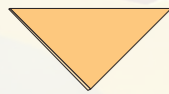You can explore shapes and angles by simply folding paper.
Origami is an ancient Japanese art using folded paper to create beautiful shapes and figures.

Task 1

Take a square sheet of plain paper and fold it in half diagonally.

a If you open it out you should have two triangles. What type of triangles are they?

Now fold it in half again.

b If you open it out, how many triangles do you have now?

Keep folding it in half – see if you can fold it five times.

c When you open it out again, how many triangles are there now?

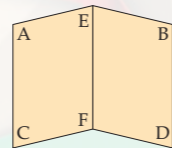**d** Look at one of the triangles. Write down its three angles.

e Construct an accurate drawing of the whole triangle pattern.
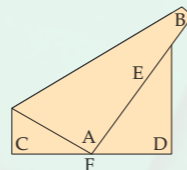
Check that:
▸ Your triangles are congruent
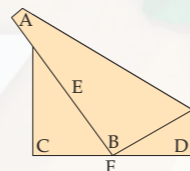▸ Your angles are accurate

Task 2

Take a square sheet of plain paper. Fold in half vertically, then unfold it again.

Bring A down to F and make a crease. Open it out again.

Now do the same with B and F.

▸ **Now do the same with C and E, then D and E.**

▸ **Open out the square and look at the creases.**

a How many triangles are there? What type of triangle are they?

b How many quadrilaterals are there? What type of quadrilateral are they?

c Construct an accurate drawing of the whole pattern.

How many times can you fold a piece of paper in half?

Task 3

You can make an origami penguin by following these steps.

What shapes did you create when folding the penguin? Try to describe them as mathematically as possible.

Is there a line of symmetry on your penguin?

Could you have created this penguin if you had started with paper which wasn't square?