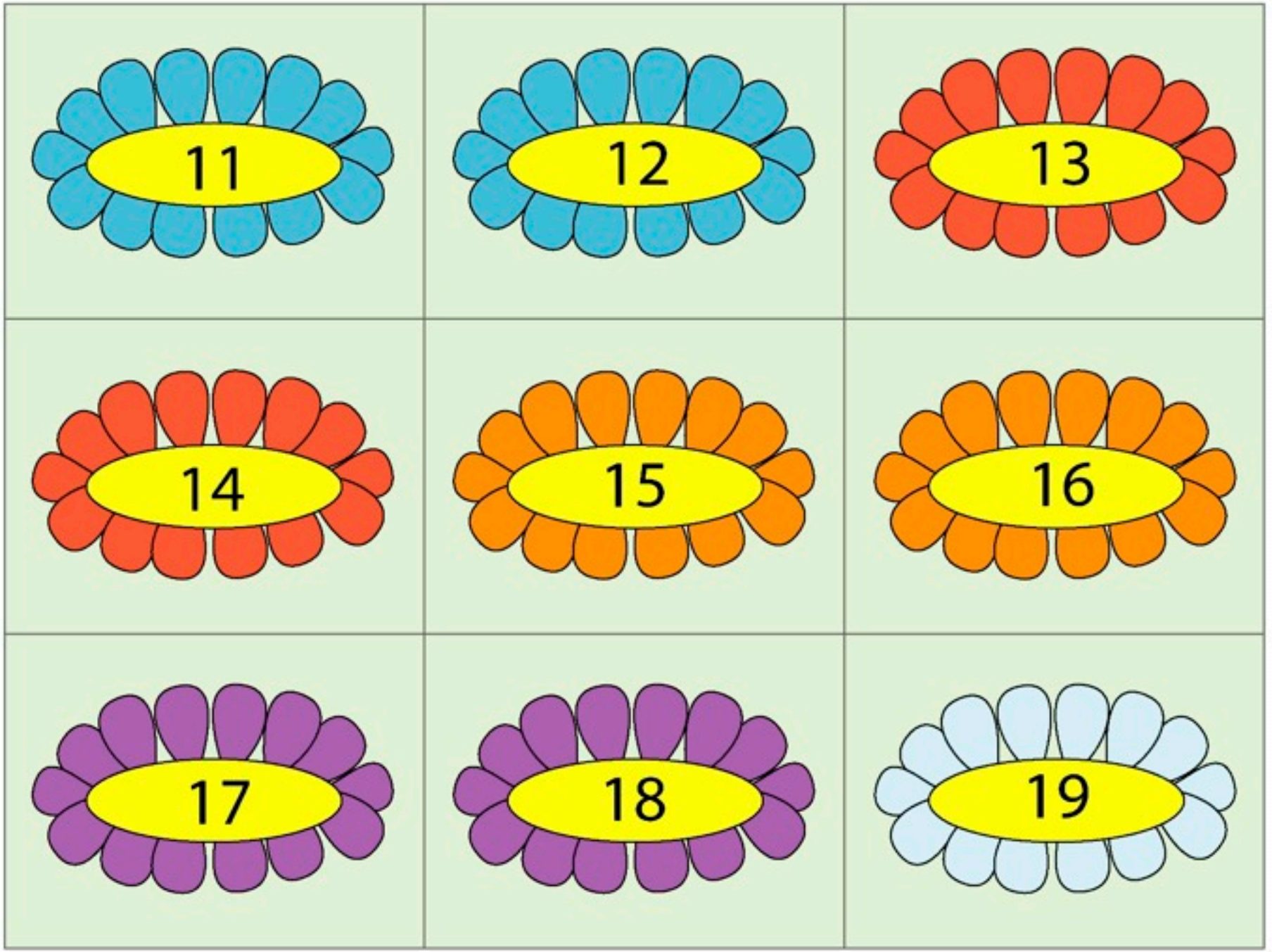


Butterfly Flowers

Can you find 2 butterflies to go on each flower so that the numbers on each pair of butterflies add to the same number as the one on the flower?

Which pair of butterflies has no flower to go to?

Which flower has no pair of butterflies to go to it?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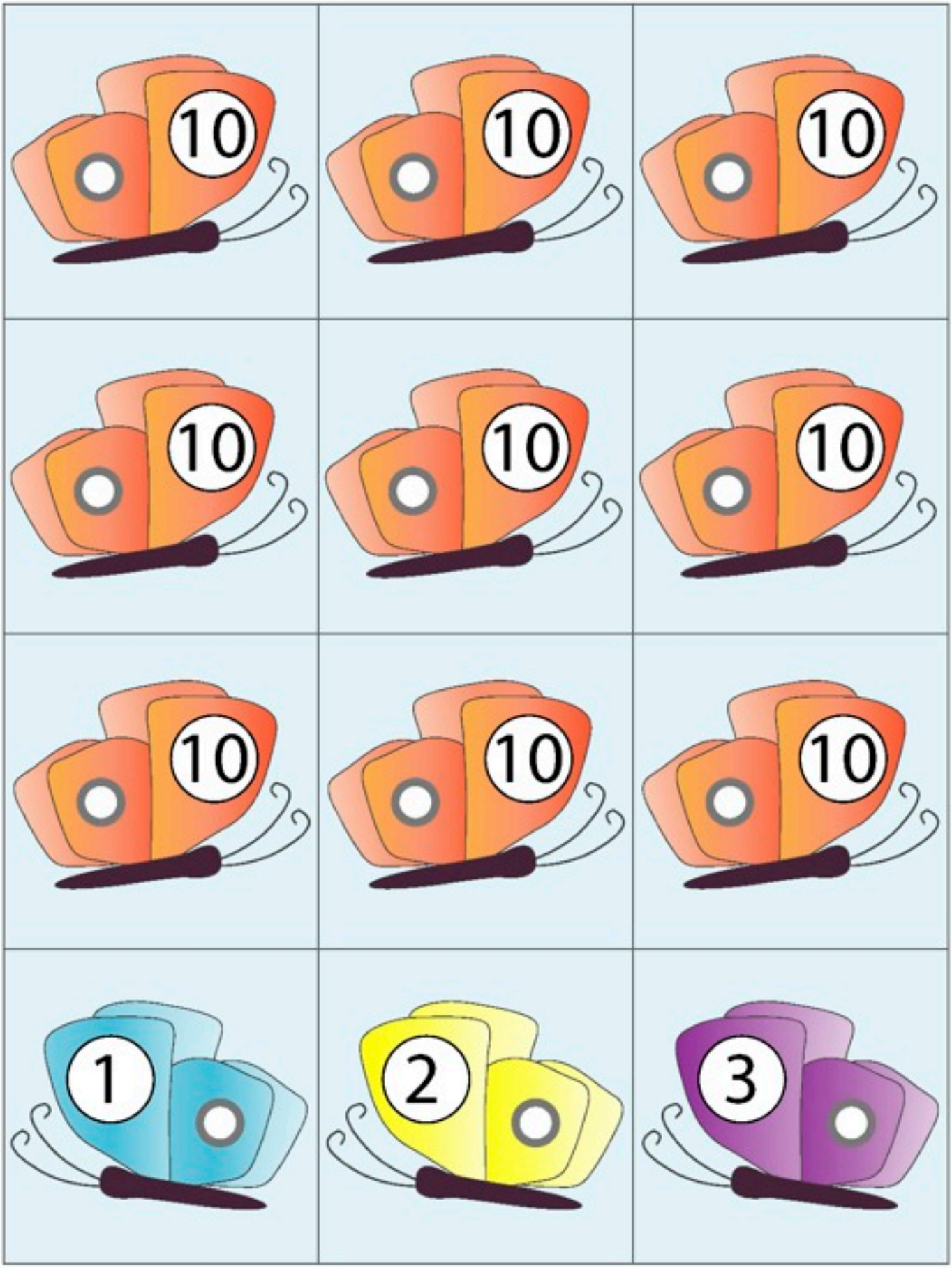
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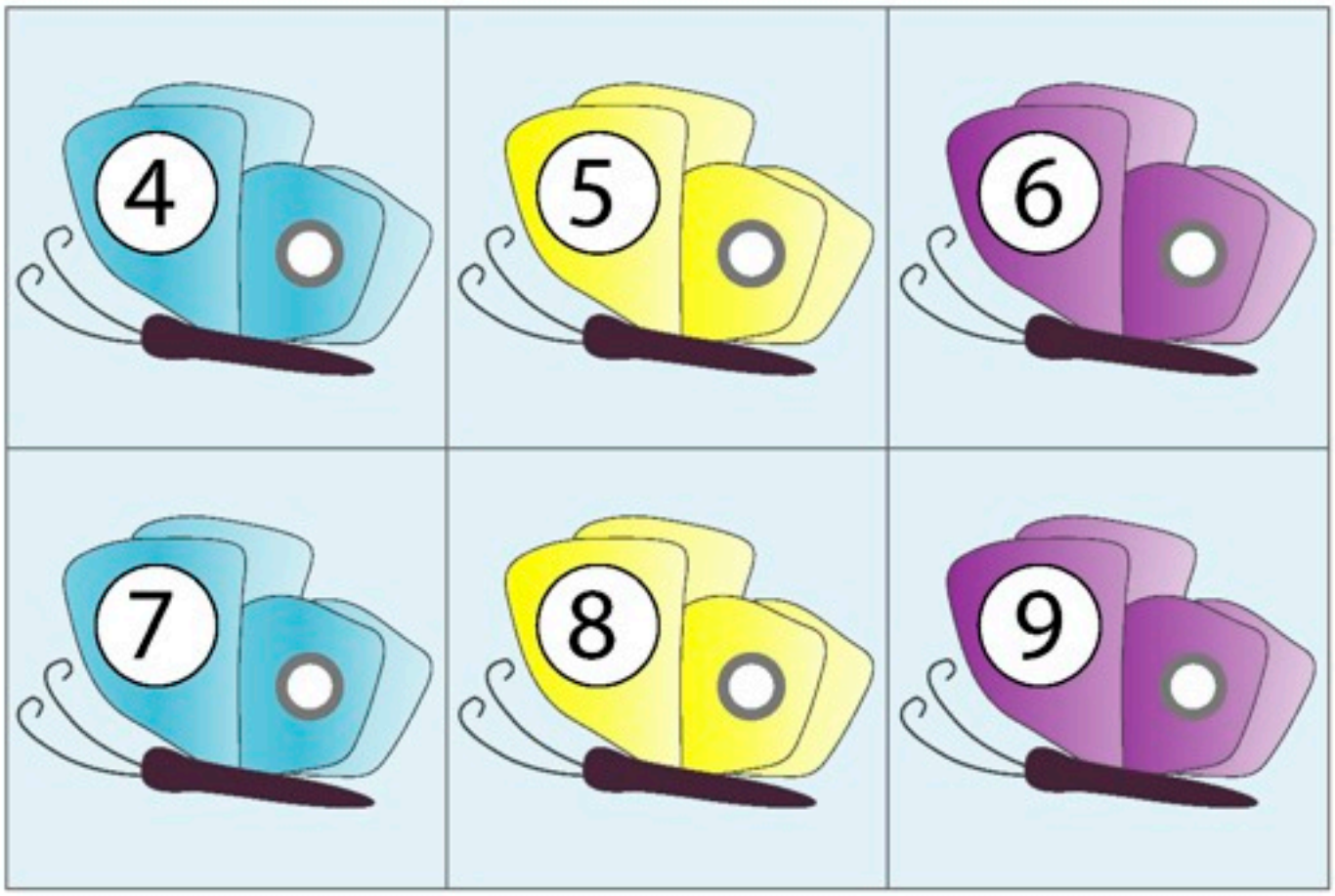
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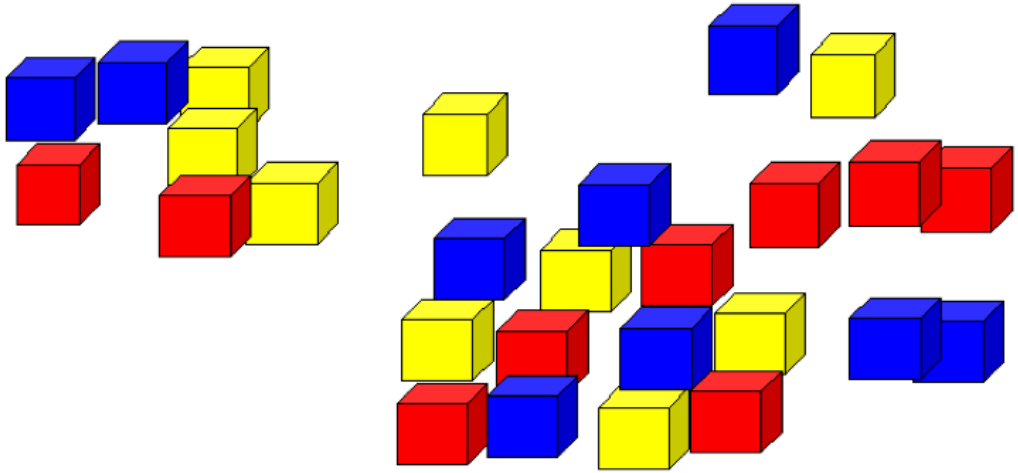
Creating Cubes

You need:

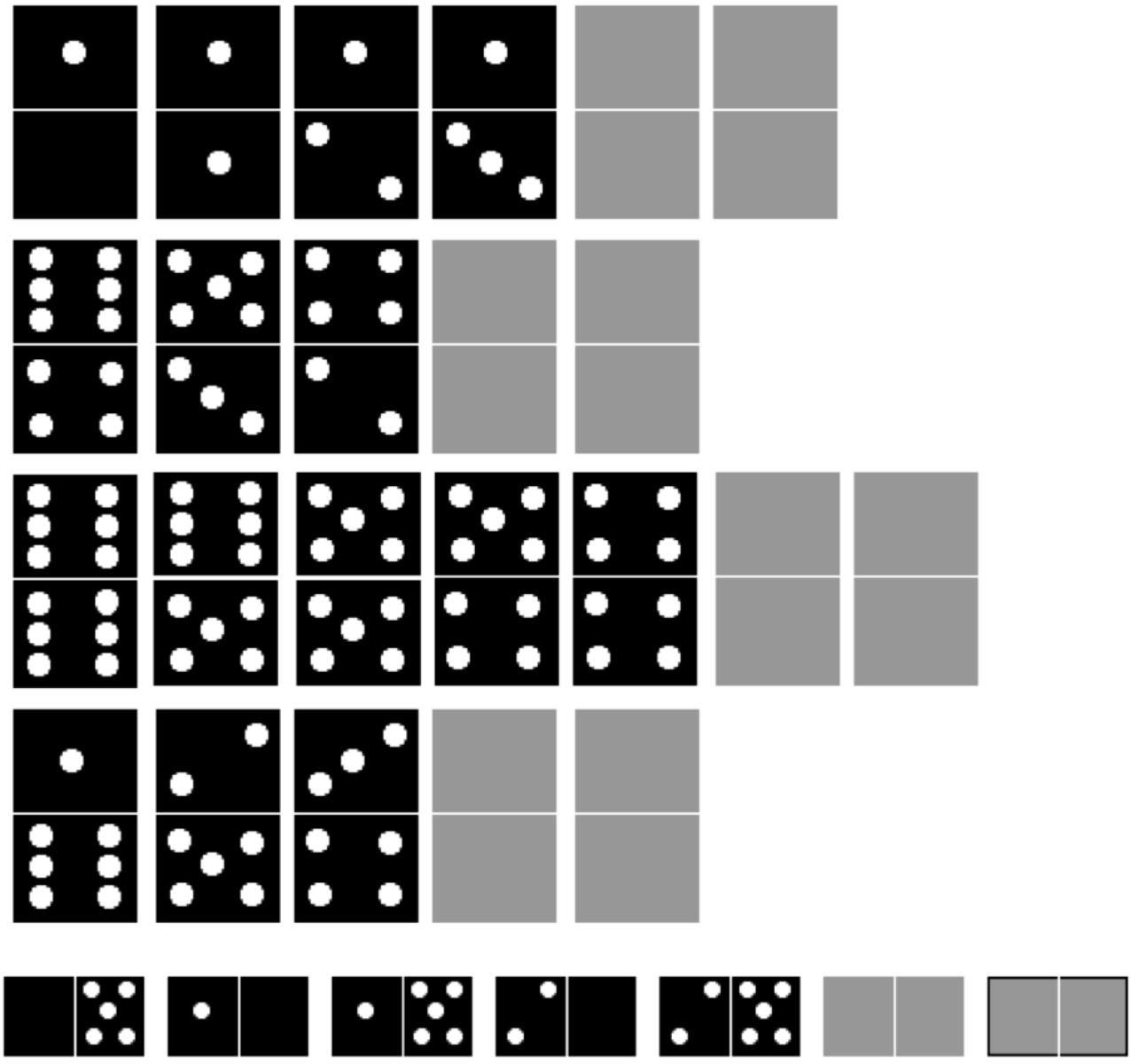
27 small cubes, 9 each of any 3 colours.



Arrange them into a large **3 by 3 by 3 cube** so that, on each face of the large cube, **no row** or **column** of cubes contains **two** cubes of the **same** colour.

Domino sequences

Find the next two dominoes in each case:

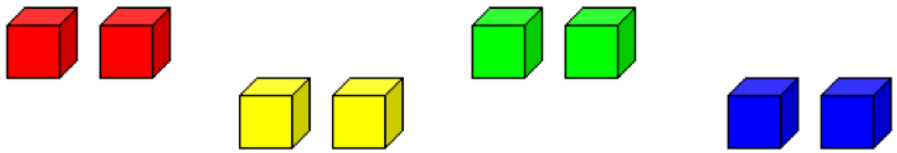


Four Colours

You need:

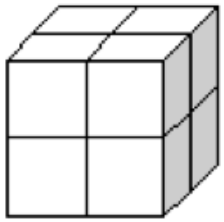
8 multilink cubes - two red ones, two yellow, two green and two blue.

(Two each of any four different colours will do.)



What you have to do:

Fit them together to make a cube so that each colour shows on each face just once?

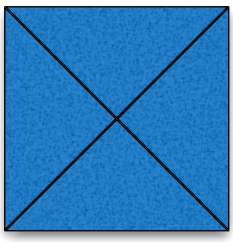


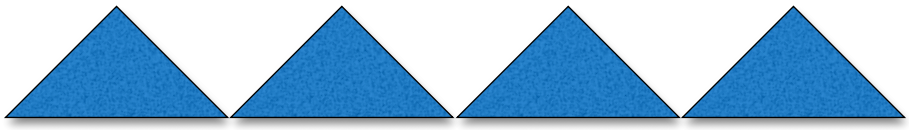
Is there more than one way to do it?

If you can do this, you might like to try ‘Creating Cubes’ and ‘Nine Colours’.

Four Triangles Puzzle

If you cut a square diagonally from corner to corner you get four right-angled isosceles triangles:

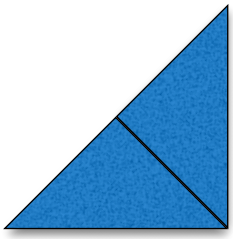




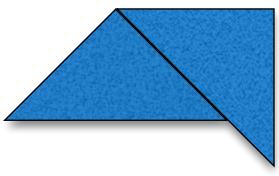
How many different shapes can you make by fitting them back together?

You may only join long sides to long sides and short sides to short sides. The whole length of the side must be joined.

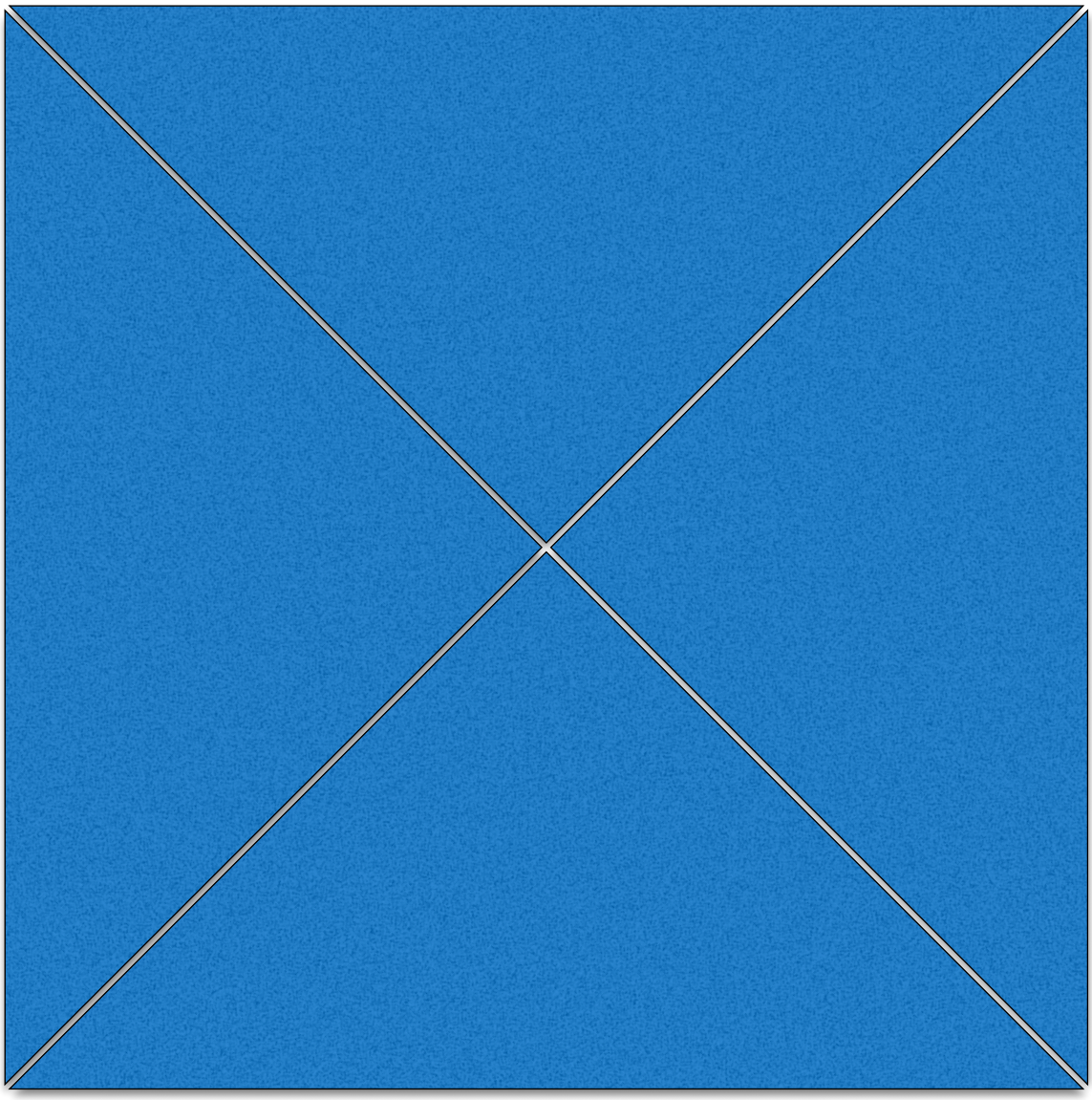
This is allowed:



This is not allowed:



Four Triangles Pieces



Mixed Up Socks

Start with three pairs of socks (or counters).

Can you mix them up so that no mismatched pair is the same as another mismatched pair? Remember that each pair must be different.

Now try it with four pairs of socks.

Is there more than one way to do it? How do you know you have found all the ways?

Noah

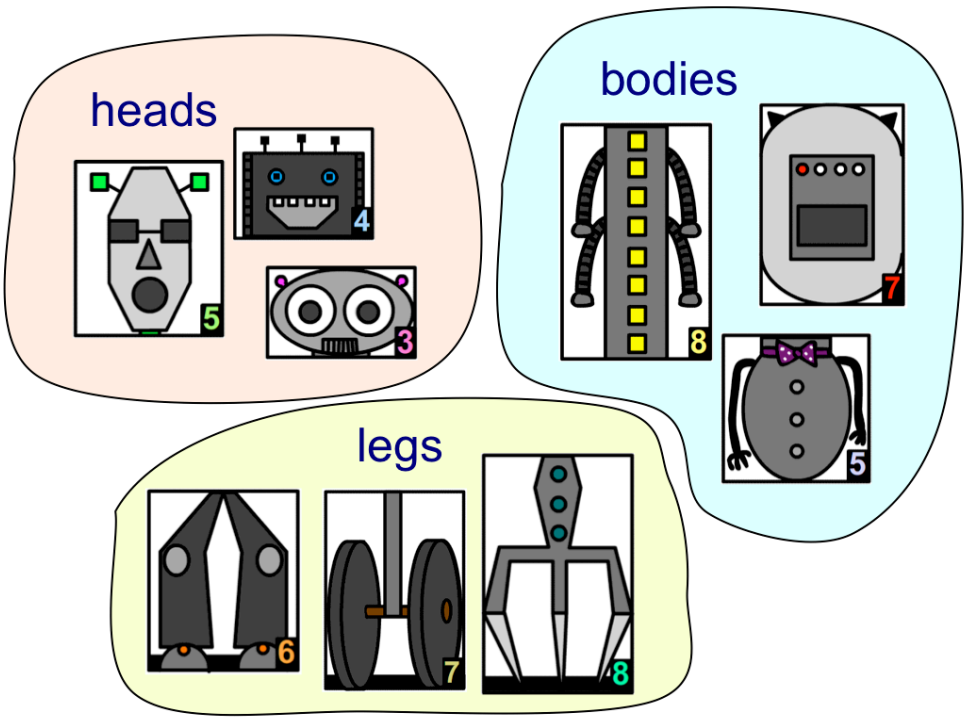
Noah saw 12 legs walk by into the Ark.

How many creatures could he have seen?

How many different answers can you find?

Robot Monsters

Robots monsters need 3 different parts. They need a head, a body and legs.



Make a robot monster!

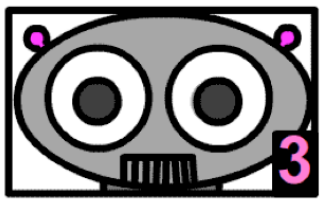
The numbers show how tall the parts are in centimetres. How tall is your robot?

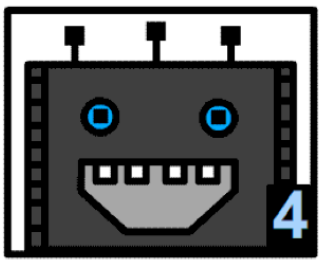
How tall is the tallest robot you can make?

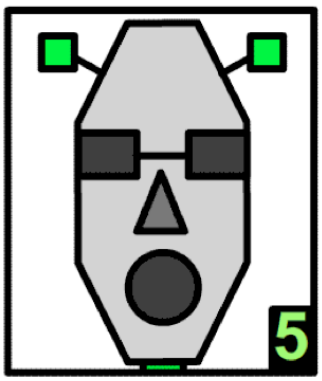
What about the shortest robot?

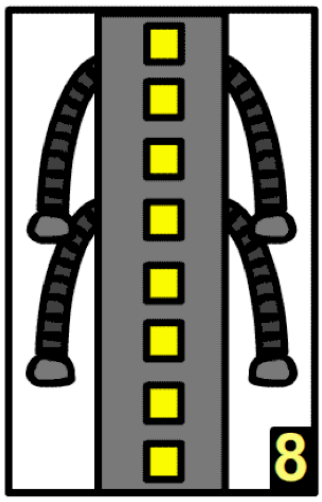
Robot Monsters

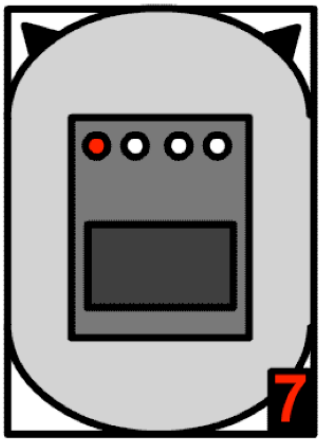
Robot parts to cut out.

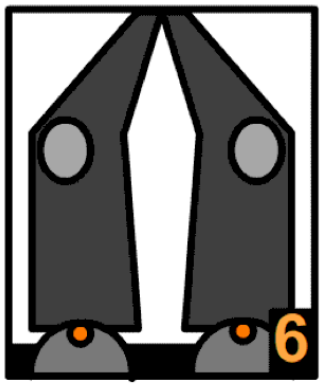


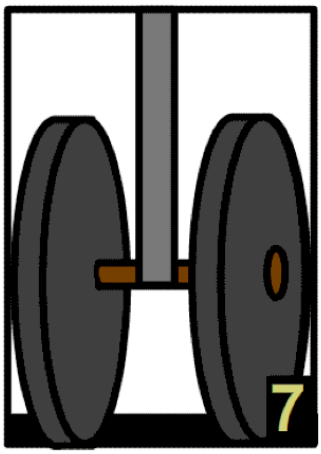


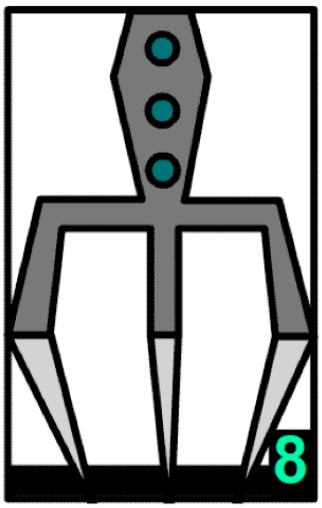












Teddy Bear Line-Up

Lachlan was playing with his bear counters. He had four green, then four yellow followed by four blue and finally four red bears.

"What are you doing now?" Jenni asked.

"I want to arrange them so that no two bears of the same colour are next to each other", he said.

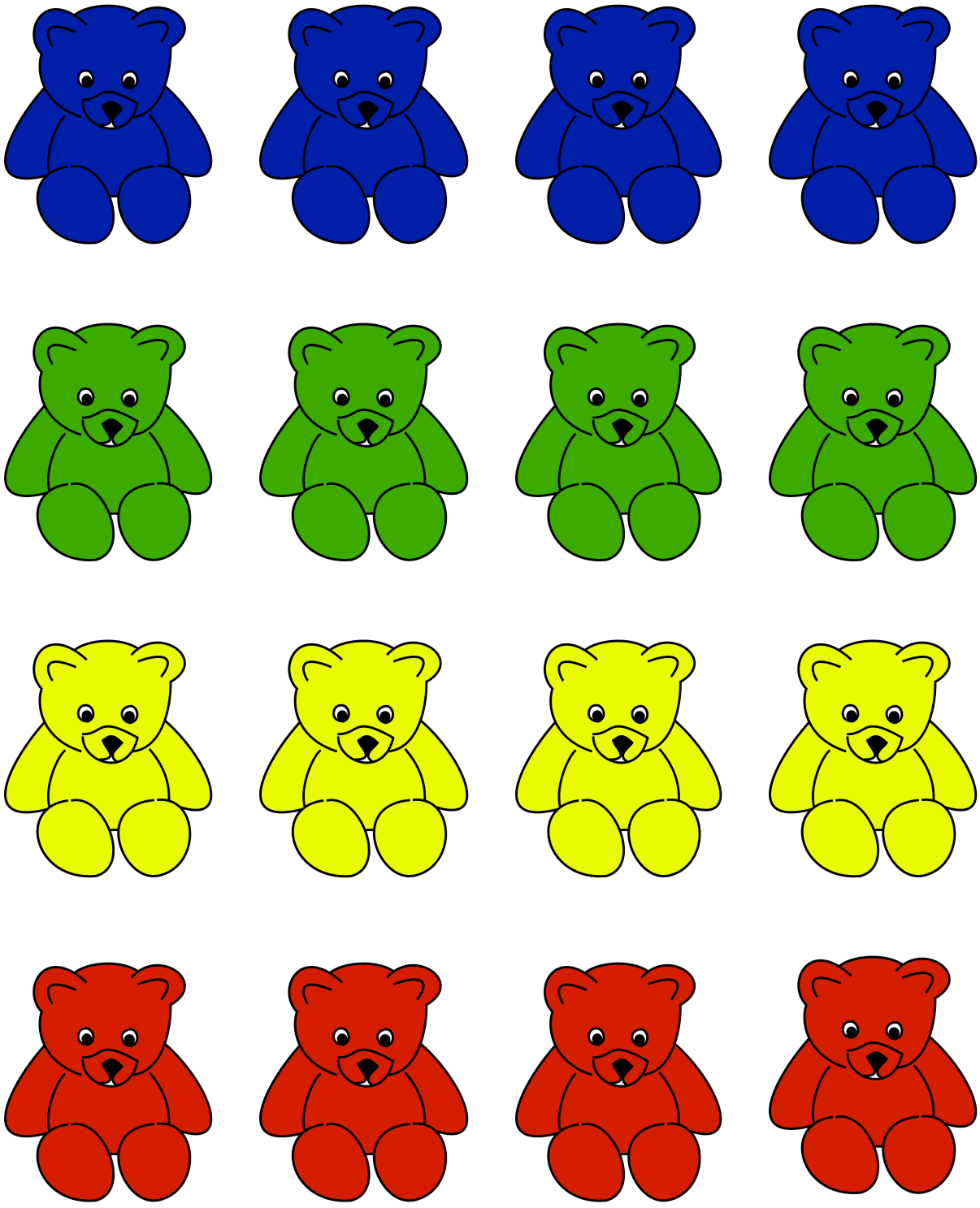
"That's easy!" cried Jenni.

"Ah, but you have to do it in the least number of moves possible", replied Lachlan.

What's the least number of moves you can take to rearrange the bears from this starting line-up?

Printable Pieces

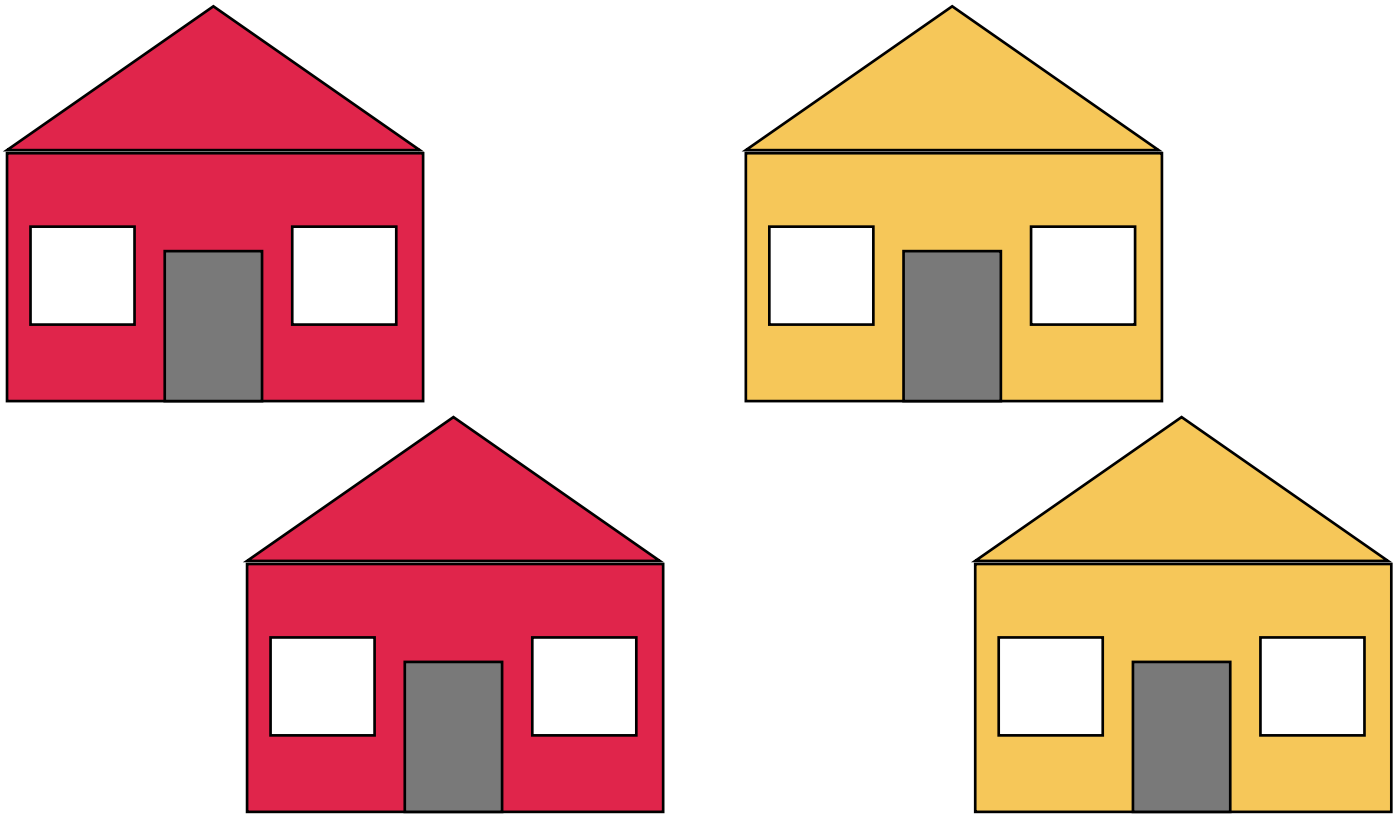
Teddies for Teddy Bear Line-up



Teddy Town

In Teddy Town, teddies are either red or yellow and they live in red or yellow houses. There are 4 teddies - 2 red and 2 yellow, and 4 houses - 2 red and 2 yellow.

Can you put each teddy into a house so that the four combinations are all different from each other?

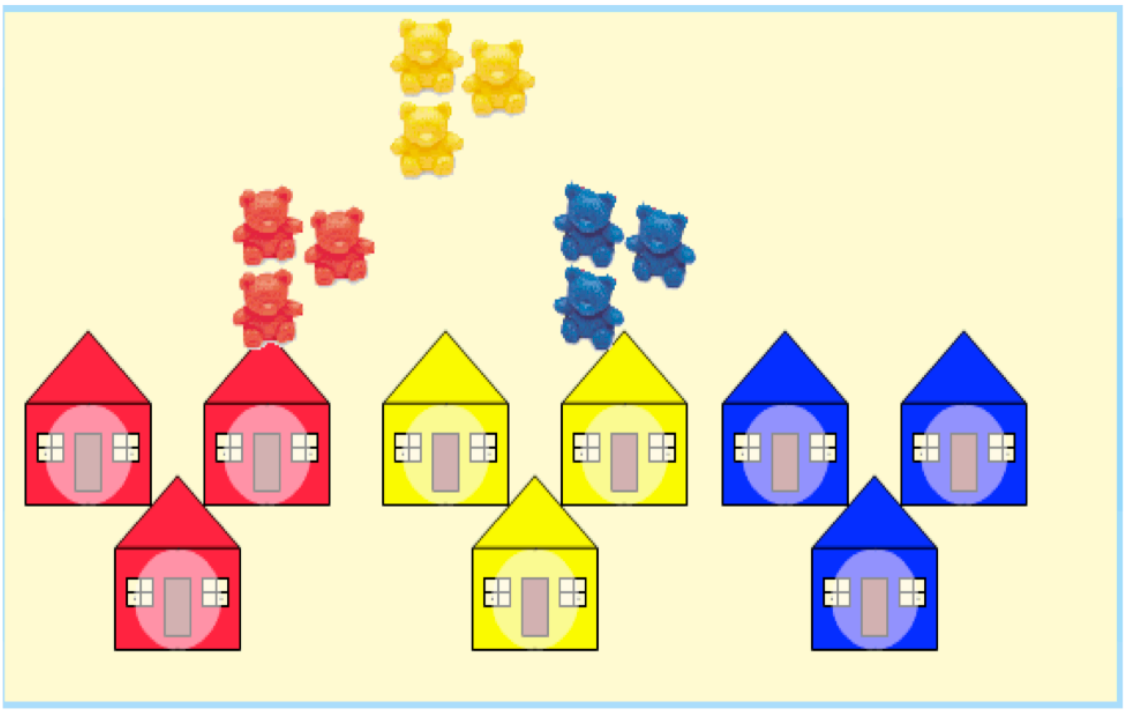


Teddy Town 2

Imagine now that there are **three** different colours of teddies and houses - red, yellow and blue.

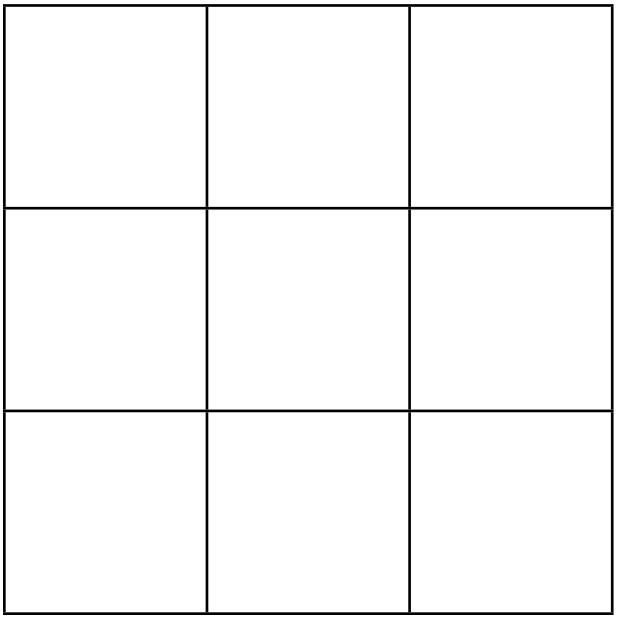
In Teddy Town now there are 9 teddies and 9 houses:

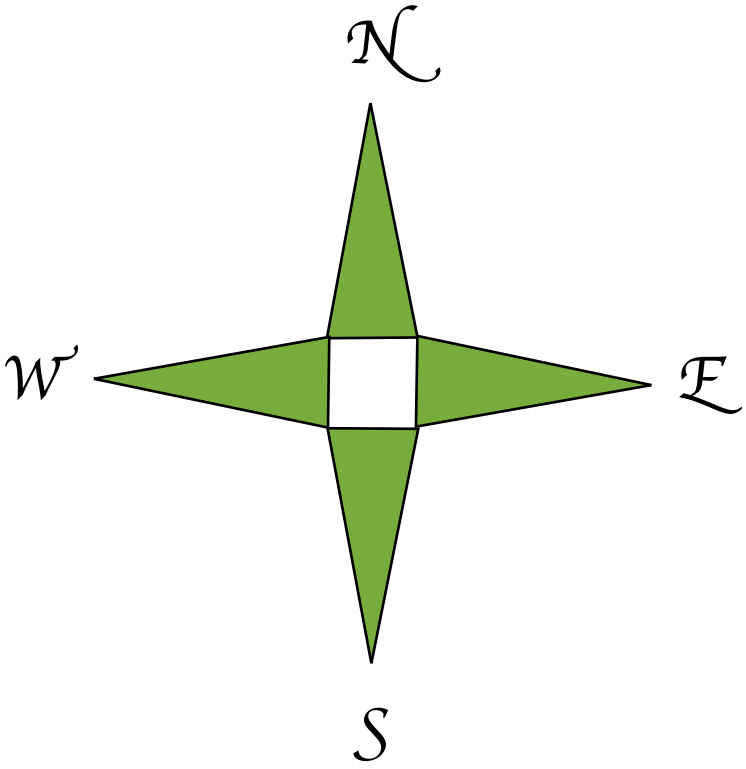
What are the nine different combinations of teddies in houses?



Teddy Town 3

Here is a map showing Teddy Town:





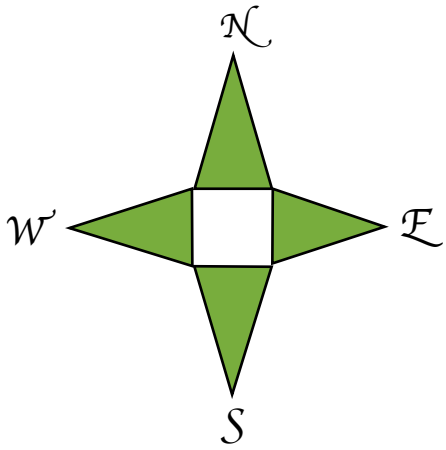
The streets are very special.

If you walk along a street in any direction all the houses are a different colour and the teddies living in the houses are a different colour too.

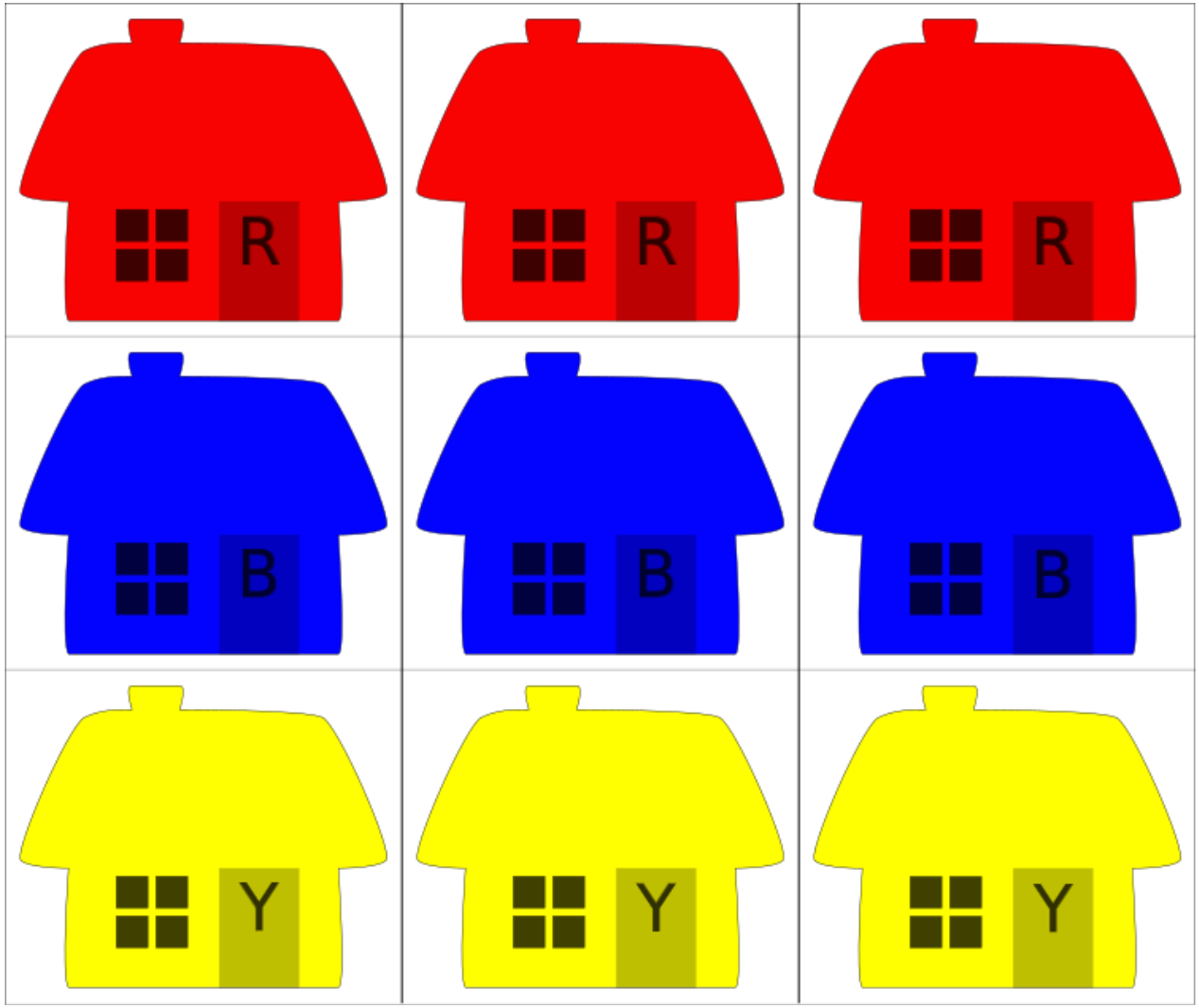
In other words, looking at the map grid, each row and column must have different coloured houses and different coloured teddies.

Can you arrange the nine different combinations you've found on the map grid?

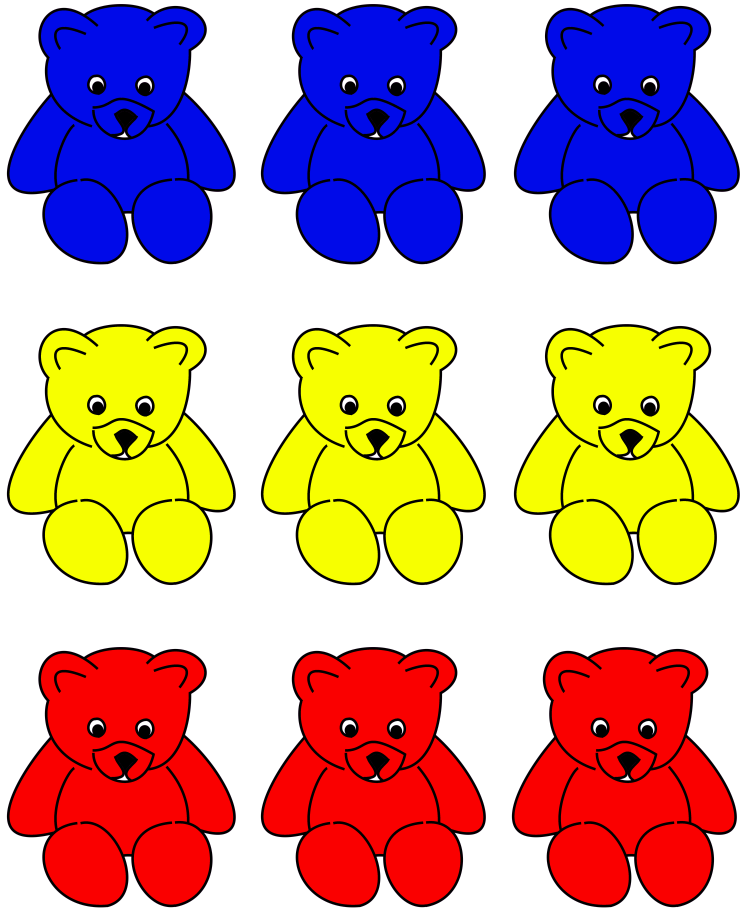
Teddy Town Map



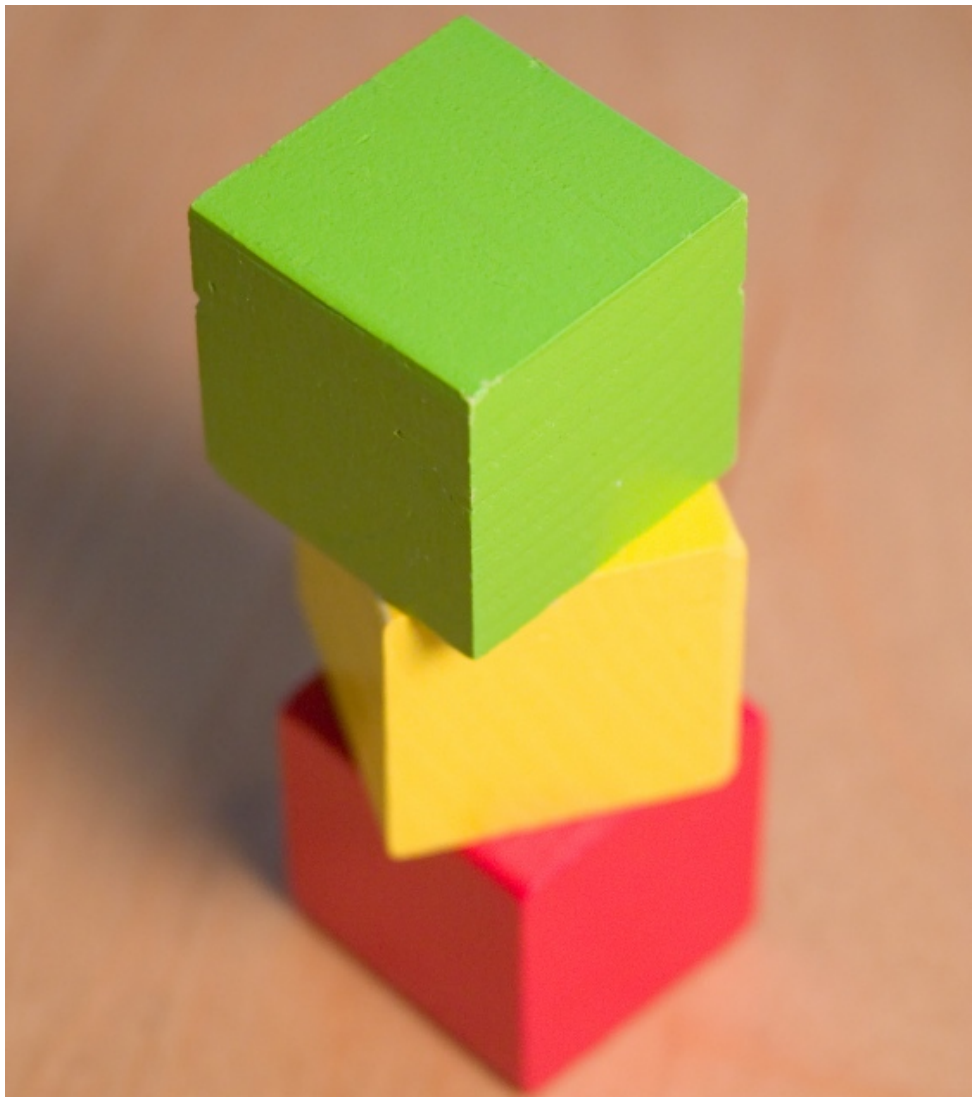
Printable Pieces



Teddies and houses for Teddy Town



Three Block Towers

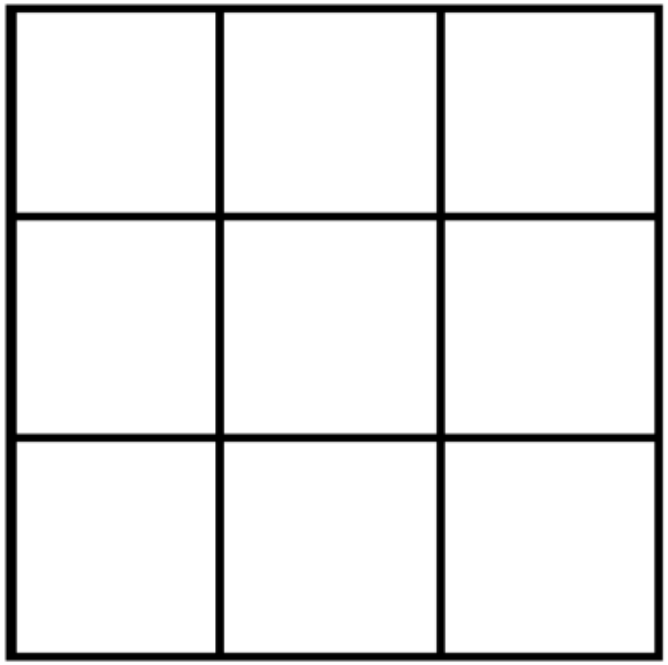


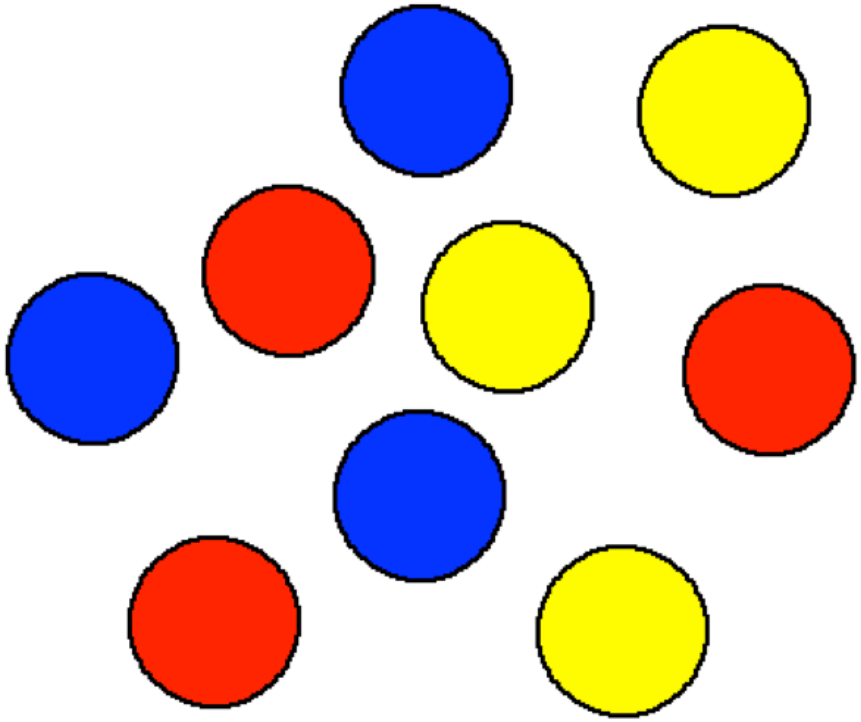
How many different towers can you make using one red, one blue and one yellow block?

How many can you make if you have a green block as well?

Three by Three

Arrange 3 red, 3 blue and 3 yellow counters into a three-by-three square grid, so that there is only one of each colour in every row and every column.

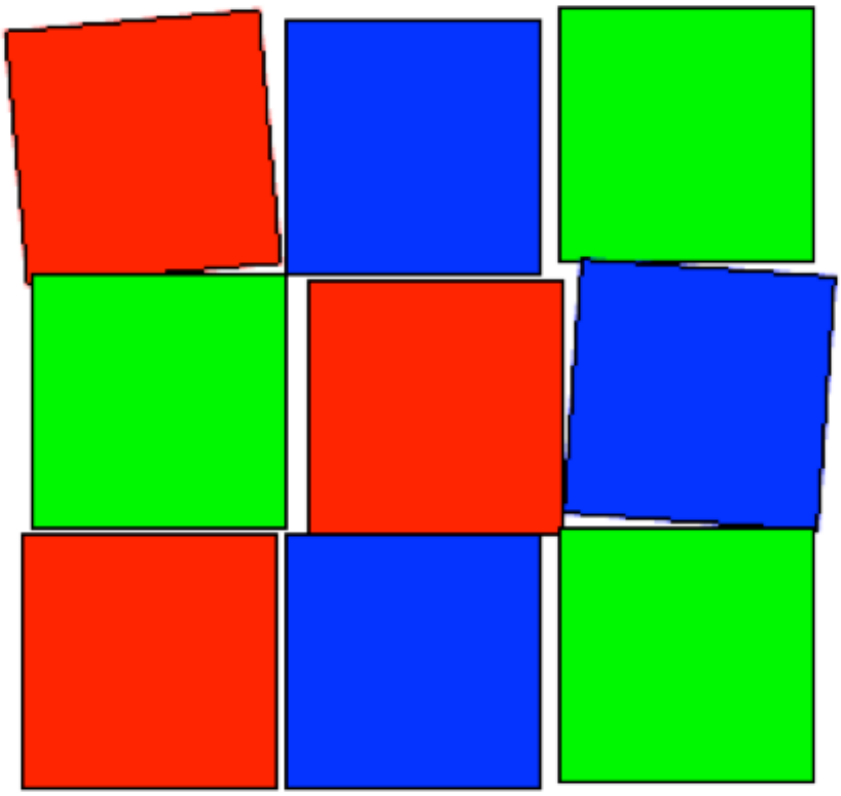




Three-Way Mix Up

Jack has 3 blue tiles, 3 green tiles and 3 red tiles.

He put them together like this to make a square.



He made the rule that you could not put two tiles of the same colour beside each other.

Can you find another way to do it?

Can you find ALL the ways to do it?!

Two Dice

Can you find ALL the numbers that can be made by adding the dots on two dice?

You can write the numbers down on the whiteboard.

What is the highest total you could make?

What is the lowest total you could make?

How will you know you've found all the possible totals?

Two-digit Targets

You need a set of the digits from 0 to 9.

0	1	2	3	4	5	6	7	8	9

Can you arrange these digits in the five boxes below to make two-digit numbers as close to the targets as possible? You may use each digit once only.

Largest even number

Largest odd number

Smallest odd number

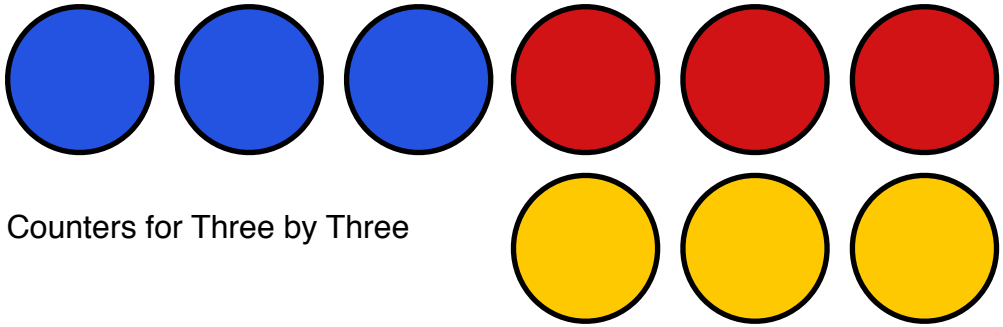
Largest multiple of 5

Number closest to 50

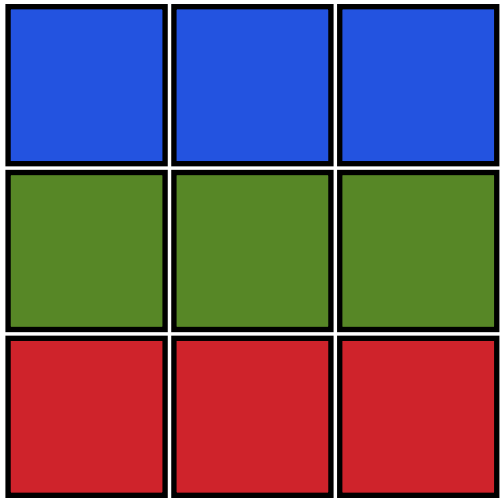
Printable Pieces

0	1	2	3	4
5	6	7	8	9

Digit cards for Two Digit Targets



Counters for Three by Three



Tiles for Three Way Mix-up

Socks for Mixed Up Socks