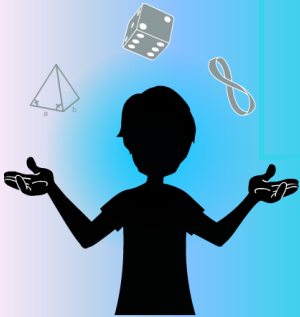


PUZZLING CARTOON

- THE KITES 2 -



AMAZINGMATHS

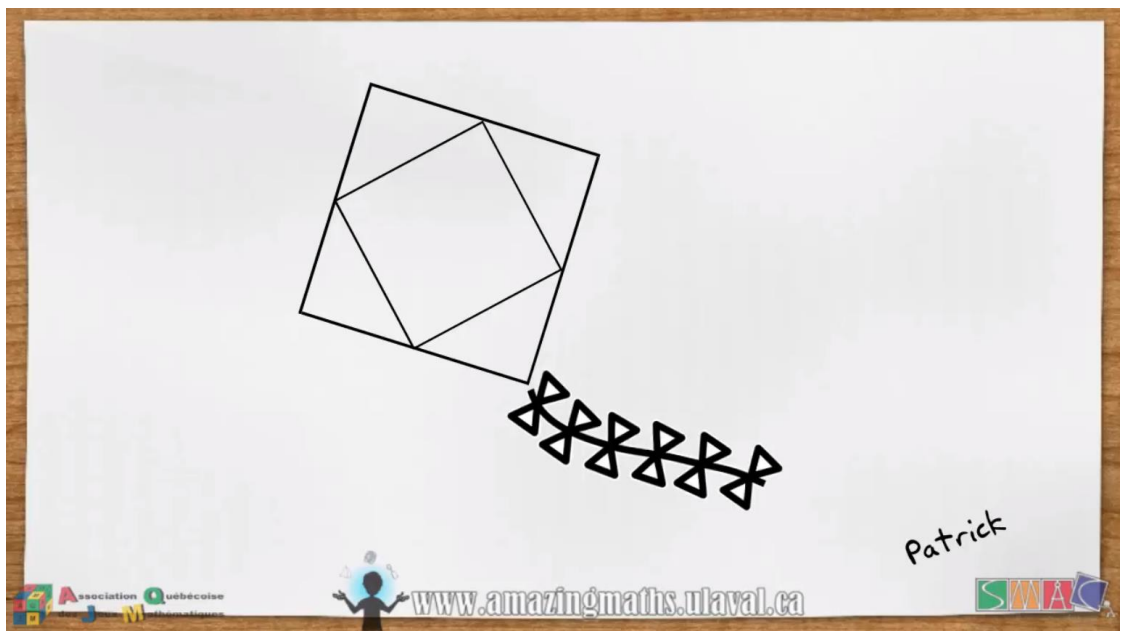
Materials:

- Video of the puzzle
- Sheets of paper
- Pencils

The puzzle

At *Happy Campers* summer camp, Patrick really liked making kites with his friends.

Back home, he decides to create a new model. Here is Patrick's model:



The next morning, Patrick, really proud of himself, shows his friends his new kite model. The campers are all very impressed! Straight away, they decide to build this new model.

The campers have white fabric and red fabric. They are ready to begin, when Meghan says: "I wonder how many people will be able to have a different kite." "That is a good question," answers Patrick.

How many different kites can be made from Patrick's model?

Careful! Do not forget that we can swivel the kites round.



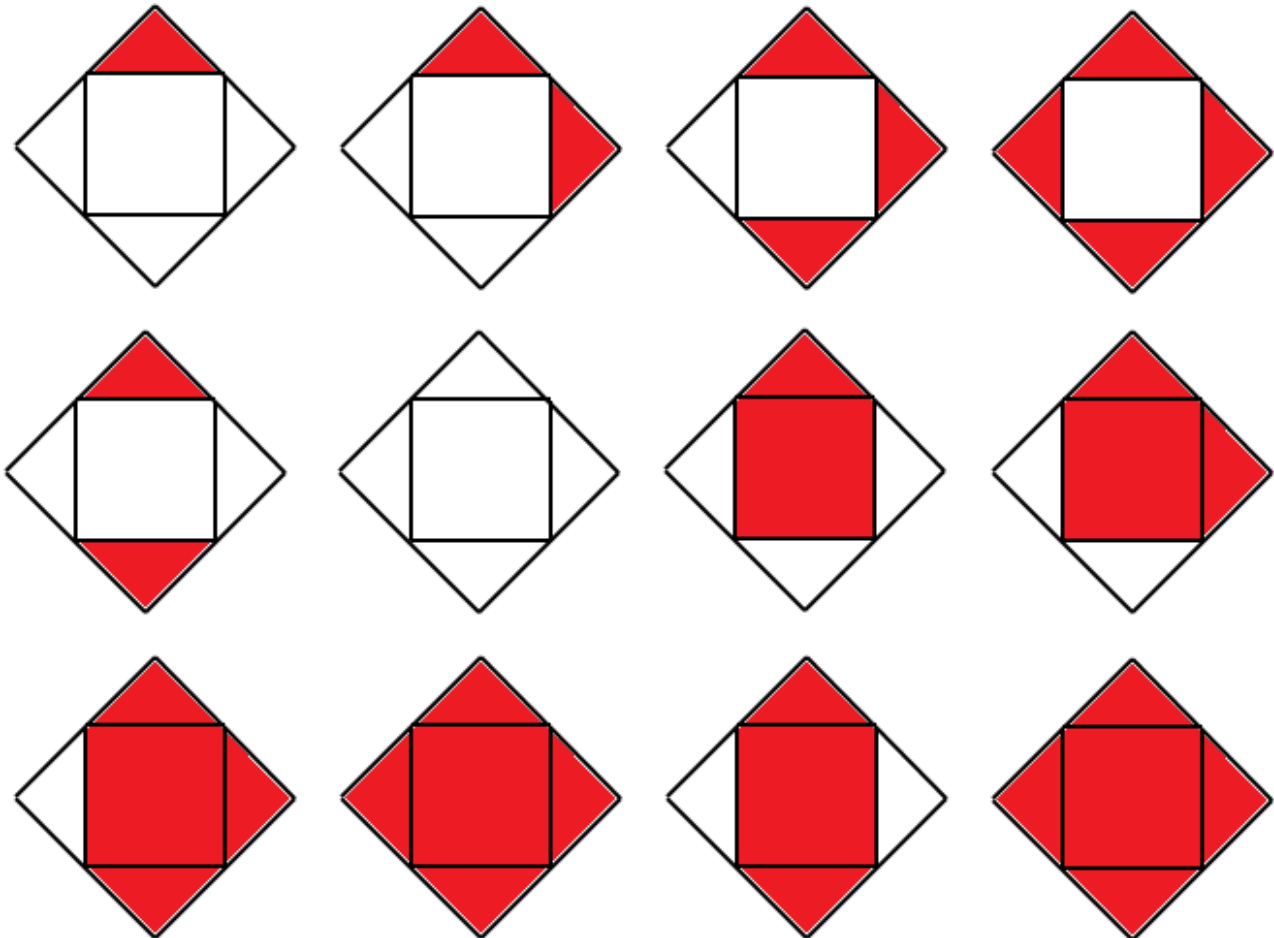
PUZZLE SOLUTION



The answer:

There are 12 different answers.

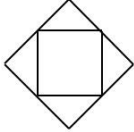
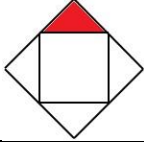
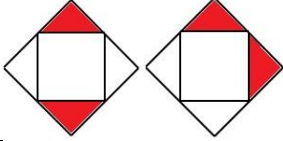
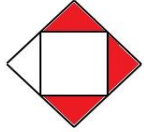
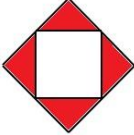
Here they are:



The solution:

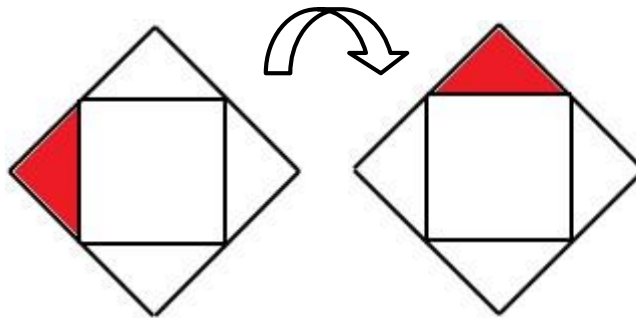
The first way to find the solution is by trial and error. The student can compare the kites one after the other and thus find all the possible colourings.

Another method consists in focusing on **the colour of the kite's centre** (the square). There are two possible choices: the centre can be white, or the centre can be red. To start with, let's look for all the models with a white centre. Here are all the possible choices to colour the small triangles of the kite with a white centre:

Number of red triangles	Number of white triangles	Possible models
0	4	
1	3	
2	2	
3	1	
4	0	

There are 6 possible solutions. Every other solution can be brought back to one of the models above.

Example:



Then, to find the other solutions, we can simply replace the white centre by a red centre. That way, we get the 12 solutions.