Student Problems

Students up to the age of 19 are invited to send solutions to either or both of the following problems to Beth Woollacott, 20 Rectory Close, Sutton Bonington, Loughborough, Nottinghamshire, LE12 5PJ.

Two prizes will be awarded – a first prize of £25, and a second prize of £20 – to the senders of the most impressive solutions for either problem. It is not necessary to submit solutions to both. Entries should arrive by 20th May 2021 and solutions will be published in the July 2021 edition.

The Mathematical Association and the *Gazette* comply fully with the provisions of the 2018 GDPR legislation. Submissions **must** be accompanied by the SPC permission form which is available on the MA website
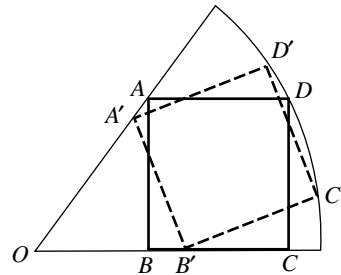
https://www.m-a.org.uk/the-mathematical-gazette

*Note that if permission is not given, a pupil **may still participate and will be eligible for a prize in the same way as others**.*

Problem 2021.1 (**Stan Dolan**)

Each vertex of a triangle is reflected in its opposite side. For what triangles will at least two of the new points be equal?

Problem 2021.2 (**Paul Stephenson**)

The diagram shows an acute-angled sector of a circle. The sector circumscribes a unit square *ABCD* which shares a side with the sector and circumscribes a unit square *A′B′C′D′* which shares an axis of symmetry with the sector.

Find the angle of the sector.