

PROBLEM SOLVING AT HOME



Creative Maths (Key Stages 1, 2 & 3)

LEARNING OUTCOMES

- describe what a tangram is
- describe the properties of basic shapes, including triangle, square, rectangle, trapezium and parallelogram
- demonstrate an understanding of how to use a tangram puzzle by completing the puzzles and creating a new design



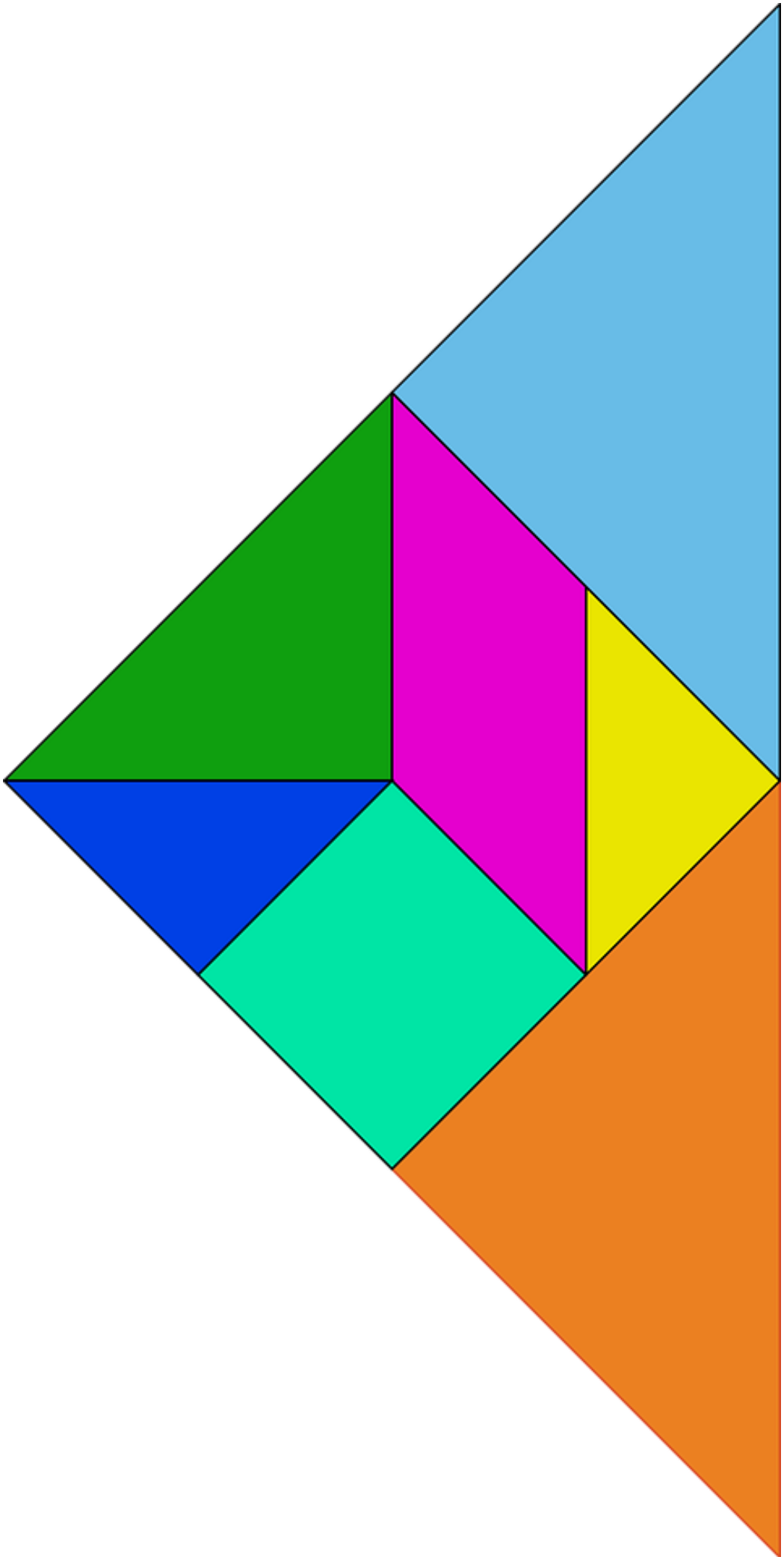
TANGRAM PUZZLE

Some of you might have seen this 200-year-old puzzle before at one of our centres, we use giant versions in our team building challenges. Below are the instructions for creating your own Tangram Puzzle at home.

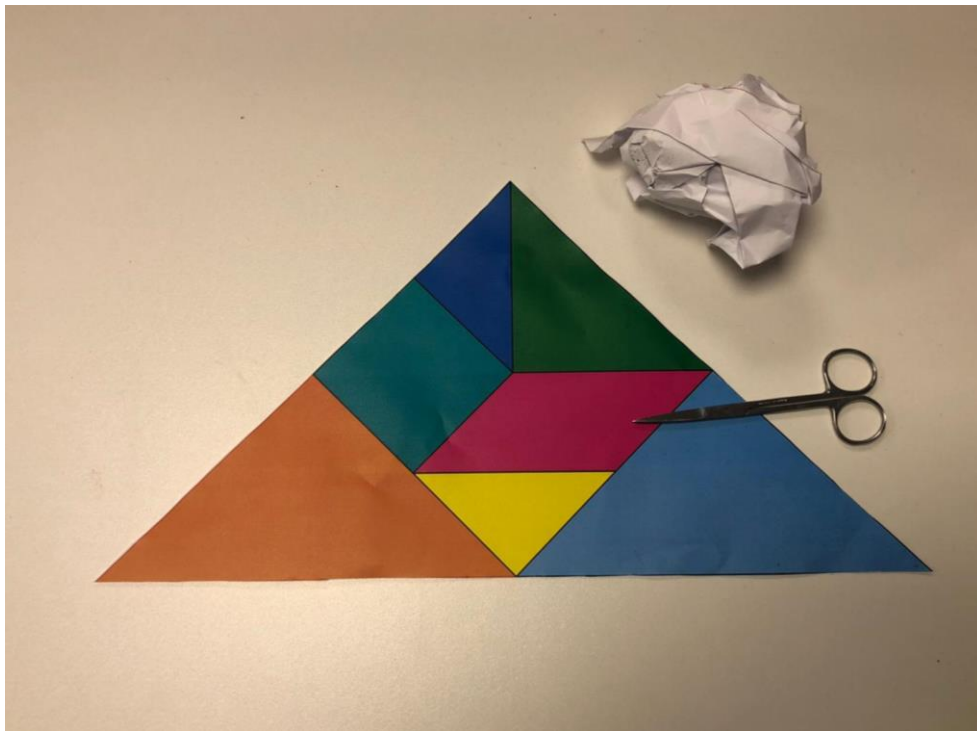
Complete the challenges below and send us a photo of your favourite shapes.

SET UP:

Print out the tangram shape on the next page. If you don't have a printer then don't worry you can draw the shape with a pen and ruler on paper or even on the side of a card board box. Make sure you stick to the shapes.



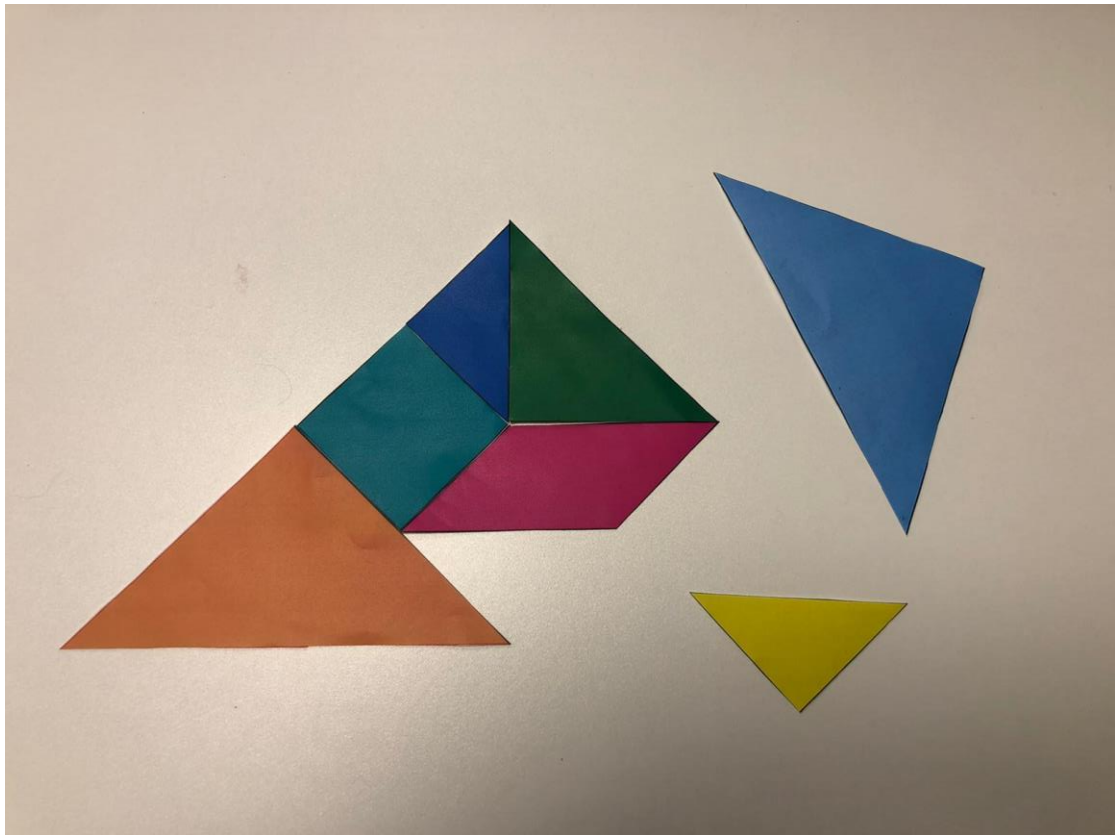
Cut out the large outer triangle. Be careful with the scissors!



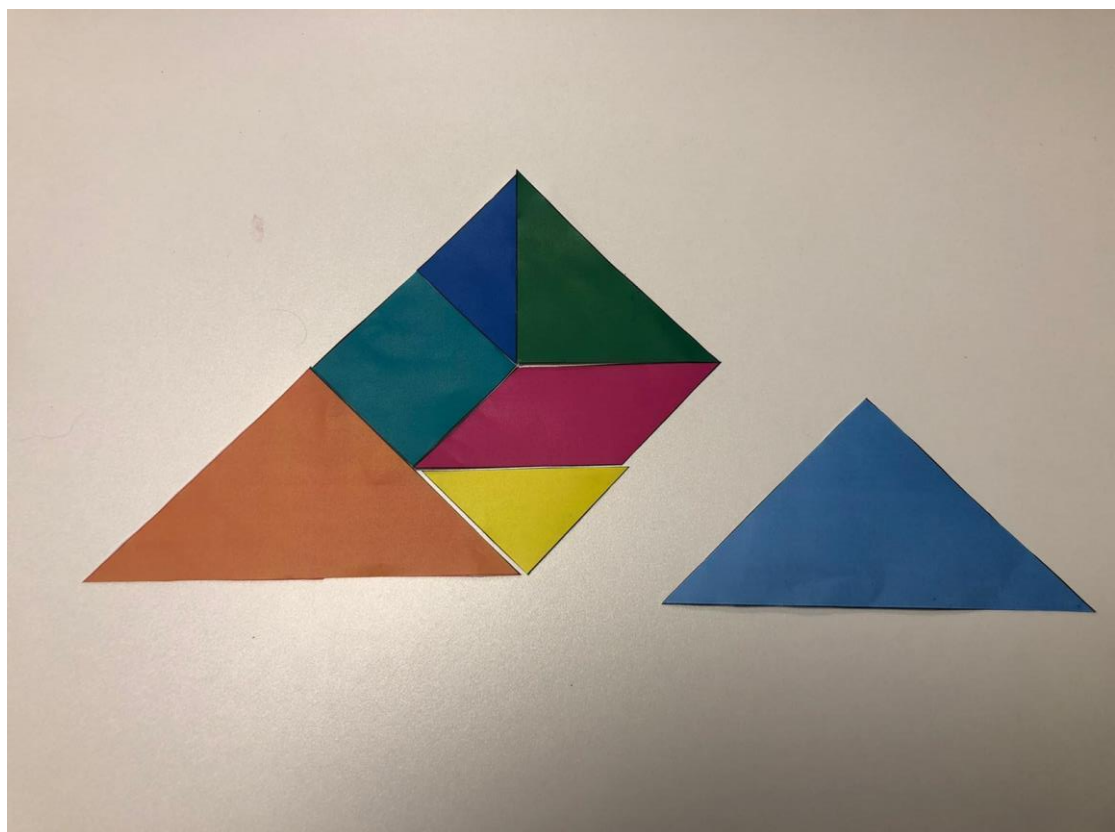
Then you can cut out the individual shapes, these are your 'puzzle pieces'



Now you can start to move the puzzle pieces around to form larger shapes.
Try this large right-angled triangle first.



Almost there!



Well done, you now have one large triangle!

Some properties of a right angled triangle are:

- It has three sides
- One of the angles is 90°



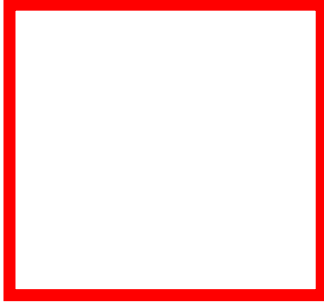
Too easy? Time to take on a challenge!

CHALLENGES

Can you rearrange the puzzle pieces to create different large shapes? Using the shape outlines and properties on the next page to help you, see if you can put your puzzle pieces together to make that shape.

Make sure you use all of the puzzle pieces to complete each challenge.

CHALLENGE 1



Square

Some properties of a square:

- All of the angles are 90°
- All sides are equal and parallel to each other

CHALLENGE 2



Rectangle

Some properties of a rectangle:

- All of the angles are 90°
- Opposite sides are equal and parallel to each other

CHALLENGE 3



Trapezium

Some properties of a trapezium:

- Only one pair of opposite sides are parallel to each other

CHALLENGE 4



Parallelogram

Some properties of a parallelogram:

- Opposite angles are equal
- Opposite sides are equal and parallel

EXTRA CHALLENGE 1

Want to make it harder?

Can you make the same large shapes but using fewer of the puzzle pieces?

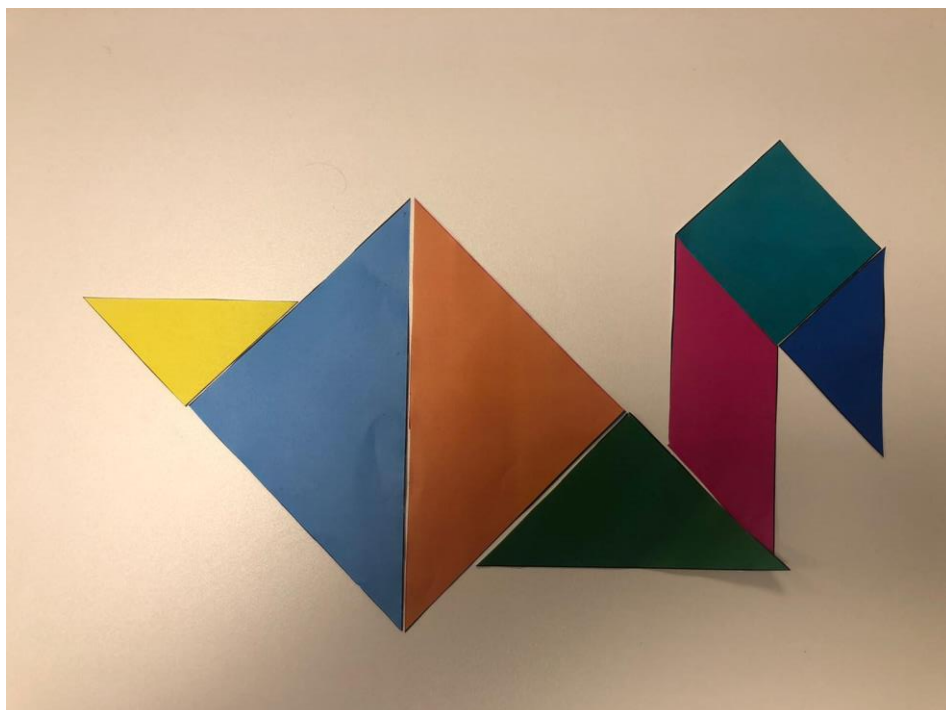
	No. of puzzle pieces used						
	1	2	3	4	5	6	7
Triangle							
Square							
Rectangle							
Trapezium							
Parallelogram							

Some combinations may not be possible, mark them with an X.

EXTRA CHALLENGE 2

What weird and wonderful irregular shapes can you make using all of the puzzle pieces?

Check out this swan shape.



Here is our favourite irregular shape. The mountains.



Once you have made a few new shape creations using your puzzle pieces, chose your favourite and send them to us to see.

**HERE COME THE
ANSWERS SO DON'T TURN
THE PAGE UNTIL YOU
HAVE TRIED THE
CHALLENGES...**

CHALLENGE 1 ANSWER

Square



CHALLENGE 2 ANSWER

Rectangle



CHALLENGE 3 ANSWER

Trapezium



CHALLENGE 4 ANSWER

Parallelogram

