Theorem 3 is illustrated for an octagon in figure 6. In this case, the formula \((n-2)\pi/2\) reduces to \(3\pi\) radians or 540°. We verify that:
\[
\angle A + \angle C + \angle E + \angle G = \angle B + \angle D + \angle F + \angle H = 540°.
\]

As with theorem 2, theorem 4 also reduces to a trivial case when \(n = 3\), which again simply illustrates the fact that all triangles are cyclic. The case of a pentagon is illustrated in figure 7. Now \((n-3)\pi/2\) reduces to \(\pi\) and we have the following cases:
\[
\begin{align*}
\angle A + \angle C &= 130 + 99 = 229 > 180 \\
\angle B + \angle D &= 126 + 71 = 197 > 180 \\
\angle C + \angle E &= 99 + 114 = 213 > 180 \\
\angle D + \angle A &= 71 + 130 = 201 > 180 \\
\angle E + \angle B &= 114 + 126 = 240 > 180 \\
\end{align*}
\]

Finally, let us just turn our attention again to testing out some of these theorems using say a dynamic geometry software package. We mentioned earlier that this may not always be a simple task. A good example is theorem 1 and the case of a tangential hexagon as illustrated in figure 3. How would we demonstrate that such a tangential hexagon is slippable? A different position of the tangential hexagon with the same sequence of side lengths is shown in figure 8. But it is no trivial task to design a construction to show that even-sided tangential polygons are slippable. In addition to this, the original articles looked at the question of converse statements. Again, it is a challenging task to consider each theorem in turn and to use dynamic geometry software to test whether or not the converse statements are true in general, true in specific cases, or never true. This whole topic is rich in possible investigations for secondary students and teachers.

References

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I was deeply impressed when reading the December 2004 issue of MT189 to see the many articles which referred to the Cockcroft Report in some way, and to see the evident esteem in which it is still held and the continuing influence which it has.

It is quite remarkable for a report of this nature to last as long as it has – especially when ministers of both political parties have exercised a degree of control over the curriculum which was quite unknown in former times. I write to express the pleasure which those associated with the production of the report must feel when reading the many tributes to it in the present MT.

I was not myself a signatory of the Report, but I was an adviser to the committee, and I am sure the current MT would give great pleasure to all associated with the report’s production.

Yours,

Trevor Fletcher
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