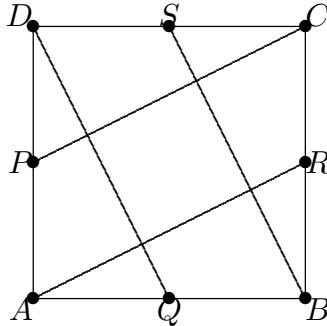


MthT 491 Roma Olympiade

From **Math Olympics - Rome**, March 21, 1997:

1. In the square $ABCD$ the points P, Q, R, S are the midpoints of the sides. What is the ratio between the area of the smaller square and the area of the square $ABCD$?



- (A) $1/2$
(B) $1/4$
(C) $1/5$
(D) $1/6$
(E) $1/8$
2. One and only one of the following numbers is the square of a natural number. Which one?
- (A) 181 056 454 541 232
(B) 114 769 004 000 875
(C) 178 974 001 444 060
(D) 100 000 010 000 001
(E) 100 000 020 000 001
3. Two cars traveling at constant speed on a track are side by side every 56 minutes. If, with the same speeds, one of the cars were traveling in the opposite direction, the two cars would meet every 8 minutes. How long does it take the faster car to complete one lap on the track?