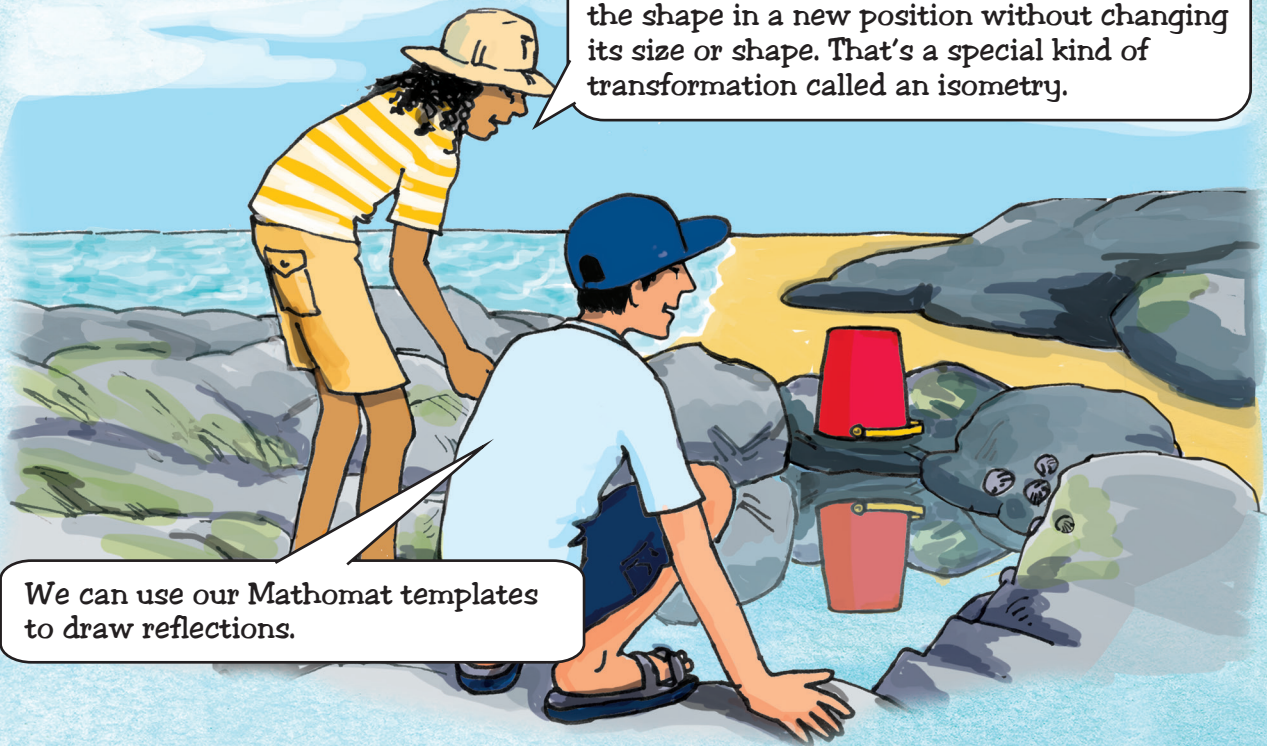


Transformation on the beach

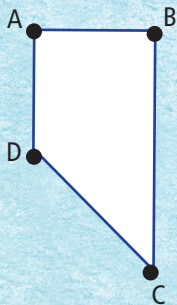
Reflections in the plane produce mirror images in a line.

The reflection in that rock pool has recreated the shape in a new position without changing its size or shape. That's a special kind of transformation called an isometry.

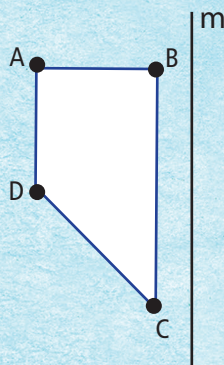


We can use our Mathomat templates to draw reflections.

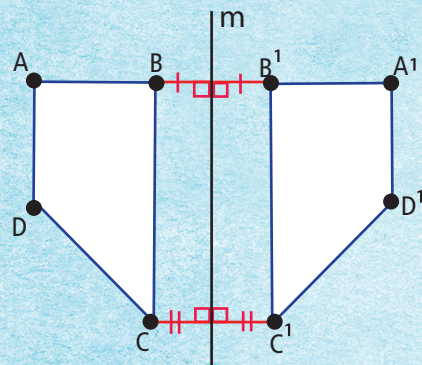
Step 1: Draw the shape to be reflected, with key points marked; vertices in this case.



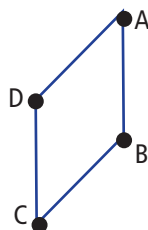
Step 2: Draw in a mirror line to reflect your shape into.



Step 3: Draw in the reflected shape. Every point in the reflected Mathomat and shape will be the same distance from the other side of the mirror line to the original points.



Use your Mathomat template to draw a mirror line and reflect the Mathomat with shape in the space here.



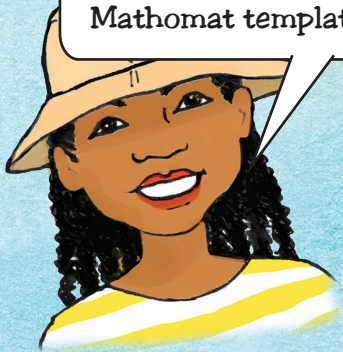
Reflections recreate all points in the plane at a new location except the points on the mirror line which remain fixed. These are called invariant points.



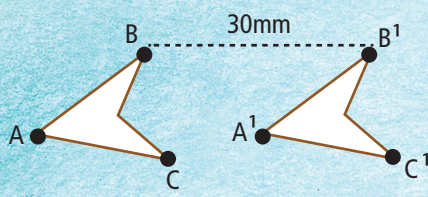
Aren't those seagull footprints in the sand an example of a glide reflection?

Oh yes, glide reflections are a combination of translation and reflection.

Let's draw a glide reflection with our Mathomat templates.

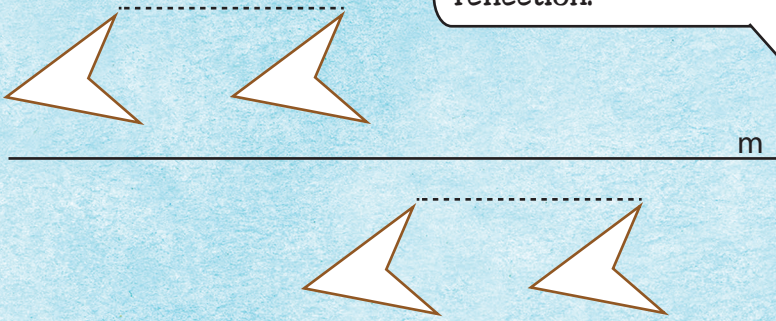


Step 1: Start by translating shape 44 on Mathomat to the right by 30mm.



We've moved each point in Mathomat including shape 44 to the right by 30mm.

Step 2: Reflect shape 44 in a mirror line running parallel to the direction of the translation, then repeat step 1.



You can begin a glide reflection with either a translation or a reflection.



Use your Mathomat to create a glide reflection in the space here that translates Mathomat and shape by 70mm to the right and which reflects it in the mirror line marked m.