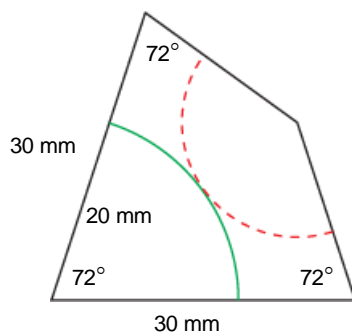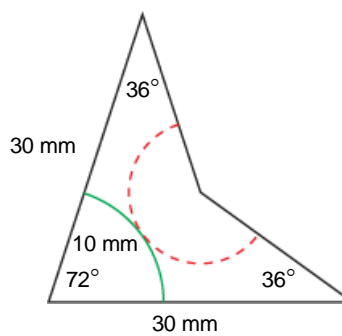Penrose tilings are tilings that don't quite repeat with the same symmetry as other tessellations. They do however produce fascinating patterns, particularly when curves are drawn within each Penrose shape as shown below.

1   Use Maths–Pro to draw the following Penrose shapes (known as the kite and the dart) onto suitable card. (These will be used to trace further shapes.) The longest sides in each shape are of equal length – here we suggest 30 mm. Use Maths–Pro's 40 mm and 20 mm diameter circles to draw arcs in each shape as shown.

"The kite"   "The dart"

2   Use your shapes to draw a tiling (include the curves within each shape), ensuring the solid curves or dashed curves match up within a millimetre or so when sides are joined.

You may use the diagrams below as a guide to the beginning of a tiling, or investigate different arrangements of kites and darts.