Project GRASP – geometry 1

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1 Administrative Stuff

1.1 Google Classroom

Per popular request I've set up a google classroom: https://tinyurl.com/y9nojnfm

The classroom code is: s8xlovo. There isn't much there yet, but from now on I'll be putting all the materials there as opposed to the mailing list.

1.2 Olympiad problems

1. Figure 1 shows two regular heptagons $ABCDEFG$ and $APQRSTU$. The vertex P lies on the side AB (and hence U lies on the side GA). Also, Q lies on OB, where O is the centre of the larger heptagon. Prove that $AB = 2AP$.

2. Figure 2 shows an equilateral triangle ABC and two squares $AWXB$ and $AYZC$. Prove that the triangle AYB is equilateral.

3. Figure 3 shows two squares $APQR$ and $ASTU$, which have vertex A in common. The point M is the midpoint of PU. Prove that $AM = \frac{1}{2}RS$.

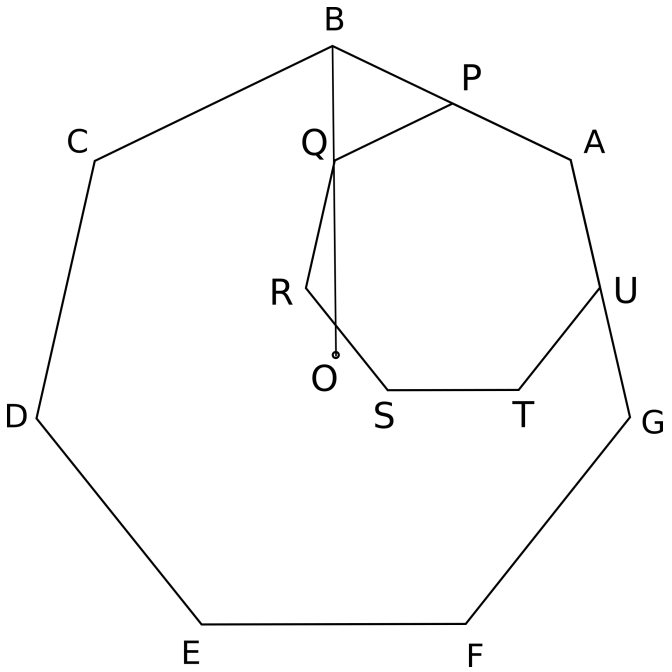

Figure 1: Task 1

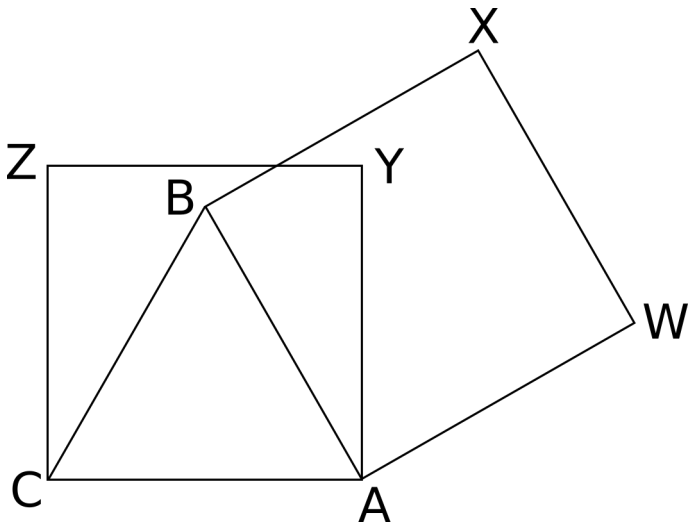

Figure 2: Task 2

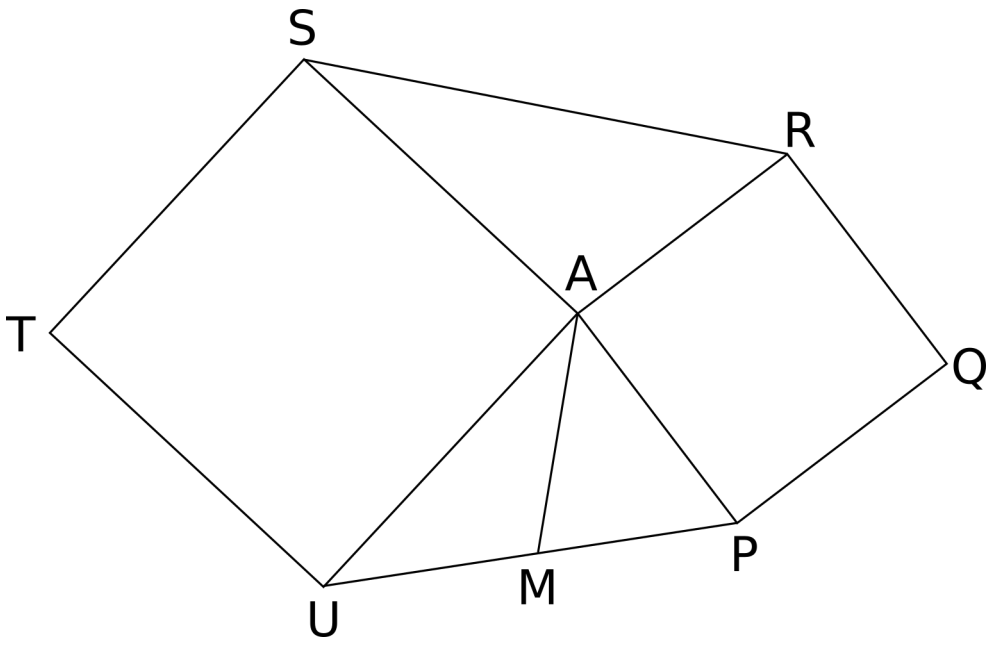

Figure 3: Task 3