Circle theorem 6

If two tangents are drawn from the same point outside a circle they are equal in length.

1.
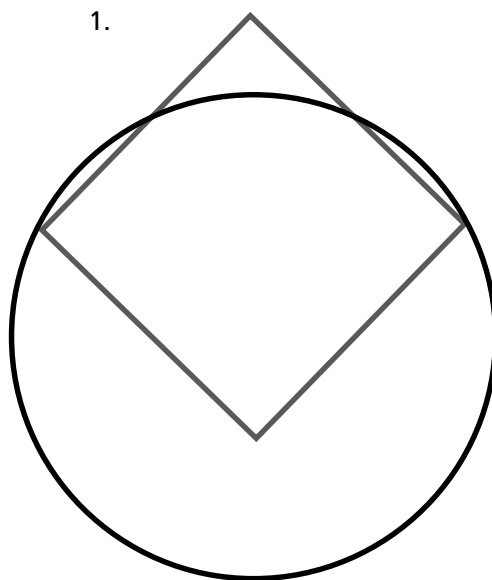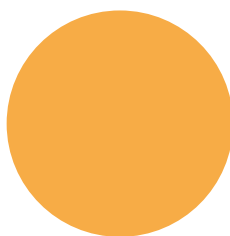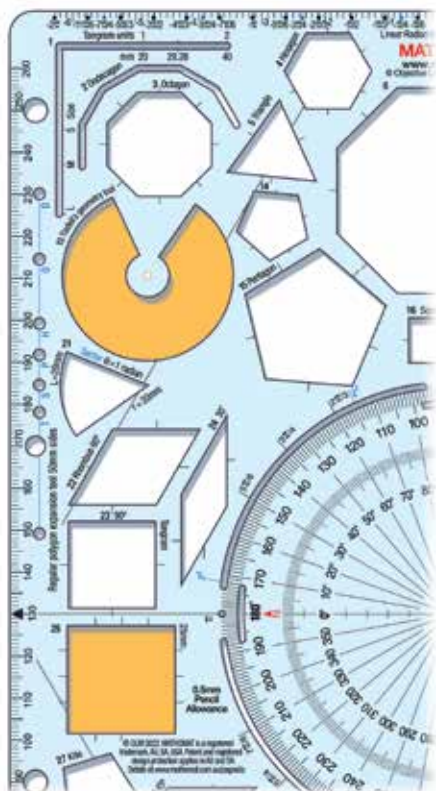
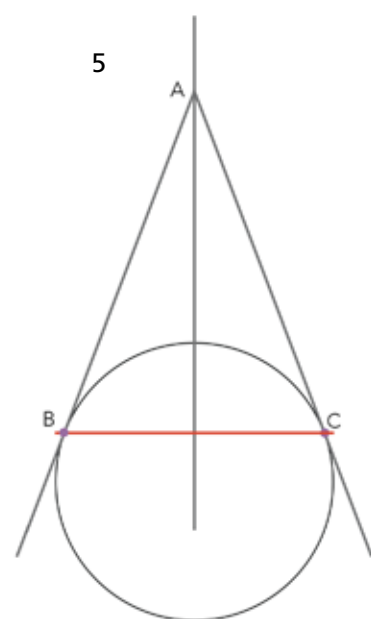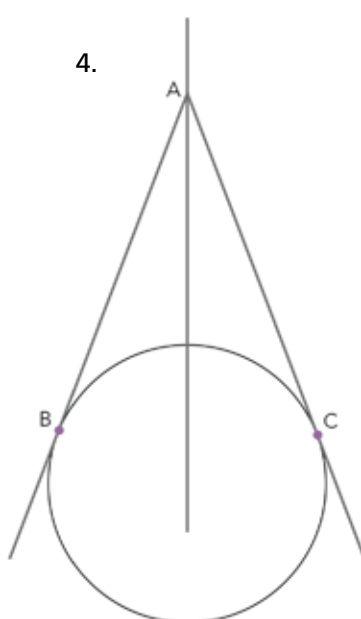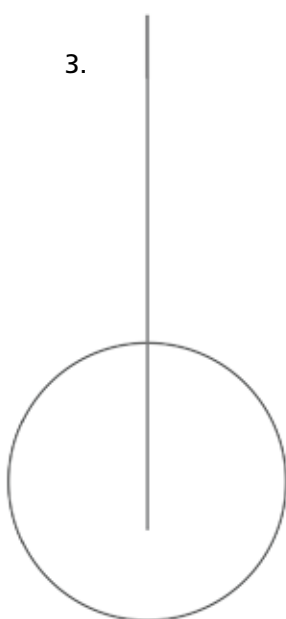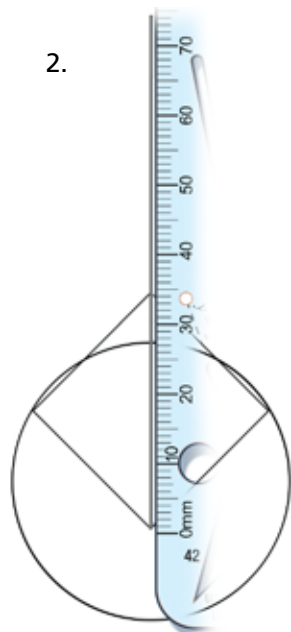1. Draw Mathomat's TGT circle in ink, rotating it to complete its circle. Place the 25mm square (shape 25) inside and rotate it so that one vertex is outside the circle. The two vertices adjacent to the outside one must both touch a point on the circumference. Draw the square in pencil.

2.

3.

4.

5

2. Use Mathomat's ruler and draw a line in ink through the vertices as shown in diagram 2.

3. Erase the square and keep the

perpendicular line that was drawn.

4. Draw two tangents from any point on this line. Name this point A. Make sure that they touch a

point on the circumference.

5. Mark the point where they touch the circumference, B and C. Connect the two points on the circumference

with a perpendicular line to the original one. Measure from point A to B and point A to C.
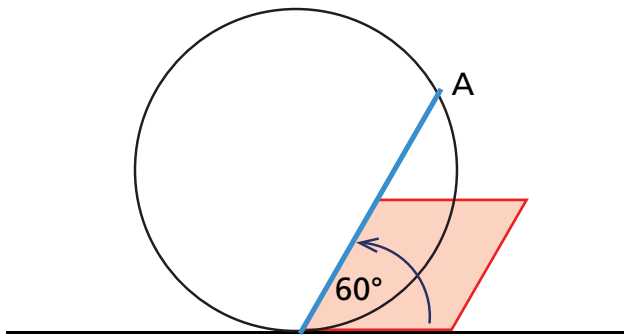
They will have the same length.

Circle theorem 7

The angle between a tangent to a circle and a chord drawn from the point of contact is equal to the angle in the alternate segment.
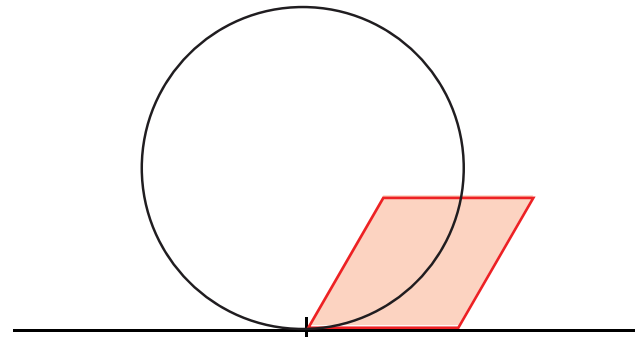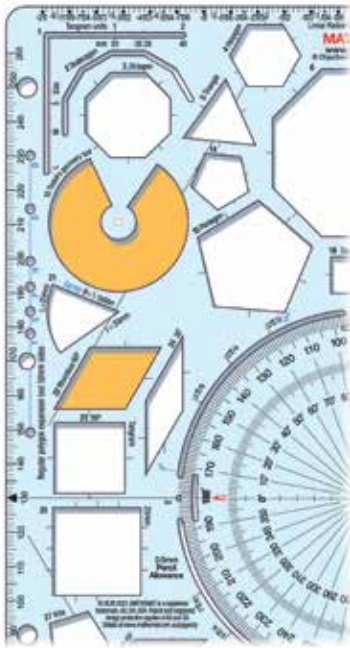
Draw the TGT circle and a tangent to it. Place the 60° rhombus so that its side lines up with the tangent. Draw it in pencil.

Produce the side of the rhombus that is inside the circle, so that it forms a chord in the circle at point A. This angle is 60° because the rhombus' vertex is 60°.
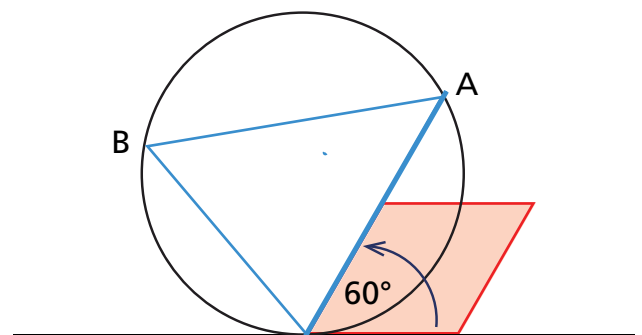
Draw another chord across the circle from point A to point B, on any point along the circumference. From there draw a second chord down to the vertex of the rhombus.
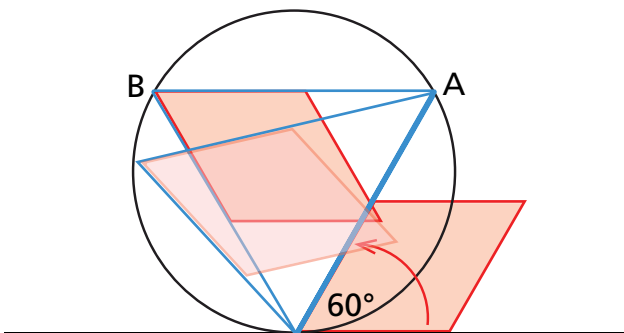
You could try a few different chords from A. Use the 60° rhombus to measure the angle opposite the first chord that was drawn. It will measure 60°, the same the angle between the first chord and the tangent.
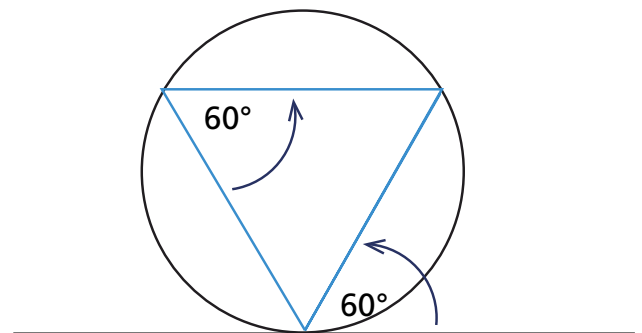
You have shown that the angle between the tangent to the circle and the chord drawn from a point of contact, is equal to the angle in the alternate segment.

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